

National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

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

Public Notice No.: 16-07-026
Public Notice Date: July 8, 2016
Comment Period Ends: August 8, 2016

Ohio EPA Permit No.: 3PD00027*KD
Application No.: OH0027324

Name and Address of Applicant:

City of Salem
231 South Broadway Avenue
Salem, Ohio 44460

Name and Address of Facility Where

Discharge Occurs:

Salem Wastewater Treatment Plant
1600 Pennsylvania Avenue
Salem, Ohio 44460
Columbiana County

Receiving Water: Middle Fork Little Beaver Creek

Subsequent Stream Network: Little Beaver Creek, 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.

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

New effluent limits are proposed for *Escherichia coli* based on new water quality standards. Lower effluent limits are proposed for summer ammonia-N due to input data used in the wasteload allocation. Lower effluent limits are proposed for mercury due to new wasteload allocation procedures.

New effluent monitoring is proposed for dissolved orthophosphate due to the provisions of Senate Bill 1, which are part of ORC 6111.03.

Limits are proposed to be removed for cadmium and dissolved hexavalent chromium because they no longer show reasonable potential to cause a violation of water quality standards. Monitoring is proposed to continue.

Limits and monitoring requirements are proposed to be removed for fecal coliform because of the new *E. coli* limits.

Monitoring requirements are proposed to be removed for bis(2-ethylhexyl)phthalate because data show it no longer poses an environmental hazard in the Salem discharge.

Annual chronic toxicity monitoring with the determination of acute endpoints using fathead minnows is proposed for the life of the permit. 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 toxicity monitoring for *Ceriodaphnia dubia* remains the same as in the current permit – twice per year with a trigger for a toxicity reduction evaluation.

Station 300 has been added to the permit. It is used for reporting the total number of sanitary sewer overflows (SSOs) that occur during a month. It is accompanied by provisions in Part II of the permit that address the monitoring and reporting requirements for SSOs. These are standard requirements for publicly owned treatment works statewide.

Downstream monitoring station 902 for acute toxicity is being removed from the permit because DMR data show that acute toxicity is not a concern in the Salem wastewater discharge. *E. coli* monitoring is replacing fecal coliform monitoring at upstream station 801 and downstream station 901.

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 cadmium, copper, lead and dissolved hexavalent chromium, a special condition is proposed in Part II of the permit that provides guidance on the analytical method detection limits (MDLs) the permittee should use in analyzing for these contaminants.

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 and a toxicity reduction evaluation (TRE); pretreatment program requirements; 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 Gary Stuhlfauth, (614) 644-2026, Gary.Stuhlfauth@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

The Salem wastewater treatment plant discharges at river mile 38.2 to Middle Fork Little Beaver Creek, which flows into Little Beaver Creek. Figure 1 shows the approximate location of the facility.

This segment of the Middle Fork Little Beaver Creek is described by Ohio EPA River Code: 08-200, Hydrologic Unit Code: 05030101-04-02, County: Columbiana. Middle Fork Little Beaver Creek is designated for the following uses under Ohio's WQS (OAC 3745-1-15): Warmwater Habitat, Agricultural Water Supply, Industrial Water Supply, Primary Contact Recreation.

Use designations define the goals and expectations of a waterbody. These goals are set for aquatic life protection, recreation use and water supply use, and are defined in the Ohio WQS (OAC 3745-1-07). The use designations for individual waterbodies are listed in rules -08 through -32 of the Ohio WQS. Once the goals are set, numeric WQS are developed to protect these uses. Different uses have different water quality criteria.

Use designations for aquatic life protection include habitats for coldwater fish and macroinvertebrates, warmwater aquatic life and waters with exceptional communities of warmwater organisms. These uses all meet the goals of the federal CWA. Ohio WQS also include aquatic life use designations for waterbodies which cannot meet the CWA goals because of human-caused conditions that cannot be remedied without causing fundamental changes to land use and widespread economic impact. The dredging and clearing of some small streams to support agricultural or urban drainage is the most common of these conditions. These streams are given Modified Warmwater or Limited Resource Water designations.

Recreation uses are defined by the depth of the waterbody and the potential for wading or swimming. Uses are defined for bathing waters, swimming/canoeing (Primary Contact Recreation) and wading only (Secondary Contact which are generally waters too shallow for swimming or canoeing).

