02/NW

Application No.: ~~OH0026069~~
Ohio EPA Permit No.: 2PE00000*ND

National Pollutant Discharge Elimination System (NPDES) Permit Program

PUBLIC NOTICE

NPDES Permit to Discharge to State Waters

Ohio Environmental Protection Agency
Permits Section
50 West Town St., Suite 700
P. O. Box 1049
Columbus, Ohio 43216-1049
(614) 644-2001

Public Notice No.	OEPA 18-03-066 DFT
Date of Issue of Public Notice:	Mar-22-2018
Name and Address of Applicant:	City of Lima WWTP, 50 Town Square, Lima, OH, 45801
Name and Address of Facility Where Discharge Occurs:	City of Lima WWTP, 1200 Fort Amanda Road, Lima, OH, 45804, Allen County
Outfall Flow and Location List:	001 18,500,000 GPD 40N 43' 24" 84W 07' 48"
Receiving Stream:	Ottawa River
Nature of Business:	Municipal WWTP
Key parameters to be limited in the permit are as follows:	E. coli, Total Residual Chlorine, Maximum pH, Minimum pH, Dissolved Oxygen, Total Suspended Solids, Oil and Grease-Hexane Extr Method, Ammonia Nitrogen (NH3), Total Phosphorus, Total (Low Level) Mercury, CBOD 5-day, Dissolved Hexavalent Chromium, Ceriodaphnia dubia Acute Toxicity, Ceriodaphnia dubia Chronic Toxicity, Total in sludge Arsenic, Total in sludge Cadmium, Total in sludge Copper, Total in sludge Lead, Total in sludge Nickel, Total in sludge Zinc, Total in sludge Selenium, Total in sludge Mercury, Fecal Coliform in Sludge, Molybdenum in Sludge

On the basis of preliminary staff review and application of standards and regulations, the director of the Ohio Environmental Protection Agency will issue a permit for the discharge subject to certain effluent conditions and special conditions. The draft permit will 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. Any person may submit written comments on the draft permit and administrative record and may request a public hearing. A request for public hearing shall be in writing and shall state the nature of the issues to be raised. In appropriate cases, including cases where there is significant public interest, the director may hold a public hearing on a draft permit or permits prior to final issuance of the permit or permits. Following final action by the director, any aggrieved party has the right to appeal to the Environmental Review Appeals Commission.

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. Comments should be delivered or mailed to both of the following locations: 1) Ohio Environmental Protection Agency, Lazarus Government Center, Division of Surface Water, Permits Processing Unit, 50 West Town St., Suite 700, P.O. Box 1049, Columbus, Ohio 43216-1049 and 2) Ohio Environmental Protection Agency, Northwest District Office 347 North Dunbridge Road, Bowling Green, Ohio 43402.

The Ohio EPA permit number and public notice numbers should appear next to the above address on the envelope and on each page of any submitted comments. All comments received no later than 30 days after the date of this public notice will be considered.

Proposed Water Quality Based Effluent Limitations: This draft permit contains water quality based effluent limitation(s) (WQBELs). In accordance with Ohio Revised Code Section 6111.03(J)(3), the Director establishes 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 of the timely submitted National Pollutant Discharge Elimination System (NDPES) permit renewal application, along with any and all pertinent information available to the Director.

This public notice hereby 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 WQBEL(s). This information shall be submitted to the addresses listed above.

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 WQBEL(s), written notification for any additional time shall be sent no later than 30 days after the date of this public notice to the Director at the addresses listed above.

Should the applicant determine that compliance with a WQBEL is technically and/or economically unattainable, the permittee may submit an application for a variance to the applicable WQBEL in accordance with the terms and conditions set forth in Ohio Administrative Code (OAC) Rule 3745-33-07(D) no later than 30 days after the date of this public notice to the addresses listed above.

Alternately, the applicant may propose the development of site-specific water quality standard(s) pursuant to OAC Rule 3745-1-35. The permittee shall submit written notification to the Director regarding their intent to develop site-specific water quality standards for the pollutant at issue to the addresses listed above no later than 30 days after the date of this public notice.

The application, fact sheets, permit including effluent limitations, special conditions, comments received, and other documents are available for inspection and may be copied at a cost of 5 cents per page at the Ohio Environmental Protection Agency at the address shown on page one of this public notice any time between the hours of 8 a.m. and 4:30 p.m., Monday through Friday. Copies of the public notice are available at no charge at the same address. Individual NPDES draft permits that are in public notice are now available on DSW's web site: http://www.epa.ohio.gov/dsw/permits/individuals/draftperm.aspx

Mailing lists are maintained for persons or groups who desire to receive public notice for all applications in the state or for certain geographical areas. Persons or groups may also request copies of fact sheets, applications, or other documents pertaining to specific applications. Persons or groups may have their names put on such a list by making a written request to the agency at the address shown above.

National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

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

Public Notice No.: 18-03-066
Public Notice Date: March 22, 2018
Comment Period Ends: April 22, 2018

Ohio EPA Permit No.: 2PE00000*ND
Application No.: OH0026069

Name and Address of Applicant:
City of Lima
1200 Fort Amanda Road
Lima, Ohio 45804

Name and Address of Facility Where Discharge Occurs:
Lima WWTP
1200 Fort Amanda Road
Lima, Ohio 45804
Allen County

Receiving Water: Ottawa River

Subsequent Stream Network: Auglaize River to Maumee River to Lake Erie

Introduction

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

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

No antidegradation review was necessary.

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

Ohio EPA reviews the need for water-quality-based limits on a pollutant-by-pollutant basis. Wasteload allocations (WLAs) are used to develop these limits based on the pollutants that have been detected in the discharge, and the receiving water's assimilative capacity. The assimilative capacity depends on the flow in the

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

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

Summary of Permit Conditions

Outfall 001:

The effluent limits and monitoring requirements proposed for the following parameters are the same as in the previous permit: dissolved oxygen, total suspended solids, ammonia, phosphorus, *E. coli*, flow rate, pH, and 5-day carbonaceous biochemical oxygen demand ($CBOD_5$).

Lower effluent limits are proposed for total residual chlorine based upon the wasteload allocation. Total residual chlorine limits are proposed to be lowered from 0.020 mg/L to 0.019 mg/L.

Station 604:

The effluent limits and monitoring requirements proposed for the following parameters are the same as in the previous permit, although some monitoring frequencies may have changed: water temperature, dissolved oxygen, total suspended solids, oil and grease, ammonia, nitrite plus nitrate, phosphorus, nickel, zinc, cadmium, lead, chromium, copper, selenium, bis(2-ethylhexyl) phthalate, flow rate, total filterable residue, and $CBOD_5$.

Monitoring for antimony is proposed to be removed because it no longer demonstrates reasonable potential.

New effluent limits are proposed for dissolved hexavalent chromium based upon the wasteload allocation. A schedule of compliance to meet the proposed limits is included in Part I.C of the permit.

Lower effluent limits are proposed for mercury in association with the mercury variance granted to Lima WWTP. Under the mercury variance, permittees are required to identify mercury sources and take steps to reduce the loading of mercury coming to the treatment plant. The monthly concentration limit for mercury has been decreased from 7.6 ng/L to 3.7 ng/L, the associated loading limit has decreased as well.

New monitoring is proposed for dissolved orthophosphate. This monitoring is required by Ohio Senate Bill 1, which was signed by the Governor on April 2, 2015 and is now a part of ORC 6111.03.

New monitoring is proposed for total Kjeldahl nitrogen (TKN) to develop a more robust nutrient data set in the Ottawa River.

In accordance with 40 CFR Part 132, Appendix F, Procedure 6, it has been determined that the effluent from Lima WWTP shows reasonable potential for chronic toxicity to *Ceriodaphnia dubia*. Limits and an increased

monitoring frequency for chronic whole effluent toxicity with acute endpoints for *Ceriodaphnia dubia* are proposed. A schedule of compliance to meet the proposed limits is included in Part I.C of the permit.

This permit no longer authorizes the use of method 4500 CN-I from Standard Methods for free cyanide testing. As soon as possible, the permittee must begin using either ASTM D7237-10 or OIA-1677-09 both of which are approved methods for free cyanide listed in 40 CFR 136.

To ensure that data is obtained that allows Ohio EPA to make water quality-related decisions regarding dissolved hexavalent chromium, a special condition is proposed in Part II of the permit that provides guidance on the analytical method detection limit (MDL) the permittee should use in analyzing for this contaminant.

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; tracking of group 4 parameters; mercury variance; pretreatment program requirements; toxicity reduction evaluation (TRE); phosphorus optimization; and outfall signage.

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Procedures for Participation in the Formulation of Final Determinations

The draft action shall be issued as a final action unless the Director revises the draft after consideration of the record of a public meeting or written comments, or upon disapproval by the Administrator of the U.S. Environmental Protection Agency.

Within thirty days of the date of the Public Notice, any person may request or petition for a public meeting for presentation of evidence, statements or opinions. The purpose of the public meeting is to obtain additional evidence. Statements concerning the issues raised by the party requesting the meeting are invited. Evidence may be presented by the applicant, the state, and other parties, and following presentation of such evidence other interested persons may present testimony of facts or statements of opinion.

Requests for public meetings shall be in writing and shall state the action of the Director objected to, the questions to be considered, and the reasons the action is contested. Such requests should be addressed to:

Legal Records Section
Ohio Environmental Protection Agency
P.O. Box 1049
Columbus, Ohio 43216-1049

Interested persons are invited to submit written comments upon the discharge permit. Comments should be submitted in person or by mail no later than 30 days after the date of this Public Notice. Deliver or mail all comments to:

Ohio Environmental Protection Agency
Attention: Division of Surface Water
Permits Processing Unit
P.O. Box 1049
Columbus, Ohio 43216-1049

The Ohio EPA permit number and Public Notice numbers should appear on each page of any submitted comments. All comments received no later than 30 days after the date of the Public Notice will be considered.

Citizens may conduct file reviews regarding specific companies or sites. Appointments are necessary to conduct file reviews, because requests to review files have increased dramatically in recent years. The first 250 pages copied are free. For requests to copy more than 250 pages, there is a five-cent charge for each page copied. Payment is required by check or money order, made payable to Treasurer State of Ohio.

For additional information about this fact sheet or the draft permit, contact Peggy Christie at (419) 373-3006, Peggy.Christie@epa.ohio.gov; or Ashley Ward at (614) 644-4852, Ashley.Ward@epa.ohio.gov.

Information Regarding Certain Water Quality Based Effluent Limits

This draft permit may contain proposed water-quality-based effluent limits (WQBELs) for parameters that **are not** priority pollutants. (See the following link for a list of the priority pollutants: http://epa.ohio.gov/portals/35/pretreatment/Pretreatment_Program_Priority_Pollutant_Detection_Limits.pdf .) In accordance with ORC 6111.03(J)(3), the Director established these WQBELs after considering, to the extent consistent with the Federal Water Pollution Control Act, evidence relating to the technical feasibility and economic reasonableness of removing the polluting properties from those wastes and to evidence relating to conditions calculated to result from that action and their relation to benefits to the people of the state and to accomplishment of the purposes of this chapter. This determination was made based on data and information

available at the time the permit was drafted, which included the contents of the timely submitted NPDES permit renewal application, along with any and all pertinent information available to the Director.