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

FACILITY DESCRIPTION

The Salem wastewater treatment plant has an average design flow of 4.0 MGD (million gallons per day). It has the following treatment processes:

- Flow equalization
- Screening and grit removal
- Comminution
- Preaeration
- Primary Settling
- Trickling filtration
- Activated sludge aeration
- Phosphorus removal
- Secondary clarification
- Post aeration
- Chlorination and dechlorination

The City of Salem has 100 percent separated sewers in the collection system.

The Salem WWTP has an approved pretreatment program. Based on information in the July 2015 annual report, there are two categorical industrial users and one significant noncategorical industrial user that discharge to the treatment plant.

The Salem wastewater plant utilizes the following sewage sludge treatment processes:

- Gravity thickening
- Anaerobic digestion (primary sludge)
- Aerobic digestion (waste activated sludge)

Treated sludge is disposed of by land application at agronomic rates. Table 1 shows the last five years of sludge removed from the treatment plant.

DESCRIPTION OF EXISTING DISCHARGE

The annual effluent flow rate for the Salem wastewater treatment plant for the previous five years is presented on Table 2.

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 3 presents chemical specific data collected by Ohio EPA and compiled from data reported in annual pretreatment reports.

Table 4 presents a summary of unaltered Discharge Monitoring Report (DMR). Data are presented for the period May 2010 through April 2015, and current permit limits are provided for comparison.

Table 5 summarizes the chemical specific data for outfall 001 by presenting the average and maximum PEQ values.

Table 6 summarizes the results of acute and chronic whole effluent toxicity tests of the final effluent.

ASSESSMENT OF IMPACT ON RECEIVING WATERS

The Headwaters Middle Fork Little Beaver Creek watershed assessment unit, which includes the Middle Fork Little Beaver Creek in the vicinity of Salem, is listed as impaired for human health (TMDL needed), and aquatic life (TMDL complete) on Ohio's 303(d) list.

A Total Daily Maximum Load (TMDL) report was approved for the Little Beaver Creek Watershed in September 2005. The March 24, 2015, Supreme Court of Ohio decision *Fairfield Cty. Bd. of Commrs. v. Nally, Slip Opinion No. 2015-Ohio-991* vacated all previously approved TMDLs. At this time, the TMDL is considered a technical guidance document pending final TMDL approval.

In regards to the Salem area, the TMDL report stated in Section 5.1, Total Phosphorus TMDLs:

Significant reductions (in total phosphorus) are needed for the Middle Fork Little Beaver Creek (Salem Area) due to existing wasteloads from the Salem WWTP. Existing loads from the WWTP are estimated to be more than 98 percent of the existing total load and will need to be significantly reduced to achieve the 0.10 mg/l instream TP target. The

TMDL is therefore based on a 50 percent reduction to controllable nonpoint sources (e.g., row crop agriculture and storm water runoff from residential and commercial lands), a 100 percent reduction from failing septic systems, and a 95 percent reduction in loads from the Salem WWTP.

In Section 9.1.1.2, Implementation Actions, Time Line, and Reasonable Assurances – Point Source Control, the report states:

Adequate point source control mechanisms shall be utilized for all direct discharges in the Little Beaver Creek TMDL area. NPDES permits for all point sources shall be prepared and issued with limits and conditions necessary to protect and restore water quality in the Little Beaver Creek TMDL area. Phosphorus limits of 1.0 mg/l have been recommended as appropriate for reducing loads in the Little Beaver Creek TMDL area. When appropriate, Ohio EPA shall take enforcement actions necessary to maintain compliance with discharge permit limits.

The current permit for the Salem wastewater plant includes a total phosphorus limit of 1.0 mg/l. No additional reduction in the total phosphorus limits are necessary to meet the recommendations of the TMDL.

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 Salem 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)	May 2010 through April 2015
Pretreatment data	2010 – 2015
Ohio EPA compliance sampling data	2011

Statistical Outliers and Other Non-Representative Data

The data were examined and the following values were removed from the evaluation as non-representative data: Nitrate+nitrite-N – 2.5 mg/l, 8/3/10.

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 5).

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 7).

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 done using the following general equation: Discharger WLA = (downstream flow x WQS) - (upstream flow x background concentration). Discharger WLAs are divided by the discharge flow so that the allocations are expressed as concentrations.