This public notice allows the permittee to provide to the Director for consideration during this public comment period additional site-specific pertinent and factual information with respect to the technical feasibility and economic reasonableness for achieving compliance with the proposed final effluent limitations for these parameters. The permittee shall deliver or mail this information to:

Ohio Environmental Protection Agency
Attention: Division of Surface Water
Permits Processing Unit
P.O. Box 1049
Columbus, Ohio 43216-1049

Should the applicant need additional time to review, obtain or develop site-specific pertinent and factual information with respect to the technical feasibility and economic reasonableness of achieving compliance with these limitations, written notification for any additional time shall be sent to the above address no later than 30 days after the Public Notice Date on Page 1.

Should the applicant determine that compliance with the proposed WQBELs for parameters other than the priority pollutants is technically and/or economically unattainable, the permittee may submit an application for a variance to the applicable WQS used to develop the proposed effluent limitation in accordance with the terms and conditions set forth in OAC 3745-33-07(D). The permittee shall submit this application to the above address no later than 30 days after the Public Notice Date.

Alternately, the applicant may propose the development of site-specific WQS pursuant to OAC 3745-1-35. The permittee shall submit written notification regarding their intent to develop site specific WQS for parameters that are not priority pollutants to the above address no later than 30 days after the Public Notice Date.

Location of Discharge/Receiving Water Use Classification

Lima WWTP discharges to Ottawa River at River Mile 37.6. Figure 1 shows the approximate location of the facility.

This segment of the Ottawa River is described by Ohio EPA River Code: 04-200, U.S. EPA River Reach Code: 04100007-018, County: Allen, Ecoregion: Eastern Corn Belt Plains. The Ottawa River is designated for the following uses under Ohio's WQS (OAC 3745-1-11): Warmwater Habitat, 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

Lima WWTP was constructed in 1930 and last upgraded in 2010. The average design flow is 18.5 million gallons per day (MGD) and the peak hydraulic capacity is 30 MGD. However, the permittee is under schedule to make improvements to achieve secondary treatment at outfall 001 for 70 MGD in accordance with Part 1,C (1)(d) of the previous permit, 2PE00000*MD. Lima WWTP serves the City of Lima, Ohio for a total of approximately 47,000 customers. Lima WWTP has the following treatment processes, and plant diagrams are shown on Figures 2 and 3:

- Bar Screen
- Grit Removal
- Scum Removal
- Primary Sedimentation
- Conventional Activated Sludge
- Secondary Clarification
- Biological Nitrification
- Chlorination
- Dechlorination
- Polymer Addition - Primary, Secondary

- Ferrous Chloride Addition - Primary

Lima's treatment plant has three bypasses: Station 057 is a bypass of the entire plant; Station 602 is a bypass of the secondary treatment system; Station 603 is a bypass of tertiary treatment (nitrification process). Stations 602 and 603 are in-plant outfalls that are disinfected and then blended with the fully treated effluent (outfall 604) prior to discharge.

Lima monitors treatment-system control parameters ($CBOD_5$, total suspended solids, ammonia and phosphorus) at outfall 604. Treatment technology limits are imposed at this outfall. Water quality based limits for these parameters and metals are also applied at this point because this outfall represents the final discharge during low-flow conditions.

Outfall 001 represents the combined discharge of the fully treated effluent and the in-plant bypasses. All flows at Outfall 001 receive disinfection. Water quality based limits for bacteria, pH and chlorine are applied at this location.

The City of Lima has 45% separated sewers and 55% combined sewers in the collection system. The City has an approved pretreatment program. The City of Lima has 10 categorical users that discharge 0.10 MGD of flow, 4 significant non-categorical users that discharge 0.13 MGD of flow, and 10 other non-categorical users that discharge 0.01 MGD of flow.

Lima WWTP utilizes the following sewage sludge treatment processes:

- Gravity Thickening (of Allen County Biosolids)
- Anaerobic Digestion
- Digested Biosolids Storage
- Mechanical Belt Press
- Alkaline Stabilization
- Dewatered Biosolids Storage Building and Pad

Treated exceptional quality sludge is disposed of by distribution and marketing. Table 1 shows sludge removed from Lima WWTP for 2013 - 2016.

See Figures 3 and 4 for the process flow charts associated with the wastewater treatment system and expansion of the facility.

Lima WWTP is also subject to a U.S. EPA Consent Order for wet weather related issues at the facility and collection system.

Description of Existing Discharge

Lima WWTP has an estimated infiltration/inflow (I/I) rate of 0.20 MGD. Effluent flow rates for 2013-2016 are presented on Table 2.

Lima WWTP effluent violations are shown on Table 3.

Lima WWTP reports SSOs at station 300. The total number of SSOs reported 2013 through 2016 is presented on Table 4.

Bypasses at the treatment plant are shown in Table 5.

There are 19 combined sewer overflows, 5 of which are mechanically controlled by a computer system to maximize in-line storage. All of the CSOs are regulated under this NPDES permit. The City of Lima submitted a Long Term Control Plan to U.S. EPA and Ohio EPA on April 18, 2012, with revisions on August 22, 2014, pursuant to the requirements of Ohio EPA NPDES Permit No. 2PE00000*LD. This plan was approved by the Director on April 28, 2016, as Plan Approval Number 1076869 and is being implemented through Consent Decree Case Number 3:14 CV 2551 filed in United States District Court on January 13, 2015. CSO events are shown in Table 6.

The separate portion of the system includes 29 lift stations and 42 known sanitary sewer overflows (SSOs) none of which are mechanically controlled or metered. The SSOs were the subject of Director's Final Findings and Orders issued in February 1994 and a general plan for elimination that was approved on January 1996. The City completed phases 1 and 2 of the general plan, eliminating 9 SSOs.

Under the provisions of 40 CFR 122.21(j), the Director has waived the requirement for submittal of expanded effluent testing data as part of the NPDES renewal application. Ohio EPA has access to substantially identical information through the submission of annual pretreatment program reports and/or from Ohio EPA effluent testing conducted.

Table 7 presents phosphorus concentrations reported by Lima WWTP.

Table 8 presents chemical specific data compiled from data reported in annual pretreatment reports and Ohio EPA compliance data.

Table 9 presents a summary of unaltered Discharge Monitoring Report (DMR) data for outfalls 001 and 604. Data are presented for the period October 2012 through September 2017 and current permit limits are provided for comparison.

Table 10 summarizes the chemical specific data for outfall 604 by presenting the average and maximum PEQ values.

Table 11 summarizes the results of acute and chronic WET tests of the final effluent.

Table 12 summarizes the screening results of Ohio EPA bioassay sampling of the final effluent.

Assessment of Impact on Receiving Waters

The Ottawa River has been identified as a priority impaired water on Ohio's 303(d) list.

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

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

Use attainment is a term which describes the degree to which environmental indicators are either above or below criteria specified by the Ohio WQS (OAC 3745-1). Assessing use attainment status for aquatic life uses primarily relies on the Ohio EPA biological criteria (OAC 3745-1-07; Table 7-15). These criteria apply to rivers and streams outside of mixing zones. Numerical biological criteria are based on measuring several characteristics of the fish and macroinvertebrate communities; these characteristics are combined into multimetric biological indices including the Index of Biotic Integrity and modified Index of Well-Being, which indicate the response of the fish community, and the Invertebrate Community Index, which indicates the response of the macroinvertebrate community. Numerical criteria are broken down by ecoregion, use designation, and stream or river size. Ohio has five ecoregions defined by common topography, land use, potential vegetation and soil type.

Three attainment status results are possible at each sampling location -full, partial, or non-attainment. Full attainment means that all of the applicable indices meet the biocriteria. Partial attainment means that one or more of the applicable indices fails meet the biocriteria. Nonattainment means that either none of the applicable indices meet the biocriteria or one of the organism groups indicates poor or very poor performance. An aquatic life use attainment table (see Table 13) 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.

2010 Biological Sampling Results

The Ottawa River in the study area covered by this report was evaluated by OEPA staff for aquatic life and recreational use potential during the 2010 field season. This assessment included the collection of water chemistry and biological sampling at numerous sites in the mainstem Ottawa River and selected tributaries. More information on the 2010 sampling can be found in the OEPA document: "Biological and Water Quality Study of the Ottawa River and Principal Tributaries, 2010", OEPA, April 2013. This document is available through the OEPA, Division of Surface Water website at www.epa.state.oh.us/dsw/index.

The Ottawa River watershed (Lima area) is impaired for nutrients, ammonia, low dissolved oxygen, excess algae, and chronic toxicity due to the following: municipal point source discharges, industrial point source discharges, combined sewer overflows, sanitary sewer overflows, and unknown sources. Chronic toxicity manifests as a declining number of pollution-sensitive fish species and an increase in the incidence of deformities, eroded fins, lesions, and tumors (DELT) anomalies in the fish community. Lima WWTP, along with other point source discharges in the segment, is considered a significant source of the pollutants causing impairments.

Specific information on the Ottawa River Basin Study can be found at this website:

http://epa.ohio.gov/Portals/35/documents/OttawaR_TSD_2010.pdf

A Total Daily Maximum Load (TMDL) report was approved for the Ottawa River (Lima Area) Watershed on April 15, 2014. The full report can be found here:

http://www.epa.ohio.gov/dsw/tmdl/MaumeeRiver.aspx#122946578-tmdl-report

Recommendations from this TMDL analysis include effluent limits and monitoring for total phosphorus for several facilities. The major recommendation included in the TMDL for the area around Lima is that the City's long-term control plan be finalized and implemented. Storm water can best be addressed by using practices that improve infiltration and slow the speed of runoff. Habitat alterations should be addressed by bank and riparian restoration, stream restoration and dam modification or removal. High levels of nutrients and bacteria can be reduced by tying unsewered areas into sewer systems where, by inspecting and replacing or repairing failing

home sewage treatment systems, and by adopting agricultural best management practices. Nonpoint sources are typically addressed by voluntary actions.

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 Lima 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)	October 2012 through September 2017
Pretreatment data	2012 through 2016
Ohio EPA compliance sampling data	2013

Outliers
The data were examined and no values were removed from the evaluation.

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 10).

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 17).

Wasteload Allocation
For those parameters that require a WLA, the results are based on the uses assigned to the receiving waterbody in OAC 3745-1. Dischargers are allocated pollutant loadings/concentrations based on the Ohio WQS (OAC 3745-1). Most pollutants are allocated by a mass-balance method because they do not degrade in the receiving water. For free flowing streams, WLAs using this method are done using the following general equation: Discharger WLA = (downstream flow x WQS) - (upstream flow x background concentration). Discharger WLAs are divided by the discharge flow so that the allocations are expressed as concentrations. The following dischargers in the Ottawa River were considered interactive (see Figure 4):

- Husky Lima Refinery
- PCS Nitrogen
- Shawnee #2 WWTP

The available assimilative capacity was distributed among them using the conservative substance wasteload allocation (CONSWLA) water quality model for conservative parameters. CONSWLA is the model Ohio EPA typically uses in multiple discharger situations. CONSWLA model inputs for flow are fixed at their critical low levels and inputs for effluent flow are fixed at their design or 50th percentile levels. Background concentrations

are fixed at a representative value (generally a 50th percentile). A mass balancing method is then used to allocate effluent concentrations that maintain WQS under these conditions. This technique is appropriate when data bases are unavailable to generate statistical distributions for inputs and if the parameters modeled are conservative.

The applicable waterbody uses for this facility's discharge and the associated stream design flows are as follows:

Aquatic life (Warmwater Habitat)		
Toxics (metals, organics, etc.)	Average	Annual 7Q10
	Maximum	Annual 1Q10
Ammonia	Average	Summer 30Q10
		Winter 30Q10
Wildlife		Annual 90Q10
Agricultural Water Supply		Harmonic mean flow
Human Health (nondrinking)		Harmonic mean flow

Allocations are developed using a percentage of stream design flow as specified in Table 15, and allocations cannot exceed the Inside Mixing Zone Maximum (IMZM) criteria.

The data used in the WLA are listed in Table 14 and Table 15. The WLA results to maintain all applicable criteria are presented in Table 16. Current ammonia limits were found to be protective of aquatic life.

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 Lima WWTP, the WLA values are 0.3 TU_a and 1.0 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 Lima WWTP is 30 percent mortality in 100 percent effluent based on the dilution ratio of 1.0 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 16. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 10, 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 17.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 18 presents the final effluent limits and monitoring requirements proposed for Lima WWTP outfall 001 and station 604 and the basis for their recommendation.

Outfall 001:

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

pH, and Escherichia coli (E. coli)
Limits proposed for pH, and *Escherichia coli* are based on WQS (OAC 3745-1-07) and are a continuation of the existing permit. PCR *E. coli* standards apply to the Ottawa River.

Total Residual Chlorine
The proposed limit for total residual chlorine is 0.019 mg/L and based on WLA. The effluent limit for chlorine at outfall 001 is less than the quantification level of 0.050 mg/L. However, a pollutant minimization program is not required because the dosing rate of dechlorination chemicals ensures that the water quality based effluent limit is being met.

If Lima WWTP develops the capability of using ultraviolet disinfection and no longer chlorinates effluent, this limit may be removed via permit modification or in a future NPDES permit renewal.

Dissolved Oxygen, Total Suspended Solids, Ammonia, Total Phosphorus, and 5-Day Carbonaceous Biochemical Oxygen Demand

The monitoring proposed for dissolved oxygen, total suspended solids, ammonia, total phosphorus and 5-day carbonaceous biochemical oxygen demand are all included in the permit to determine the total pollutant load being discharged. These monitoring requirements are a continuation of the existing permit. See the footnotes of outfall 001 in the permit to determine appropriate monitoring frequencies for the above parameters.

Outfall 604:

Water Temperature and Flow Rate
Monitoring for water temperature and flow rate is proposed to continue in order to evaluate the performance of the treatment plant.

Oil and Grease
Limits proposed for oil and grease are based on WQS (OAC 3745-1-07) and are a continuation of the existing permit.

Dissolved Oxygen, Total Suspended Solids, Ammonia, and 5-Day Carbonaceous Biochemical Oxygen Demand
The limits proposed for dissolved oxygen, ammonia-nitrogen and 5-day carbonaceous biochemical oxygen demand are all based on a 1988 wasteload allocation model. These limits are protective of water quality standards. Limits for total suspended solids are treatment technology limits derived from the WLA limits. They represent the level of suspended solids removal that can be expected for a treatment plant that is designed to meet the 5-day carbonaceous biochemical oxygen and ammonia limits in the permit. The current ammonia limits have been evaluated using the WLA procedures and are protective of WQS for ammonia toxicity.

Loading limits are based on the hydraulic capacity of the treatment plant, rather than the average design flow, as an incentive to run as much flow through the treatment plant as possible. Using this flow does not significantly affect concentration limits because the background flows are so low that limits are set at concentrations very close to WQS.

Dissolved Hexavalent Chromium
The Ohio EPA risk assessment (Table 17) places dissolved hexavalent chromium in group 5. This placement, as well as the data in Table 9 and Table 10, indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. For dissolved hexavalent chromium, the PEQ is greater than 100 percent of the WLA. Pollutants that meet these requirements must have permit limits under OAC 3745-33-07(A)(1).

There were four detections of hexavalent chromium between October 2012 and September 2017. There have also been several detections of hexavalent chromium within the influent. The repeated detections of this parameter in the above timeframe show that there may be sources of this parameter in the collection system that contribute to concentrations above WQS. One of these four detections was above WLA (15.4 µg/L on 12/12/12) and downstream monitoring showed that in-stream concentrations were above allowable levels (14.1 µg/L on 12/12/12; 35.8 µg/L on 1/13/16 and 14 µg/L on 4/5/17). The thirty-day average concentration limit for dissolved hexavalent chromium of 11 µg/L is based on WLA (Table 16) for aquatic life. The daily maximum concentration limit for dissolved hexavalent chromium of 16 µg/L is based on WLA (Table 16) for maximum aquatic life.

Selenium
Selenium has been re-allocated between Lima Refinery and Lima WWTP. Lima Refinery currently has limits for selenium; while monitoring only is proposed for Lima WWTP. The Lima WWTP is given an allocation for selenium because Ohio EPA allocates selenium and several other metals to POTWs that have approved pretreatment programs. In addition, selenium is periodically detected in Lima WWTP's discharge. Consistent with the existing permit, Lima WWTP's allocation was reduced from 5 µg/L to 3 µg/L.

The Ohio EPA risk assessment (Table 17) places selenium in group 5, which recommends limits to protect water quality. Selenium was detected one time at 14 µg/L on 10/1/2014.

In 2015, PCS Nitrogen contracted Alloway Labs to assess the potential interference of bromide on selenium analysis by USEPA Method 200.8, which is the laboratory analysis Lima WWTP uses for selenium. The results of Alloway's assessment were documented in a March 17, 2015 Alloway report titled "PCS Nitrogen Ohio, L.P. Selenium and Bromide Study". This study concluded that bromide concentrations above 5 ppm appear to bias selenium values analyzed using USEPA Method 200.8. Using the discretion allowed the Director under OAC 3745-33-07(A)(5), monitoring rather than limits is proposed for selenium. 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. The permit includes a Part II condition requiring Lima WWTP to use an analytical method that is not susceptible to bromide interference.

For the following reasons, the frequency of selenium monitoring is proposed to increase:

- Invertebrate tissue, fish tissue and DELT anomaly results show impacts to the biology in the Ottawa River due to selenium.
- The data reported by Lima WWTP for the previous five years was sampled using a method detection level of 4 µg/L, when the WLA is 3 µg/L.
- Lima Refinery would like to continue using a portion of Lima WWTP's allocation, and would like for this portion to increase. It is important for Lima WWTP and Ohio EPA to have a robust dataset to determine what selenium allocation Lima WWTP needs to retain.

Total Filterable Residue and Bis (2-ethylhexyl) phthalate
The Ohio EPA risk assessment (Table 17) places total filterable residue and bis (2-ethylhexyl) phthalate in group 4. This placement, as well as the data in Table 9 and Table 10, supports that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring for Group 4 pollutants (where PEQ exceeds 50 percent of the WLA) is required by OAC 3745-33-07(A)(2).

Cadmium, Chromium, Copper, Lead, Nickel, and Zinc
The Ohio EPA risk assessment (Table 17) places cadmium, chromium, copper, lead, nickel, and zinc in groups 2 and 3. This placement, as well as the data in Table 9 and Table 10, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring at a continued monthly frequency is proposed to document that these pollutants continue to remain at low levels.

Alpha-BHC, Antimony, Arsenic, Barium, Chloroform, Free Cyanide, Dichlorobromomethane, Iron, Manganese, Molybdenum, Silver, and Strontium
The Ohio EPA risk assessment (Table 17) places alpha-BHC, antimony, arsenic, barium, chloroform, dichlorobromomethane, iron, manganese, molybdenum, silver, and strontium in groups 2 and 3. This placement, as well as the data in Table 8, Table 9, and Table 10, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. No new monitoring is proposed and monitoring for antimony is proposed to be removed.

Nitrate+Nitrite and Total Kjeldahl Nitrogen (TKN)
Monitoring for nitrate+nitrite is proposed to continue. Monitoring nitrate+nitrite at the upstream and downstream stations is also proposed. The purpose of the monitoring is to maintain a data set tracking nutrient levels in the Ottawa River and may be used for future permit decisions relating to nutrients.

New monitoring for TKN is proposed based on best technical judgment. Monitoring TKN at the upstream and downstream stations is also proposed. The purpose of the monitoring is also to maintain a data set tracking nutrient levels in the Ottawa River area and may be used for future permit decisions relating to nutrients

Phosphorus
Limits for total phosphorus are proposed to continue for this permit. Phosphorus treatment to maintain effluent with a 1.0 mg/L concentration is required under OAC 3745-33-06(C) for all facilities with a design flow above 1.0 MGD or considered a major in the Lake Erie basin.

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.

Mercury
The Lima WWTP permit includes a mercury variance, and variance-based limits for mercury in the previous permit renewal. Based on the monitoring results since the permit renewal, and the new application information, the Lima WWTP has determined that the facility will not meet the 30-day average permit limit of 1.3 ng/L. However, the effluent data shows that the permittee can meet the mercury annual average value of 12 ng/L. The permittee's application has also demonstrated to the satisfaction of Ohio EPA that there is no readily apparent means of complying with the WQBEL without constructing prohibitively expensive end-of-pipe controls for mercury. Based upon these demonstrations, the Lima WWTP is eligible for the mercury variance under OAC 3745-33-07(D)(10)(a).

Lima WWTP submitted information supporting the renewal of the variance. The permittee plan of study includes identification of major mercury sources and associated source reduction, proper disposal of mercury-containing devices, continued monitoring of the collection system, and implementing training from Northeastern Ohio Regional Sewer District (NEORSD) staff to reduce the amount of mercury being discharged. The calculation of the PEQ_{avg} value from October 2012 through September 2017 compared to the PEQ_{avg} calculated at the time the original variance was issued shows a reduction from 7.6 ng/L to 3.7 ng/L. The Pollutant Minimization Program (PMP) schedule developed from the original variance continues to be implemented, and further reductions in mercury may be possible.