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

Aquatic life (Warmwater Habitat)		
Toxics (metals, organics, etc.)	Average	Annual 7Q10
	Maximum	Annual 1Q10
Ammonia	Average	Summer 30Q10
		Winter 30Q10
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 8, and allocations cannot exceed the Inside Mixing Zone Maximum (IMZM) criteria.

The data used in the WLA are listed in Table 7 and Table 8. The WLA results to maintain all applicable criteria are presented in Table 9.

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 the Salem wastewater plant, the WLA values are 0.3 TU_a and 1.04 TU_c.

The chronic toxicity unit (TU_c) is defined as 100 divided by the estimate of the effluent concentration which causes a 25 percent reduction in growth or reproduction of test organisms (IC₂₅):

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

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

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

The acute toxicity unit (TU_a) is defined as 100 divided by the concentration in water having 50 percent chance of causing death to aquatic life (LC₅₀) for the most sensitive test species:

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

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

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

<u>Dilution Ratio</u> (downstream flow to discharger flow)	<u>Allowable Effluent Toxicity</u> (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

$$\text{Stream Dilution Ratio} = \frac{1Q_{10} + [\text{WWTP flow rate}]}{[\text{WWTP flow rate}]} = \frac{0.25 \text{ cfs} + 6.20 \text{ cfs}}{6.20 \text{ cfs}} = 1.04$$

The acute WLA for the Salem wastewater plant is 30 percent mortality in 100 percent effluent based on the dilution ratio of 1.04 to 1.

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 9. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 5, and the PEL_{max} is compared to the PEQ_{max}. Based on the calculated percentage of the allocated value [(PEQ_{avg} ÷ PEL_{avg}) X 100, or (PEQ_{max} ÷ PEL_{max}) X 100], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 10.

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

Total Suspended Solids, CBOD₅, Dissolved Oxygen, Ammonia-Nitrogen

The limits proposed for total suspended solids and 5-day carbonaceous biochemical oxygen demand are based on plant design criteria. The limits proposed for dissolved oxygen and winter ammonia-N are a continuation of existing permit limits. These limits are protective of WQS.

The limits proposed for summer ammonia-N are based on the current wasteload allocation (Table 9). They are lower than the limits in the current permit, but plant operating data show that it is capable of complying with the new summer limits.

Total Phosphorus

Based on best technical judgment (BTJ), the limits proposed for total phosphorus are a continuation of the existing permit limits. Since August 2014, the Salem plant has been complying with the total phosphorus limits

in its current permit. The results of future Ohio EPA stream surveys and water quality studies will determine if additional phosphorus reductions are necessary at the Salem plant

Oil and Grease, pH, *E. coli*

Limits proposed for oil and grease, pH, and *Escherichia coli* are based on WQS (OAC 3745-1-07). Primary contact recreation standards apply to this section of Middle Fork Little Beaver Creek.

New water quality standards for *E. coli* became effective in January 2016. It is expected the plant can comply with the new limits at the start of the next disinfection season and does not require a compliance schedule.

Copper, Mercury, Total Filterable Residue, Specific Conductance

The Ohio EPA risk assessment (Table 10) places copper, mercury and total filterable residue (total dissolved solids) in group 5. This placement, as well as the data in Tables 4 and 5, indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. For copper and mercury, the PEQ is greater than 100 percent of the WLA. For total filterable residue, 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 these requirements must have permit limits under OAC 3745-33-07(A)(1).

It is proposed that the current limits for copper continue. Although the current WLA would allow slightly higher limits, antibacksliding provisions of OAC 3745-33-05(F) prevent the imposition of limits less stringent than those in the existing permit unless specific conditions have been satisfied. In the case of the Salem wastewater plant, none of those conditions have been satisfied, so the existing limits are proposed to continue.

For mercury, the proposed monthly average limit is based on wasteload allocation (Table 9). Under the antibacksliding rule, it is proposed that the current daily maximum limit continue.

A review of monitoring data submitted since January 2010 shows that in most months the plant complies with the proposed 12 ng/l monthly average limit. If the City has concerns about meeting this limit, it may either request a schedule of compliance or it may apply for coverage under Ohio's general mercury variance [OAC 3745-33-07(D)(10)].