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

- A variance-based monthly average effluent limit of 3.7 ng/L, which was developed from sampling data submitted by the permittee;
- A requirement that the permittee make reasonable progress to meet the WQBEL for mercury by implementing the plan of study, which has been developed as part of the PMP;
- Low-level mercury monitoring of the plant's influent and effluent;
- A requirement that the annual average mercury effluent concentration is less than or equal to 12 ng/L as specified in the plan of study;
- A summary of the elements of the plan of study;
- A requirement to submit an annual report on implementation of the PMP; and
- A requirement for submittal of a certification stating that all permit conditions related to implementing the plan of study and the PMP have been satisfied, but that compliance with the monthly average WQBEL for mercury has not been achieved.

Carcinogen Additivity
Alpha BHC and bis(2-ethylhexyl) phthalate are carcinogens, which requires the evaluation of the additive effect of these pollutants. Ohio Administrative Code 3745-33-07(A)(8) states that the additivity equation in Table 17 must be included in the permit and used to determine compliance unless certain conditions are met. One of the conditions in the rule referenced above states that a pollutant may be removed from the consideration of additivity if the preliminary effluent limit (PEL) for the pollutant is less than the quantification level for that pollutant. For Alpha BHC, the average PEL is less than the quantification level, so this parameter can be removed from the additivity equation. As a result, the compliance equation in Table 17 is not necessary for inclusion in the permit.

Whole Effluent Toxicity Reasonable Potential
Evaluating the acute and chronic toxicity results in Table 11 and Table 12 under the provisions of 40 CFR Part 132, Appendix F, Procedure 6, gives an acute PEQ value of 0 TU_a and a chronic PEQ of 7.9 TU_c for *Ceriodaphnia dubia*. Reasonable potential for chronic toxicity is demonstrated, since this value exceeds the WLA value of 1.0 TU_c. Consistent with Procedure 6 and OAC 3745-33-07(B), a monthly average limit of 1.0 TU_c is proposed, as well as a daily maximum acute toxicity limit of 1.0 TU_a. It is proposed that the final effluent limits for toxicity become effective 48 months from the effective date of the permit. Quarterly monitoring with a toxicity reduction evaluation (TRE) requirement is proposed as the interim condition.

As there were no detections of whole effluent toxicity from the tests conducted on *Pimephales promelas*, continued annual monitoring is proposed for acute and chronic toxicity. Minimum annual toxicity testing is required based upon OAC 3745-33-07(B).

Additional Monitoring Requirements
New monitoring for TKN is being proposed at both the upstream and downstream monitoring stations 801 and 901 to maintain further nutrient data for this reach of the Ottawa River.

Monitoring for nickel, zinc, antimony, cadmium, lead, chromium and copper is proposed to be removed at the downstream monitoring station 901. Also, monitoring for antimony is proposed to be removed from the influent station 601 as this parameter is no longer to be monitored at outfall 604

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
Pretreatment Local Limits Review - A 6-month compliance schedule is proposed for the City to submit a technical justification for either revising its local industrial user limits or retaining its existing local limits. If revisions to local limits are required, the City must also submit a pretreatment program modification request. Details are in Part I.C of the permit.

New Limits - Compliance schedules are proposed for the Lima WWTP to meet the new limits for dissolved hexavalent chromium and whole effluent toxicity for *Ceriodaphnia dubia* at outfall 604. Details are in Part I.C of the permit.

Wet Weather Improvements - The compliance schedule from the previous permit is proposed to continue into this permit renewal. Details are in Part I.C of the permit.

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

Sanitary Sewer Overflow Reporting
Provisions for reporting SSOs are again proposed in this permit. These provisions include: the reporting of the system-wide number of SSO occurrences on monthly operating reports; telephone notification of Ohio EPA and the local health department, and 5-day follow up written reports for certain high risk SSOs; and preparation of an annual report that is submitted to Ohio EPA and made available to the public. Many of these provisions were already required under the "Noncompliance Notification", "Records Retention", and "Facility Operation and Quality Control" general conditions in Part III of Ohio NPDES permits.

Operator Certification and Operator of Record
Operator certification requirements have been included in Part II of the permit in accordance with rules adopted in December 2006 (OAC 3745-7-02). These rules require the Lima WWTP to have a Class IV wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 604. These rules also require the permittee to designate one or more operator of record to oversee the technical operation of the treatment works.

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

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

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

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

Method Detection Limit
The reported data for selenium and dissolved hexavalent chromium shows that Lima WWTP used analytical methods with MDLs that are not sensitive enough to properly evaluate the discharge with regard to the WLAs for these parameters. As a result, Part II of the permit includes a condition requiring Lima WWTP to use analytical methods with appropriate MDLs.

Storm Water Compliance
Parts IV, V, and VI have been included with the draft permit to ensure that any storm water flows from the facility site are properly regulated and managed. As an alternative to complying with Parts IV, V, and VI, the Lima WWTP may seek permit coverage under the general permit for industrial storm water (permit # OHR000005) or submit a "No Exposure Certification." Parts IV, V, and VI will be removed from the final permit if: 1) the Lima WWTP submits a Notice of Intent (NOI) for coverage under the general permit for industrial storm water or submits a No Exposure Certification, 2) Ohio EPA determines that the facility is

eligible for coverage under the general permit or meets the requirements for a No Exposure Certification, and 3) the determination by Ohio EPA can be made prior to the issuance of the final permit.

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

Figure 1. Location of Lima WWTP

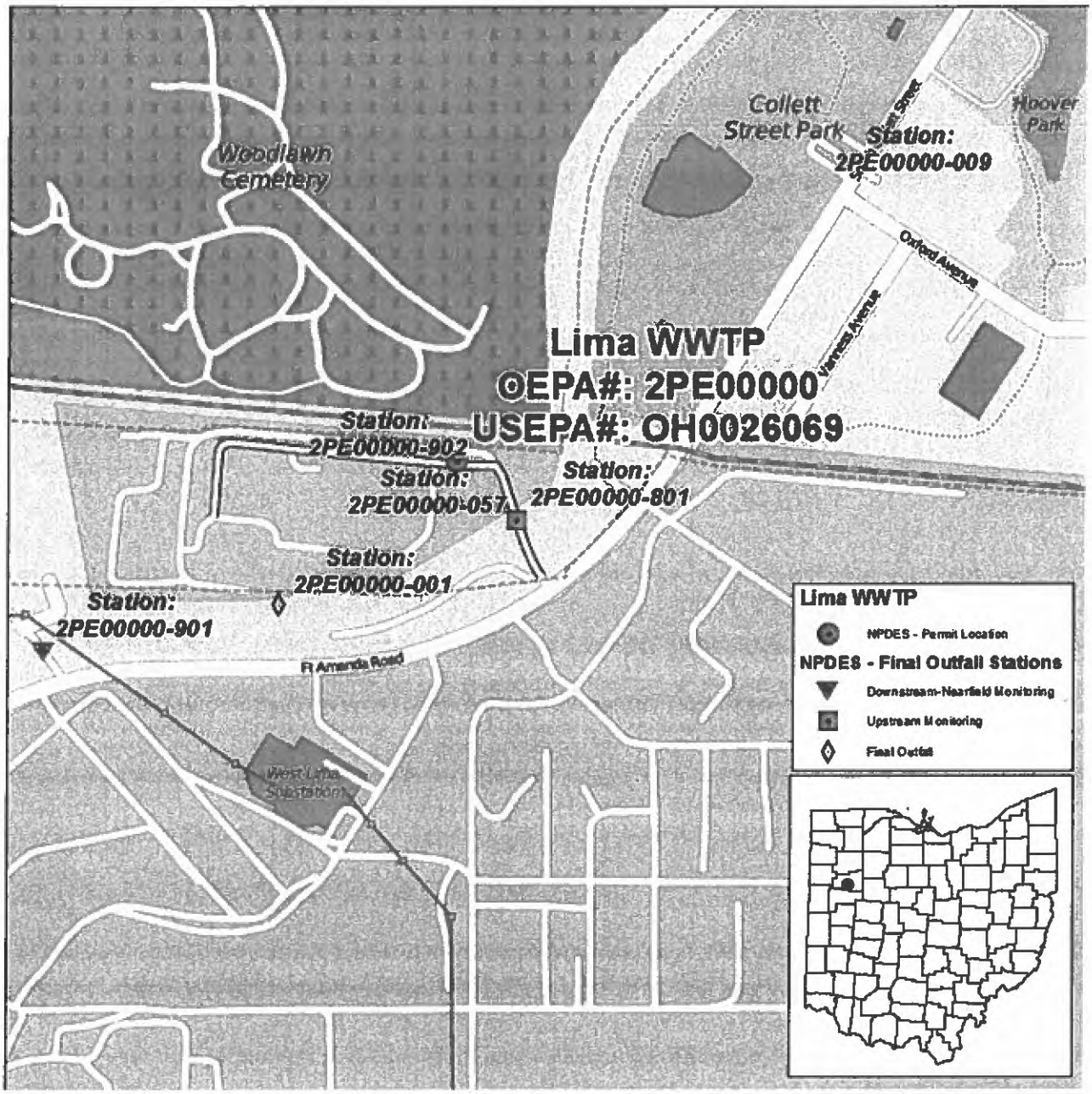

Figure 2. Location of CSOs - Lima WWTP

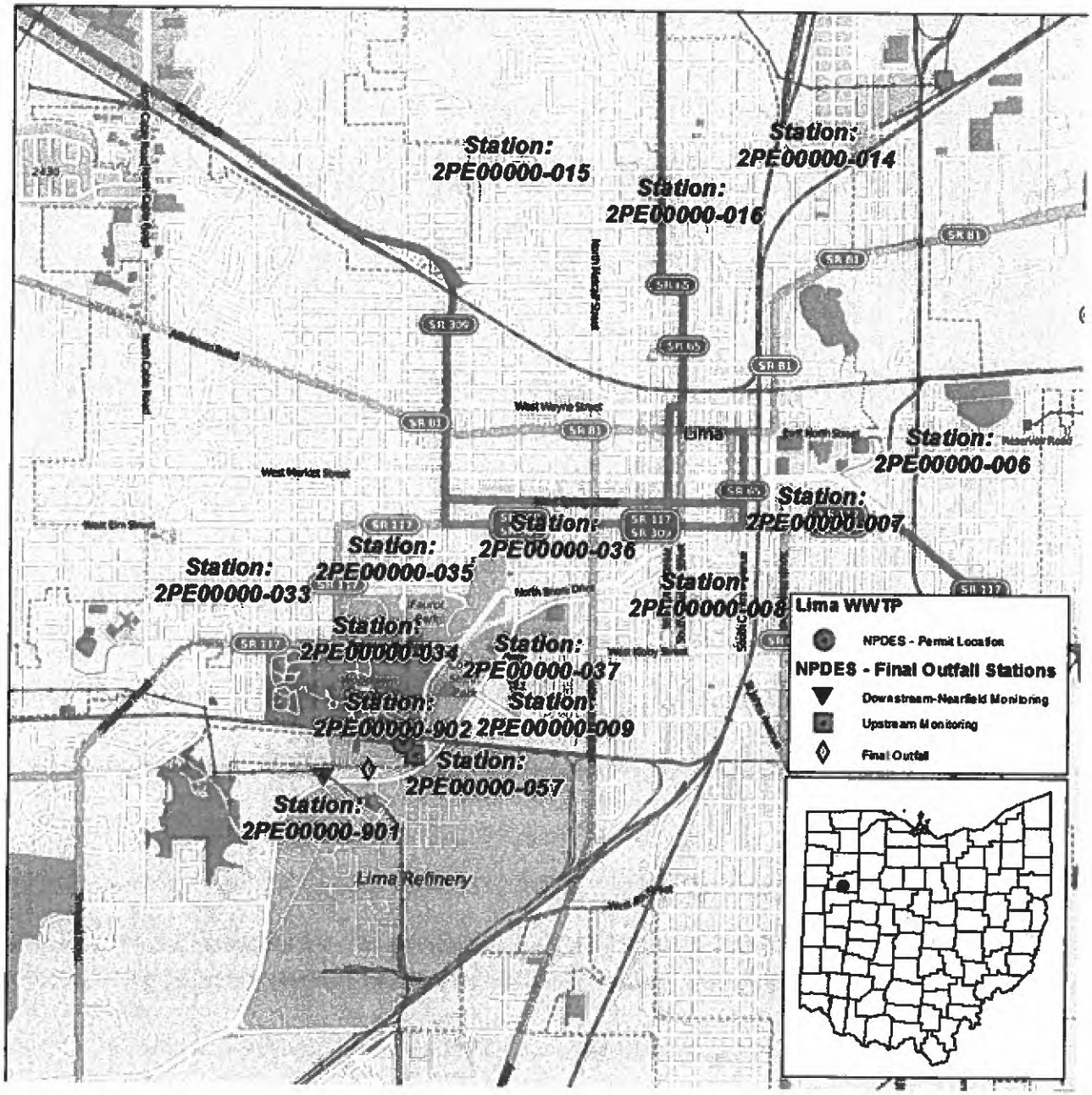

Figure 3. Diagram of Wastewater Treatment System - Pre-Construction

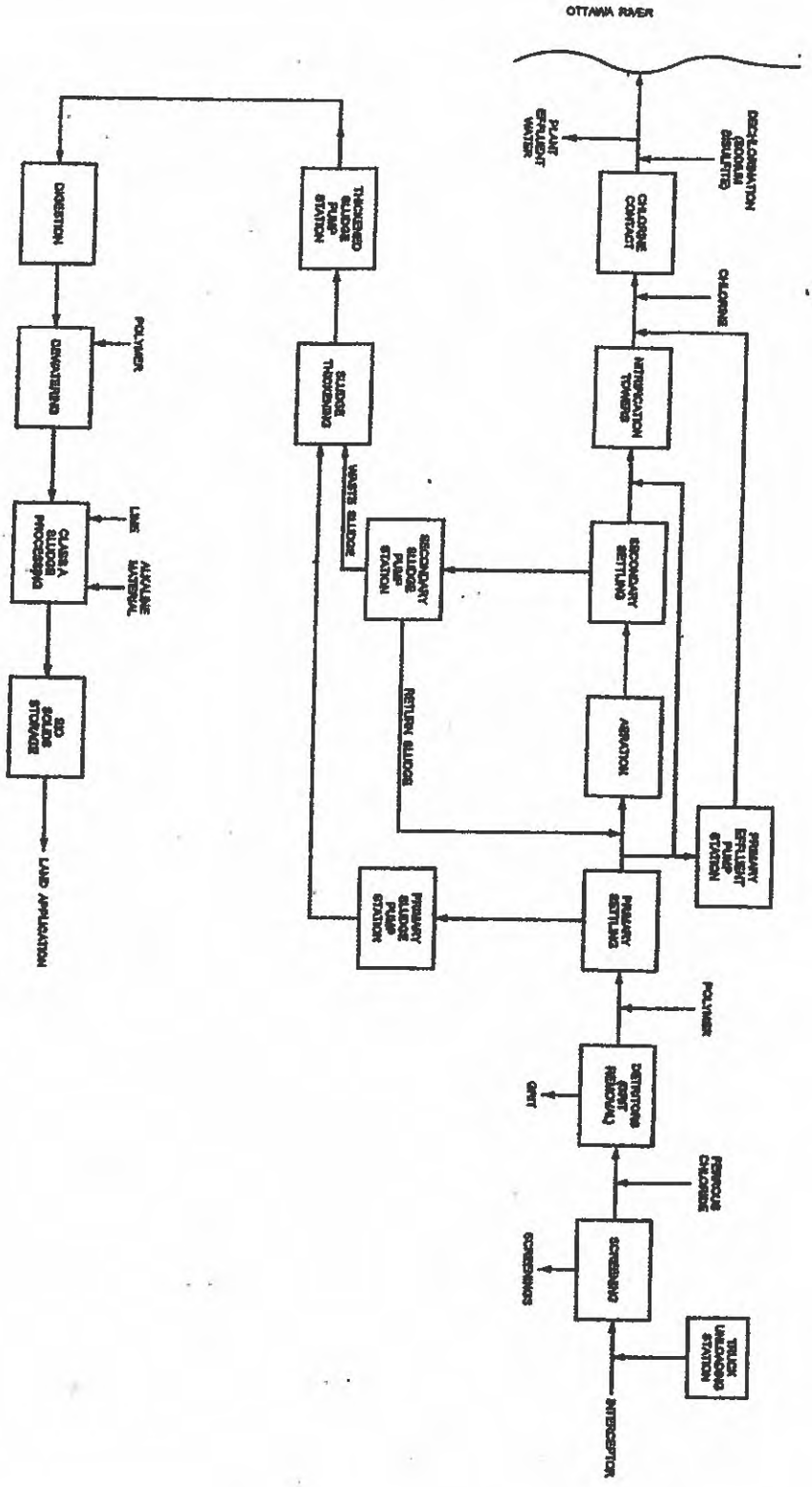

Figure 4. Diagram of Wastewater Treatment System - Post Construction

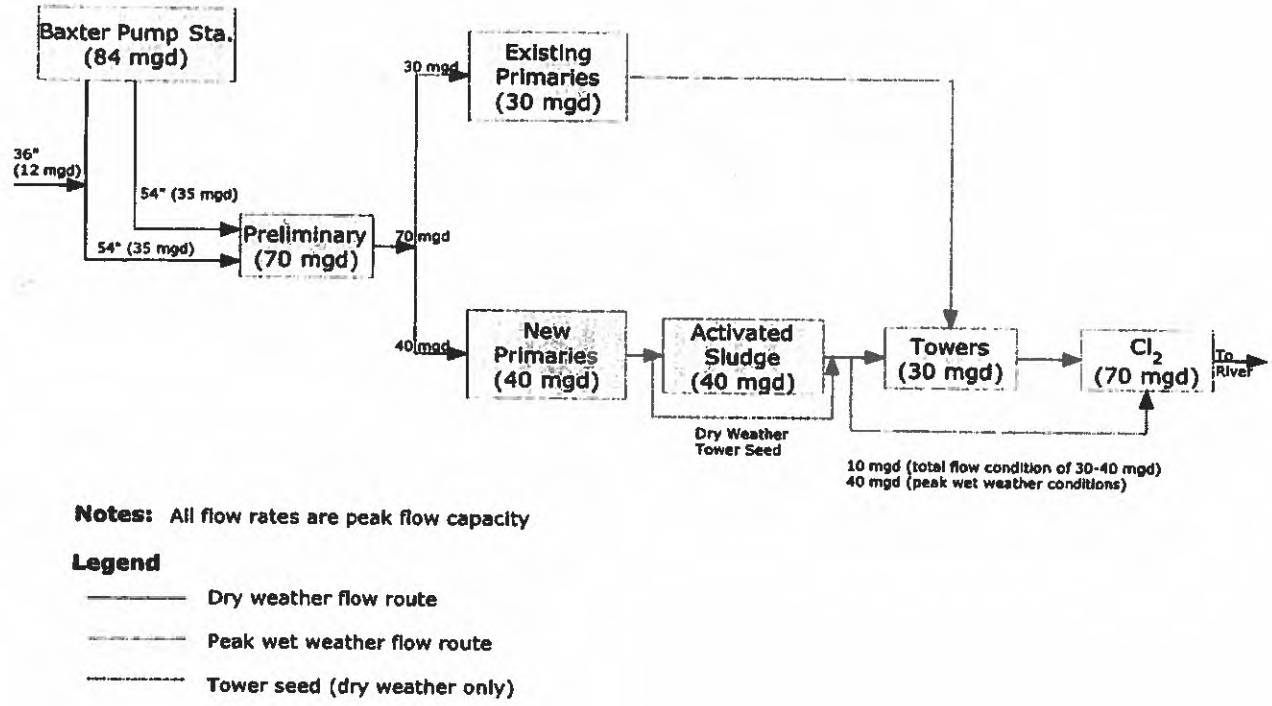

Figure 5. Ottawa River Study Area

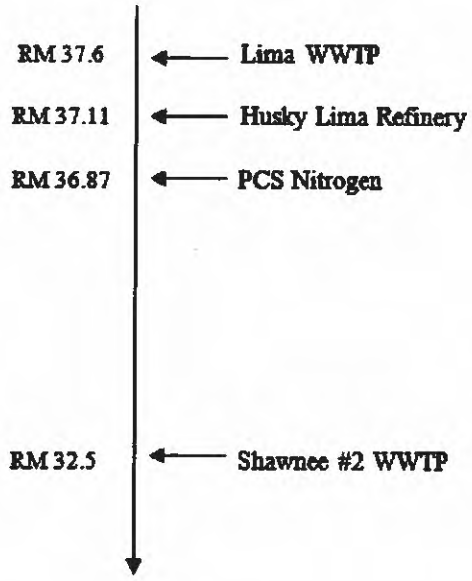

Table 1. Sewage Sludge Removal

Year	Dry Tons Removed
2013	9220
2014	7920
2015	9190
2016	8080

Table 2. Annual Effluent Flow Rates

Year	Annual Flow in MGD		
	50th Percentile	95th Percentile	Maximum
2013	11.13	30.524	42.75
2014	11.86	31.767	41.68
2015	11.41	34.228	44.9
2016	10.925	26.675	32.7

MGD = million gallons per day

Table 3. Effluent Violations

Outfall	Parameter	Months with Violations	Loading Violations	Concentration Violations
001	Chlorine	2	0	2
001	pH, Minimum	1	0	1
604	Chronic Toxicity	1	0	1
604	Total Suspended Solids	2	0	2

Table 4. Sanitary Sewer Overflows Discharges

Year	Number
2013	198
2014	173
2015	261
2016	90

Table 5. Bypass Discharges

Year	602	603	057
	Total Volume	Total Volume	Total Volume
2013	N/A	92.03	N/A
2014	N/A	290.06	N/A
2015	N/A	490.54	N/A
2016	N/A	982.48	N/A

Total Volume in million gallons

Table 6. Combined Sewer Overflow Discharges

Summary of discharge monitoring report data for combined sewer overflow discharges for the period 2013 through 2016. Note that flow reporting is only required of outfalls 002 through 006, while overflow occurrences is required for all CSO outfalls.