The average wasteload allocation for total filterable residue (TDS) is 1542 mg/l (Table 9). Total filterable residue levels are correlated with specific conductance, which can be measured with continuous monitoring equipment. Using the conversion factor of (1.6 umhos specific conductance)/(1 mg/l TDS), which was derived from the most recent three years of same-day DMR data, a monthly average specific conductance limit of 2470 umhos is proposed to continue as a surrogate for a limit on total filterable residue. Continuous specific conductance monitoring is proposed, and the 24-hour average will be reported each day. It is proposed that the current daily maximum limit of 3705 umhos, which applies to the 24-hour average values, continue.

Monitoring for total filterable residue once every two weeks also is proposed to continue.

Total Residual Chlorine

The proposed limit for total residual chlorine is based on WLA (Table 9) and is a continuation of the existing permit limit.

Zinc

The Ohio EPA risk assessment (Table 10) places zinc in group 4. This placement, as well as the data in Tables 4 and 5, 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)

Nickel, Cadmium, Lead, Chromium, Dissolved Hexavalent Chromium, Free Cyanide

The Ohio EPA risk assessment (Table 10) these parameters in groups 2 and 3. This placement, as well as the data in Tables 4 and 5, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring at a low frequency is proposed to document that these pollutants continue to remain at low levels. Limits for cadmium and hexavalent chromium are proposed to be removed, but monitoring will continue.

Method Detection Limits

The reported data for cadmium, lead, copper and hexavalent chromium shows that the Salem wastewater plant used analytical methods with method detection levels (MDL) that are not sufficiently sensitive to properly evaluate the discharge with regard to the wasteload allocation for these parameters. As a result, Part II of the permit includes a condition requiring the Salem plant to use analytical methods with MDLs no greater than the following:

Cadmium – 1.5 ug/l

Copper – 7.0 ug/l

Lead – 7.0 ug/l

Dissolved hexavalent chromium – 3.5 ug/l

Low-Level Free Cyanide Testing

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

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

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

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

Parameters That Don't Require Monitoring

The Ohio EPA risk assessment (Table 10) places arsenic, bis(2-ethylhexyl)phthalate, iron, methyl bromide, molybdenum, selenium, silver and strontium in groups 2 and 3. This placement, as well as the data in Tables 3, 4 and 5, 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. Removal of monitoring for bis(2-ethylhexyl)phthalate is proposed.

Temperature and Flow

Monitoring for these parameters is proposed to continue to evaluate the performance of the treatment plant.

Dissolved Orthophosphate

New monthly monitoring is proposed for dissolved orthophosphate (as P). This monitoring is required by Ohio Senate Bill 1, which was signed by the Governor on April 2, 2015. Monitoring for orthophosphate is proposed to further develop nutrient datasets for dissolved reactive phosphorus and to assist stream and watershed assessments and studies. Ohio EPA monitoring, as well as other in-stream monitoring, is taken via grab sample, orthophosphate is proposed to be collected by grab sample to maintain consistent data to support watershed and

stream surveys. Monitoring will be done by grab sample, which must be filtered within 15 minutes of collection using a 0.45-micron filter. The filtered sample must be analyzed within 48 hours.

Whole Effluent Toxicity Reasonable Potential

Based on evaluating the WET data presented in Table 6 and other pertinent data under the provisions of OAC 3745-33-07(B), the Salem wastewater treatment plant is placed in Category 2 with respect to toxicity to *Ceriodaphnia dubia*. Considering that in all ten tests no toxicity was observed at the near field 902 station or the far-field 903 station, toxicity limits are not proposed. Twice per year monitoring with a trigger to conduct a toxicity reduction evaluation is proposed.

Based on evaluating the WET data presented in Table 6 and other pertinent data under the provisions of OAC 3745-33-07(B), the Salem plant is placed in Category 4 with respect to toxicity to fathead minnows (*Pimephales promelas*). While this indicates that the plant's effluent does not currently pose a toxicity problem to this species, annual toxicity testing is proposed consistent with the minimum monitoring requirements at OAC 3754-33-07(B)(11). Annual chronic toxicity monitoring with the determination of acute endpoints is proposed for the life of the permit. The proposed monitoring will adequately characterize toxicity to fathead minnows in the plant's effluent.

Additional Monitoring Requirements

Additional monitoring requirements proposed at the final effluent, influent and upstream/downstream stations are included for all facilities in Ohio and vary according to the type and size of the discharge. In addition to permit compliance, this data is used to assist in the evaluation of effluent quality and treatment plant performance and for designing plant improvements and conducting future stream studies.