Station Number	Annual Total - CSO Flows (In millions of gallons)			
	2013	2014	2015	2016
002	409.34	505.66	1064.01	4254.24
003	138.25	394.08	1744.77	2820.30
004	171.68	418.96	315.49	106.16
005	97.1	104.10	87.50	25.84
006	25.75	17.61	69.06	19.54

Station Number	Annual Total - CSO Flow Occurrences			
	2013	2014	2015	2016
002	39	52	67	80
003	31	69	107	70
004	29	38	45	32
005	26	29	33	13
006	18	13	26	7
007	11	13	15	4
008	6	10	6	2
009	13	12	8	1
011	5	2	7	1
012	4	2	4	2
013	9	2	4	3
014	8	4	9	4
015	7	3	2	0
016	6	1	3	2
033	3	3	6	2
034	3	3	6	3
035	17	34	26	4
036	9	14	15	0
037	6	9	12	2
038	1	2	6	1

Table 7. Average Phosphorus Concentrations at Outfall 001

Year	Average Phosphorus Concentration (mg/L)
2013	0.46
2014	0.50
2015	0.46
2016	0.50

Table 8. Effluent Characterization Using Pretreatment and Ohio EPA data

Parameter	Unit	Bioassay	Bioassay	PT	PT	PT	PT	PT
		3/19/2013	4/30/2013	10/3/2012	9/11/2013	7/16/2014	9/9/2015	9/2/2016
Copper	µg/L	2.7	2.6	AA (8)	AA (8)	AA (8)	AA (8.0)	AA (8.0)
Zinc	µg/L	13	17	27	26	19	12	15
Chloroform	µg/L	AA (0.5)	AA (0.5)	16.3	NT	9.4	16.0	AA (5.0)
Bis(2-ethylhexyl) phthalate	µg/L	AA (10.6)	AA (10.9)	AA (5.0)	6.6	AA (5.0)	AA (5.0)	AA (5.0)
Selenium	µg/L	AA (2.0)	AA (2.0)	AA (4.0)	AA (4.0)	AA (4.0)	AA (4.0)	AA (4.0)
Dichlorobromomethane	µg/L	AA (0.5)	AA (0.5)	5.4	NT	AA (5.0)	7.6	AA (5.0)
Total Filterable Residue	mg/L	574	632	NT	NT	NT	NT	NT
Nickel	µg/L	4.2	5	AA (8)	AA (8)	AA (8)	AA (8)	10.0
Barium	µg/L	21	26	NT	NT	NT	NT	NT
Iron	µg/L	192	375	NT	NT	NT	NT	NT
Manganese	µg/L	15	26	NT	NT	NT	NT	NT
Strontium	µg/L	484	719	NT	NT	NT	NT	NT

AA = Not-detected (analytical method detection limit)
PT = Pretreatment

Table 9. Effluent Characterization Using Self-Monitoring Data

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50th	95th	
Outfall 001								
Dissolved Oxygen	Summer	mg/L	Monitor		918	8.8	10.2	6.5-11
Dissolved Oxygen	Winter	mg/L	Monitor		905	10.8	12.3	5.5-12.9
Total Suspended Solids	Annual	mg/L	Monitor		1823	4.2	10.7	0-92.2
Ammonia	Summer	mg/L	Monitor		918	0.16	0.677	0-6.29
Ammonia	Winter	mg/L	Monitor		904	0.097	0.881	0-9.84
Total Phosphorus	Annual	mg/L	Monitor		505	0.381	0.948	0-2.02
Orthophosphate	Annual	mg/L	Monitor		1	0.149	0.149	0.149-0.149
E. coli	Annual	#/100 ml	126	284[a]	875	11	190	0-34700
Flow Rate	Annual	MGD	Monitor		1820	11.5	30.6	5-46
Chlorine, Total Residual	Annual	mg/L	--	0.020	919	0	0	0-0.3
pH, Maximum	Annual	S.U.	--	9.0	1825	8.2	8.6	6.9-8.9
pH, Minimum	Annual	S.U.	--	6.5	1825	7.8	8.2	5.9-8.7
CBOD 5 day	Summer	mg/L	Monitor		884	0	3.2	0-7.1
CBOD 5 day	Winter	mg/L	Monitor		844	0	4.38	0-16.8
Outfall 604								
Water Temperature	Annual	°C	Monitor		1799	17.4	25.4	0-60.6
Dissolved Oxygen	Summer	mg/L	--	5.0 min	920	10.2	11.7	6.4-12.4
Dissolved Oxygen	Winter	mg/L	--	5.0 min	905	12.6	14	5.8-14.8
Total Suspended Solids	Annual	mg/L	14.0	20.0[a]	1819	4.8	12.6	0-98.4
Oil and Grease	Annual	mg/L	--	10.0	121	0	0	0-5.2
Ammonia	Summer	mg/L	2.0	4.0[a]	916	0.066	0.523	0-5.68
Ammonia	Winter	mg/L	4.0	8.0[a]	902	0.0505	0.781	0-11.4
Total Nitrogen Kjeldahl	Annual	mg/L	Monitor		3	1.09	1.36	0-1.39
Nitrite Plus Nitrate	Annual	mg/L	Monitor		60	11.9	19.5	0.34-23.9
Total Phosphorus	Annual	mg/L	1.0	1.5[a]	492	0.39	0.91	0.08-2.31
Free Cyanide	Annual	mg/L	Monitor		60	0	0	0-0
Nickel	Annual	µg/L	Monitor		60	0	15	0-30
Strontium	Annual	µg/L	Monitor		3	633	781	601-797
Zinc	Annual	µg/L	Monitor		60	20	44.1	0-63
Cadmium	Annual	µg/L	Monitor		60	0	0	0-0
Lead	Annual	µg/L	Monitor		60	0	0	0-0
Chromium	Annual	µg/L	Monitor		60	0	0	0-0
Copper	Annual	µg/L	Monitor		60	0	0	0-9
Selenium	Annual	µg/L	Monitor		57	0	0	0-14
Chromium, Dissolved Hexavalent	Annual	µg/L	Monitor		58	0	3.09	0-15.4

Table 9. Effluent Characterization Using Self-Monitoring Data

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50th	95th	
Antimony	Annual	µg/L	Monitor		57	0	0	0-0
Alpha BHC	Annual	µg/L	Monitor		1	0	0	0-0
Bis(2-ethylhexyl) Phthalate	Annual	µg/L	Monitor		56	0	1.53	0-9.6
Flow Rate	Annual	MGD	Monitor		1821	11.5	30	0-35.4
Mercury	Annual	ng/L	7.6	1700	66	1.23	5.34	0-15.9
Acute Toxicity, *Ceriodaphnia dubia*	Annual	TU_a	Monitor		20	0	0	0-0
Chronic Toxicity, *Ceriodaphnia dubia*	Annual	TU_c	Monitor		20	0	5.42	0-5.7
Acute Toxicity, *Pimephales promelas*	Annual	TU_a	Monitor		6	0	0	0-0
Chronic Toxicity, *Pimephales promelas*	Annual	TU_c	Monitor		6	0	0	0-0
Total Filterable Residue	Annual	mg/L	Monitor		58	562	690	352-1210
CBOD 5 day	Summer	mg/L	7.0	10.0[a]	888	0	4.3	0-18
CBOD 5 day	Winter	mg/L	7.0	10.0[a]	840	0	5	0-9.5

All values are based on annual records unless otherwise indicated. a = weekly average.

Table 10. Projected Effluent Quality for Outfall 604

Parameter	Units		# of Samples	# > MDL	Average PEQ	Maximum PEQ
Self-Monitoring (DMR) Data						
Total Filterable Residue [B]	mg/L		60	60	692	823.76
Ammonia-Nitrogen	mg/L	Summer	610	609	0.202	0.493
Ammonia-Nitrogen	mg/L	Winter	449	449	0.223	0.558
Nitrate+Nitrite	mg/L		60	60	27.31	43.04
Chlorine, Total Residual [C]	µg/L		919	2	131.4	180
Free Cyanide	µg/L		60	0	--	--
Nickel [B]	µg/L		67	17	13.12	20.66
Strontium [B]	µg/L		5	5	1338	1833
Zinc [B]	µg/L		66	62	30.61	41.46
Cadmium	µg/L		60	0	--	--
Lead	µg/L		60	0	--	--
Chromium	µg/L		60	0	--	--
Copper [B]	µg/L		66	3	6.57	9
Selenium [B]	µg/L		64	1	10.22	14
Dissolved Hexavalent Chromium	µg/L		58	4	11.24	15.4
Antimony	µg/L		57	0	--	--
alpha BHC [A]	µg/L		1	0	--	--
Bis(2-ethylhexyl) phthalate [A, B]	µg/L		61	4	7.008	9.6
Mercury	ng/L		66	64	3.6584	5.703
Ohio EPA and Pretreatment Data						
Chloroform [A]	µg/L		5	2	24.98	34.23
Bromodichloromethane [A]	µg/L		6	2	11.6508	15.96
Barium	µg/L		2	2	72.12	98.8
Iron	µg/L		2	2	1040.	1425.
Manganese	µg/L		2	2	72.12	98.8

[A] Carcinogen
[B.] Combined DMR and Ohio EPA/Pretreatment Data
MDL = analytical method detection limit
PEQ = projected effluent quality

Table 11. Summary of Acute and Chronic Toxicity Results

Date	*Ceriodaphnia Dubia*		*Pimephales promelas*	
	TU_a	TU_c	TU_a	TU_c
12/10/2012	AA	5.4	AA	AA
3/4/2013	AA	AA	NT	NT
6/17/2013	AA	AA	NT	NT
8/19/2013	AA	5.7	AA	AA
12/9/2013	AA	AA	NT	NT
3/7/2014	AA	AA	NT	NT
6/10/2014	AA	AA	NT	NT
8/19/2014	AA	AA	AA	AA
12/16/2014	AA	AA	NT	NT
3/10/2015	AA	AA	NT	NT
6/5/2015	AA	AA	NT	NT
8/14/2015	AA	5.4	AA	AA
12/15/2015	AA	1.5	NT	NT
3/16/2016	AA	AA	NT	NT
6/1/2016	AA	AA	NT	NT
8/26/2016	AA	AA	AA	AA
12/7/2016	AA	1.1	NT	NT
3/17/2017	AA	AA	NT	NT
6/17/2017	AA	AA	NT	NT

AA = non-detection; analytical method detection limit of 0.2 TU_a, 1.0 TU_c
NT = no test performed
TU_a = acute toxicity unit
TU_c = chronic toxicity unit

Table 12. Ohio EPA Toxicity Screening Results for Outfall 604

4/30/2013 Ohio EPA Bioassay Report:

Bioassay Number: 13-4255-NW

Sample	Time Collected Date: Time: (hours)	Test Start Date: Time: (hours)	Cumulative percent mortality (plus those lethargic in behavior)			
			P. promelas Time (hours)		*C. dubia* Time (hours)	
			24	48	24	48
Ottawa River upstream	22 April 2013 1006	23 April 2013 0925	0	0	0	10
Acute mixing zone	22 April 2013 0955	23 April 2013 0925	0	0	0	0
Grab 604	22 April 2013 0934	23 April 2013 0925	0	0	0	0
Rearing unit water control		23 April 2013 0925	0	0	-	-
Reconstituted water control		23 April 2013 0925	-	-	0	0
Grab 604	23 April 2013 0935	24 April 2013 0920	5	5	0	5
Composite 604	22-23 April 2013 0942-0937	24 April 2013 0920	0	0	0	0
Rearing unit water control		24 April 2013 0920	5	5	-	-
Reconstituted water control		24 April 2013 0920	-	-	0	0

3/19/2013 Ohio EPA Bioassay Report:

Bioassay Number: 13-4237-NW

Sample	Time Collected Date: Time: (hours)	Test Start Date: Time: (hours)	Cumulative percent mortality (plus those lethargic in behavior)			
			P. promelas Time (hours)		*C. dubia* Time (hours)	
			24	48	24	48
Ottawa River upstream	11 March 2013 0926	12 March 2013 0845	0	0	0	5
Acute mixing zone	11 March 2013 0916	12 March 2013 0845	0	0	0	0
Grab 604	11 March 2013 0858	12 March 2013 0845	0 (5)	0 (5)	0	10
Rearing unit water control		12 March 2013 0845	0	0	-	-
Reconstituted water control		12 March 2013 0845	-	-	0	5
Grab 604	12 March 2013 0920	13 March 2013 0805	0	0	0	0
Composite 604	11-12 March 2013 0905-0850	13 March 2013 0805	0 (5)	5	0	0
Rearing unit water control		13 March 2013 0805	0	0	-	-
Reconstituted water control		13 March 2013 0805	-	-	0	0

Table 13. Use Attainment Table

Location	RM	Aquatic Life Use Desig.	Attain. Status	Causes of Impairment	Sources of Impairment
Ottawa at Fetter Rd.	44.3	WWH	FULL		
Ottawa dst. Metzger Dam	43.4	WWH	PARTIAL	Low Flow Alteration, Nutrient/Eutrophication Biol. Indicators, Nutrients	Flow Alteration from Water Diversions, Impoundment, Crop Production with Subsurface Drainage
Ottawa dst. Roush Rd.	42.5	WWH	PARTIAL	Low Flow Alteration Nutrient/Eutrophication Biol. Indicators, Nutrients, DO (Low, Range)	Flow Alteration from Water Diversions, Impoundment, Crop Production with Subsurface Drainage
Ottawa at Sugar St.	41.3	WWH	FULL		
Ottawa dst. Lovers Lane Dam	40.1	WWH	PARTIAL	Nutrient/Eutrophication Biol. Indicators, Nutrients DO (Range)	Storm sewer overflows, Combined Sewer Overflows (CSOs)
Ottawa dst. Elm St. Dam	39.6	WWH	FULL		
Ottawa at Collett St./Erie RR Dam pool	38.6	WWH	PARTIAL	Direct habitat alteration, Nutrient/eutrophication biol. Indicators, Organic enrichment (sewage) biol. Indicators, D.O. (low, range)	Impoundment CSOs
Ottawa dst Erie RR Dam, Upst Lima WWTP	37.9	WWH	PARTIAL	Nutrient/Eutrophication Biol. Indicators, DO (Range), Organic Enrichment (Sewage), Biological Indicators, Nutrients, Other Anthropomorphic Substrate Alteration	CSOs, Impoundment, Historic Bottom Deposits
Ottawa dst Lima WWTP	37.4	WWH	PARTIAL	Nutrient/Eutrophication Biol. Indicators, Ammonia-N, Nutrients	Municipal Point Source Discharges, CSOs

Table 13. Use Attainment Table

Location	RM	Aquatic Life Use Desig.	Attain. Status	Causes of Impairment	Sources of Impairment
Ottawa dst Husky Refinery	37.0	WWH	NON	Nutrient/Eutrophication Biol. Indicators, Ammonia-N, Nutrients, Excess Algae, Chronic Toxicity (Impairment Unknown)	Municipal Point Source Discharges, Industrial Point Source Discharge, Source Unknown
Ottawa dst PCS Nitrogen	36.1	WWH	NON	Nutrient/Eutrophication Biol. Indicators, Ammonia-N, Nutrients, DO (Range), Chronic Toxicity (Impairment Unknown)	Municipal Point Source Discharges, Industrial Point Source Discharges, Source Unknown
Ottawa adj. Westfield Dr. (dst major dischargers)	34.6	WWH	PARTIAL	Nutrient/Eutrophication Biol. Indicators, DO (Low, Range), Nutrients, Chronic Toxicity (Impairment Unknown)	Municipal Point Source Discharges, Industrial Point Source Discharges, Source Unknown
Ottawa at Elm St./Dst Shawnee WWTP	31.1	WWH	PARTIAL	Nutrient/Eutrophication Biol. Indicators, DO (Minimum, Range), Nutrients, Organic Enrichment (Sewage), Biological Indicators,	Sanitary Sewer Overflows (SSOs), Municipal Point Source Discharges, Industrial Point Source Discharges, Urban Runoff/Storm Sewers
Ottawa at Copus Road	29.3	WWH	PARTIAL	Nutrient/eutrophication biol. Indicators, Nutrients, Organic enrichment (sewage) biol. indicators	SSOs Municipal point source discharge (upst.) Industrial point source discharges
Ottawa at Allentown Dam Pool	28.9	WWH	PARTIAL	Nutrient/Eutrophication Biol. Indicators, Nutrients, Fish-Passage Barriers	SSOs, Municipal Point Discharge, Impoundment
Ottawa at Piquad Rd.	25.8	WWH	FULL		

* WWH=Warm Water Habitat, PARTIAL=Partial-Attainment, RM=river mile, dst=downstream, upst=upstream, WWTP=wastewater treatment plant

Table 14. Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum [B]
		Average			Maximum	
		Human Health [B]	Agri-culture	Aquatic Life [B]	Aquatic Life [B]	
Ammonia-Nitrogen Summer	mg/L	--	--	1.1	--	--
Ammonia-Nitrogen Winter	mg/L	--	--	2.8	--	--
alpha-BHC [C]	µg/L	0.0053 [C]	--	--	--	--
Aluminum	µg/L	4500.	--	--	--	--
Antimony	µg/L	780.	--	190.	900.	1800.
Arsenic	µg/L	580.	100.	150.	340.	680.
Barium	µg/L	160000.	--	220.[A]	2000.[A]	4000.[A]
Bis(2-ethylhexyl)phthalate	µg/L	32. [C]	--	8.4 [A]	1100.[A]	2100.[A]
Boron	µg/L	200000.	--	3900.[A]	33000.	65000.
Bromodichloromethane	µg/L	180. [C]	--	340.[E]	3100.[E]	6200.[E]
Bromoform	µg/L	890. [C]	--	230.[A]	1100.[A]	2200.[A]
Cadmium	µg/L	730.	50.	6.0	16.	32.
Chlorine, Total Residual	µg/L	--	--	11.	19.	38.
Chloroform	µg/L	1700. [C]	--	140.[A]	1300.[A]	2600.[A]
Dissolved Hexavalent Chromium	µg/L	14000.	--	11.	16.	31.
Chromium	µg/L	14000.	100.	320. [D]	2400. [D]	4900. [D]
Copper	µg/L	64000.	500.	28. [D]	46. [D]	92. [D]
Free Cyanide	µg/L	48000.	--	5.2	22.	44.
Total Cyanide	µg/L	48000.	--	--	--	--
Diethylphthalate	µg/L	--	--	220. [A]	980. [A]	2000. [A]
Fluoride	µg/L	--	2000.	--	--	--
Iron	µg/L	--	5000.	--	--	--
Lead	µg/L	--	100.	53. [D]	1000. [D]	2000. [D]
Manganese	µg/L	61000.	--	--	--	--
Mercury [F]	ng/L	3.1	10000.	910.	1700.	3400.
Molybdenum	µg/L	10000.	--	20000.[A]	190000.[A]	370000.[A]
Nickel	µg/L	43000.	200.	140. [D]	1200. [D]	2500. [D]
Nitrate + Nitrite	mg/L	--	100.	--	--	--
Selenium	µg/L	3100.	50.	5.0	--	--
Silver	µg/L	11000.	--	1.3	11.	22.
Strontium	µg/L	1400000.	--	21000.[A]	40000.	81000.
Total Filterable Residue	mg/L	--	--	1500.	--	--
Urea	µg/L	--	--	17000.[A]	150000.[A]	300000.[A]
Zinc	µg/L	35000.	25000.	350. [D]	350. [D]	690. [D]

[A] Tier II
[B] Human Health and Aquatic Life criteria are Tier I unless otherwise indicated.
[C] Carcinogen
[D] Aquatic Life Criteria are Total Effective Criteria; Dissolved Metals Criteria with Translator Applied
[E] Screening Value.
[F] Bioaccumulative Chemical of Concern (BCC)