Sludge

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

OTHER REQUIREMENTS

Compliance Schedule

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

Pretreatment Streamlining - A six-month compliance schedule is proposed for the City to submit a pretreatment program modification request for implementing changes required by Ohio's pretreatment rules and U.S. EPA's pretreatment streamlining rule. 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 Salem WWTP to have a Class IV wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 001. These rules also require the permittee to designate one or more operator of record to oversee the technical operation of the treatment works.

Method Detection Limit

Part II of the permit includes a condition requiring the Salem wastewater plant to use laboratory analytical methods with an appropriate MDL.

Storm Water Compliance

To comply with industrial storm water regulations, the permittee submitted a form for "No Exposure Certification" which was signed on June 10, 2011. The certification number is 3GRN0472*BG. Compliance with the industrial storm water regulations must be re-affirmed every five years. No later than June 10, 2016, the permittee must submit a new form for "No Exposure Certification" or make other provisions to comply with the industrial storm water regulations.

Outfall Signage

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

Part III

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

Figure 1. Location of Salem Wastewater Treatment Plant

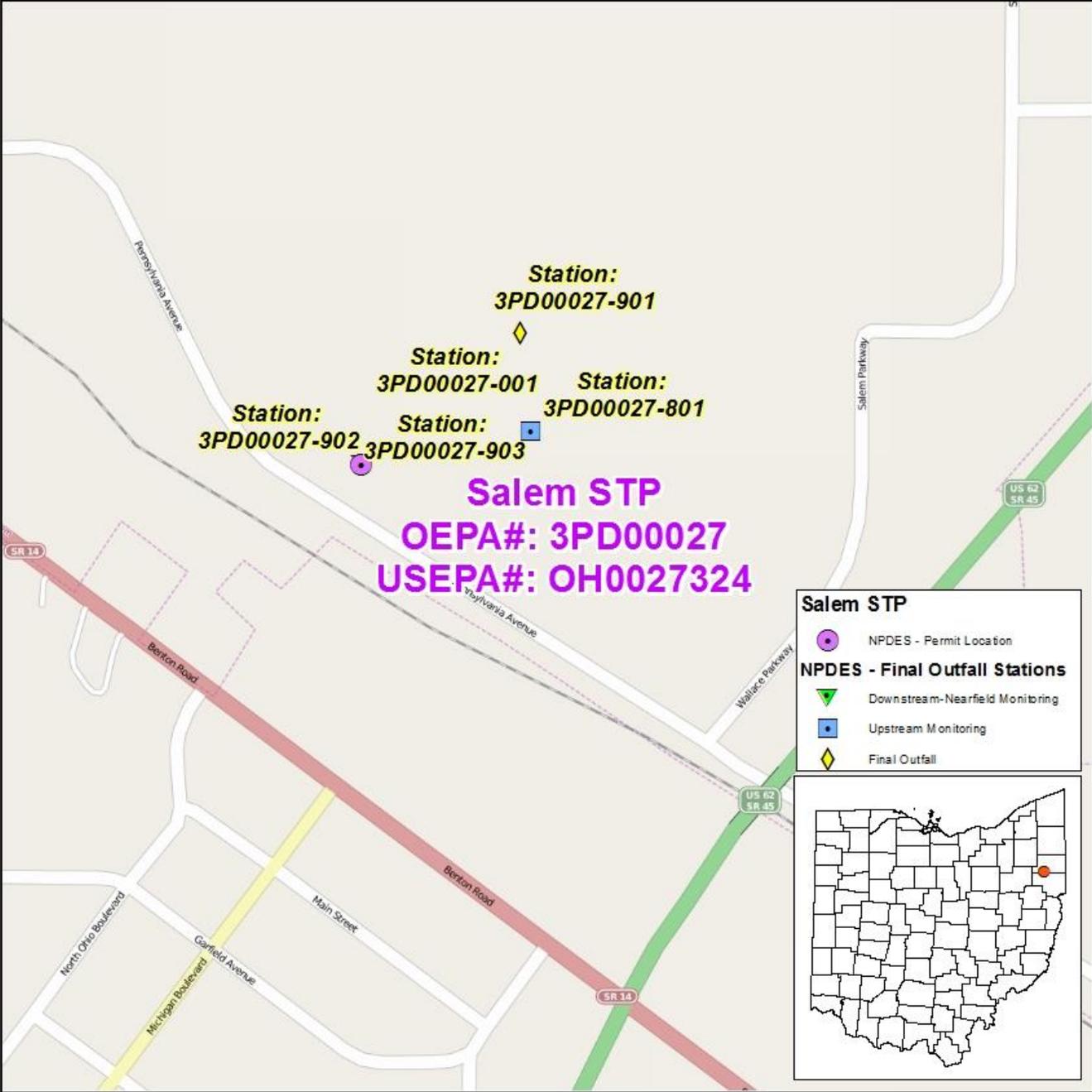


Table 1. Sewage Sludge Removal

Year	Dry Tons Removed
2010	362
2011	731
2012	594
2013	416
2014	454

Table 2. Annual Effluent Flow Rates

Year	Annual Flow in MGD		
	50th Percentile	95th Percentile	Maximum
2010	2.376	4.584	9.832
2011	2.539	5.596	19.470
2012	2.117	3.831	10.127
2013	2.313	3.908	9.239
2014	2.259	4.951	11.303

MGD = million gallons per day.