Table 15. Instream Conditions and Discharger Flow

Parameter	Units		Value	Basis
7Q10	cfs	annual	0.17	USGS gage #04187100, 1988-2013 data [A]
1Q10	cfs	annual	0.0	USGS gage #04187100, 1988-2013 data [A]
90Q10	cfs	annual	4.36	USGS gage #04187100, 1988-2013 data [A]
30Q10	cfs	summer	2.15	USGS gage #04187100, 1988-2013 data [A]
30Q10	cfs	winter	3.48	USGS gage #04187100, 1988-2013 data [A]
Harmonic Mean Flow	cfs	annual	5.06	USGS gage #04187100, 1988-2013 data [A]
Mixing Assumption	%	average	25	Stream-to-discharge ratio
	%	maximum	100	Stream-to-discharge ratio
Instream Hardness	mg/L	annual	308.	Lima 901 DMRs & STORET Combined; 115 values, 2009-2014
Instream Temperature	°C	summer	23.	Lima 901 DMRs; 20 values, 2010-15
	°C	winter	5.1	Lima 901 DMRs; 15 values, 2010-14
Instream pH	S.U.	summer	8.0	Lima 901 DMRs; 20 values, 2010-15
	S.U.	winter	8.2	Lima 901 DMRs; 15 values, 2010-14
Background Water Quality				
Ammonia	mg/L	summer	0.08	801 DMRs; 20 values, 0<MDL, 2010-15
	mg/L	winter	0.09	801 DMRs; 15 values, 0<MDL, 2010-14
Alpha BHC	µg/L	annual	0.0	No representative data available
Arsenic	µg/L	annual	2.25	STORET; 40 values, 12<MDL, 2010-11
Barium	µg/L	annual	47.	STORET; 40 values, 0<MDL, 2010-11
Bis(2-ethylhexyl) phthalate	µg/L	annual	0.0	No representative data available
Cadmium	µg/L	annual	0.0	STORET; 40 values, 40<MDL, 2010-11
Chlorine, Total Residual	µg/L	annual	0.0	No representative data available
Dissolved Hexavalent Chromium	µg/L	annual	0.0	No representative data available
Chromium	µg/L	annual	0.0	STORET; 40 values, 40<MDL, 2010-11
Copper	µg/L	annual	2.45	STORET; 40 values, 2<MDL, 2010-11
Free Cyanide	µg/L	annual	0.0	No representative data available
Fluoride	µg/L	annual	0.0	No representative data available
Iron	µg/L	annual	441.	STORET; 40 values, 0<MDL, 2010-11
Lead	µg/L	annual	1.0	STORET; 40 values, 39<MDL, 2010-11
Mercury	ng/L	annual	0.0	No representative data available
Molybdenum	µg/L	annual	0.0	No representative data available
Nickel	µg/L	annual	4.6	STORET; 40 values, 0<MDL, 2010-11
Total Filterable Residue	mg/L	annual	488.	STORET; 45 values, 0<MDL, 2010-11
Selenium	µg/L	annual	1.0	STORET; 40 values, 38<MDL, 2010-11
Silver	µg/L	annual	0.0	No representative data available
Strontium	µg/L	annual	1855.	STORET; 40 values, 0<MDL, 2010-11
Zinc	µg/L	annual	5.0	STORET; 40 values, 30<MDL, 2010-11

[A] Actual period of record is October 1988 to September 1999, and September 2009 to September 2013.

Table 15. Instream Conditions and Discharger Flow (Continued)

Parameter	Units	Value	Basis
Lima WWTP flow	cfs (mgd) design	28.62(18.5)	DSW
Other Interactive Discharger Flows			
Husky Lima Refinery	cfs (mgd) annual	9.70 (6.27)	DSW
PCS Nitrogen	cfs (mgd) annual	6.70 (4.33)	DSW
Shawnee #2 WWTP	cfs (mgd) design	3.09 (2.0)	DSW
Dissolved Metals Translators			
Chromium	µg/L	1.71	Lima Ref./PCS Study, 10 values, 2013
Copper	µg/L	1.18	Lima Ref./PCS Study, 10 values, 2013
Lead	µg/L	2.50	Lima Ref./PCS Study, 10 values, 2013
Nickel	µg/L	1.02	Lima Ref./PCS Study, 10 values, 2013
Zinc	µg/L	1.13	Lima Ref./PCS Study, 10 values, 2013

Table 16. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

Parameter	Units	Average			Maximum	Inside
		Human Health	Agri Supply	Aquatic Life	Aquatic Life	Mixing Zone Maximum
Ammonia (summer)	mg/L	--	--	1.1	--	--
Ammonia (winter)	mg/L	--	--	3.0	--	--
Alpha BHC [D]	µg/L	0.0053	--	--	--	--
Arsenic [B]	µg/L	606.	104.	150.	340.	680.
Barium	µg/L	164222. [A]	--	220.	2000.	4000.
Bis(2-ethylhexyl)phthalate	µg/L	33.	--	8.4	1100.	2100.
Cadmium [B]	µg/L	762. [A]	52. [A]	6.0	16.	32.
Chlorine, Total Residual	µg/L	--	--	11.	19.	38.
Dissolved Hexavalent Chromium	µg/L	14464. [A]	--	11.	16.	31.
Chromium [B]	µg/L	14621. [A]	104.	320. [D]	4500. [D]	9100. [D]
Copper	µg/L	65689. [A]	513. [A]	28. [D]	46. [D]	92. [D]
Free Cyanide [B]	µg/L	49354. [A]	--	5.2	22.	44.
Lead [B]	µg/L	--	104.	53. [D]	1000. [D]	2000. [D]
Mercury [C E]	ng/L	3.1	10000. [A]	910.	1700.	3400.
Molybdenum [B]	µg/L	10440.	--	20028.	190000.	370000.
Nickel [B]	µg/L	44908. [A]	209.	140. [D]	1200. [D]	2500. [D]
Selenium	µg/L	3187.	51.	3.0	--	--
Silver [B]	µg/L	11488. [A]	--	1.3	11.	22.
Total Filterable Residue	mg/L	--	--	1501.	--	--
Zinc	µg/L	36553. [A]	26109. [A]	350. [D]	340. [D]	690. [D]

[A] Allocation must not exceed the Inside Mixing Zone Maximum.
[B] Parameter would not require a WLA based on reasonable potential procedures, but allocation requested for use in pretreatment program.
[C] Wildlife criteria limit; 1.3 ng/L.
[D] WLA based on total effective criteria.
[E] Bioaccumulative Chemical of Concern (BCC); WQS must be met at end-of-pipe, unless the requirements for an exclusion are met as listed in 3745-2-08 (L).

Table 17. Parameter Assessment

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

Magnesium

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

Ammonia (summer)	Ammonia (winter)	Antimony
Arsenic	Bromodichloromethane	Cadmium
Chloroform	Chromium	Iron
Lead	Manganese	Molybdenum
Nickel	Silver	Free Cyanide
Strontium	Zinc	Alpha-BHC [A]

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

Barium	Copper	Nitrate+Nitrite

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

Total Filterable Residue	Bis(2-Ethylhexyl)phthalate [A]

Group 5: Maximum PEQ ≥ 100% of the maximum PEL or average PEQ ≥ 100% of the average PEL,or either the average or maximum PEQ is between 75 and 100% of the PEL and certain conditions that increase the risk to the environment are present. Limit recommended.

Limits to Protect Numeric Water Quality Criteria

Parameter	Units	Applicable Period	Recommended Effluent Limits Average	Maximum
Chlorine, Total Residual	µg/L	summer only	11.	19.
Dissolved Hexavalent Chromium	µg/L	annual	11.	16.
Mercury	ng/L	annual	1.3	1700.
Selenium	µg/L	annual	3.0	--

[A] Additivity of carcinogens. Following are the human health limits for the carcinogens:

Substance	Parameter	Limits for Human Health (µg/L)
A	Alpha-BHC	0.0053
B	Bis(2-Ethylhexyl)phthalate	33.

The following equation will be used to calculate the additivity factor:

$$\frac{MAC_A}{0.0053\ \mu g/L} + \frac{MAC_B}{33.0\ \mu g/L} \leq 1.0$$

where MAC = average concentration of all samples collected within the month.

Table 18(a). Final Effluent Limits for Outfall 001

Parameter	Units	Concentration 30 Day Average	Concentration Daily Maximum	Loading (kg/day)[a] 30 Day Average	Loading (kg/day)[a] Daily Maximum	Basis[b]
Flow Rate	MGD	---------- Monitor ----------				M[c]
pH	SU	6.5 - 9.0		--	--	WQS
Dissolved Oxygen	mg/L	---------- Monitor ----------				M
Total Suspended Solids	mg/L	---------- Monitor ----------				M
Ammonia	mg/L	---------- Monitor ----------				M
Phosphorus	mg/L	---------- Monitor ----------				M
E. coli	#/100 mL	126	284[d]	--	--	WQS
Chlorine, Total Residual	mg/L	--	0.019	--	--	WLA
Carbonaceous Biochemical Oxygen Demand (5 day)	mg/L	---------- Monitor ----------				M

Table 18(b). Final Effluent Limits for Outfall 604

Parameter	Units	Concentration 30 Day Average	Concentration Daily Maximum	Loading (kg/day)[a] 30 Day Average	Loading (kg/day)[a] Daily Maximum	Basis[b]
Water Temperature	°C	---------- Monitor ----------				M[c]
Flow Rate	MGD	---------- Monitor ----------				M[c]
Dissolved Oxygen	mg/L	-------- Not Less than 5.0 --------				PD
Total Suspended Solids	mg/L	14	20[d]	2385	3407[d]	PD
Oil & Grease	mg/L	--	10	--	--	WQS
Ammonia						
Winter	mg/L	4.0	8.0[d]	681	1363[d]	PD
Summer	mg/L	2.0	4.0[d]	341	681[d]	PD
Total Kjeldahl Nitrogen	mg/L	---------- Monitor ----------				BTJ
Nitrate+Nitrite	mg/L	---------- Monitor ----------				BTJ
Phosphorus	mg/L	1.0	1.5[d]	170	255[d]	PTS
Orthophosphate, Dissolved (as P)	mg/L	---------- Monitor ----------				SB1
Total Filterable Residue	mg/L	---------- Monitor ----------				RP
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
Selenium	µg/L	---------- Monitor ----------				RP
Dissolved Hexavalent Chromium	µg/L	11.0	16.0	1.88	2.73	WLA
Bis(2-ethylhexyl) phthalate	µg/L	---------- Monitor ----------				RP
Mercury	ng/L	3.7	1700	0.000631	0.29	VAR(avg) WLA(max)
Free Cyanide	µg/L	---------- Monitor ----------				M
Carbonaceous Biochemical Oxygen Demand (5 day)	mg/L	7.0	10[d]	1192	1703[d]	PD
Whole Effluent Toxicity – *Pimephales promelas*						
Acute	TU_a	---------- Monitor ----------				WET(1)
Chronic	TU_c	---------- Monitor ----------				WET(1)
Whole Effluent Toxicity – *Ceriodaphnia dubia*						
Acute	TU_a	--	1.0	--	--	WET(2)
Chronic	TU_c	1.0	--	--	--	WET(2)

[a] Effluent loadings are based on maximum wet weather flow of 45 MGD that was determined during wet weather stress testing of the

wastewater treatment plant. The maximum operational hydraulic loading of the tertiary treatment is 30 MGD. The average daily design flow is 18.5 MGD.

[b] Definitions:

BTJ = Best Technical Judgment
EP = Existing Permit
M = Division of Surface Water NPDES Permit Guidance 1: Monitoring frequency requirements for Sanitary Discharges
PD = Plant Design
PTS = Phosphorus Treatment Standards (OAC 3745-33-06 (C))
RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in permits (3745-33-07(A))
SB1 = Implementation of Senate Bill 1 [ORC 6111.03]
VAR = Mercury variance (OAC 3745-33-07(D)(10)(a))
WET(1) = Whole effluent toxicity minimum requirements (OAC 3745-33-07(B))
WET(2) = Whole effluent toxicity required under [40 CFR Part 132, Appendix F, Procedure 6]
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.