Table 3. Effluent Characterization Using Ohio EPA and Pretreatment Data

Summary of analytical results for Salem outfall 3PD00027001. Units ug/l unless otherwise noted; OEPA = data from analyses by Ohio EPA; PT = data from pretreatment program reports; NA = not analyzed; AA = not detected (detection limit).

PARAMETER	OEPA 04/26/11	PT 05/19/14	PT 05/14/13	PT 04/23/12	PT 05/18/11	PT 06/02/10
Copper	4.1	21	15.4	13.4	AA(10)	14.5
Dissolved solids, T (mg/l)	548	NA	NA	NA	NA	NA
Iron	452	NA	NA	NA	NA	NA
Nickel	3.4	AA(20)	AA(10.00)	11.5	AA(10)	AA(10)
Strontium	172	NA	NA	NA	NA	NA
Zinc	16	31	64.7	49.4	14.7	58.5
Nitrate+nitrite (mg/l)	9.67	NA	NA	NA	NA	NA
Phosphorus, T (mg/l)	3.29	NA	NA	NA	NA	NA
Methyl bromide	1.97	AA(5)	AA(5.00)	AA(5.00)	AA(5)	AA(5)

Table 4. Effluent Characterization Using Self-Monitoring Data – May 2010 through April 2015

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
Water Temperature	Annual	C	Monitor		1826	17.6	25.3	7.47-28.9
Specific Conductance	Annual	Umho/cm	2470	3705	1826	1850	2830	770-19000
Dissolved Oxygen	Summer	mg/l		6.0 min	920	7.68	8.81	6.11-9.98
Dissolved Oxygen	Winter	mg/l		6.0 min	906	8.52	10.7	4.02-12
Residue, Total Dissolved	Annual	mg/l	Monitor		238	1150	1780	606-2450
Total Suspended Solids	Annual	mg/l	20	30 ^a	793	12	32	1-312
Oil and Grease, Hexane	Annual	mg/l		10	115	2	6	0-13
Nitrogen, Ammonia (NH3)	Summer	mg/l	2.0	3.0 ^a	383	0.18	0.348	0.02-4.4
Nitrogen, Ammonia (NH3)	Winter	mg/l	7.1	10.6 ^a	381	0.15	1.2	0.022-14
Nitrogen Kjeldahl, Total	Annual	mg/l	Monitor		58	1.86	4.14	0.66-29.7
Nitrite Plus Nitrate, Total	Annual	mg/l	Monitor		60	23.1	37.1	2.5-39.5
Phosphorus, Total (P)	Annual	mg/l	1.0	1.5 ^a	323	9.25	24.2	0.063-34
Cyanide, Free	Annual	mg/l	Monitor		20	0	0	0-0
Nickel, Total Recoverable	Annual	ug/l	Monitor		20	0	13.1	0-14
Zinc, Total Recoverable	Annual	ug/l	Monitor		60	32	121	0-243
Cadmium, Total Recoverable	Annual	ug/l	5.0	12	60	0	0	0-0
Lead, Total Recoverable	Annual	ug/l	Monitor		20	0	0	0-0
Chromium, Total Recoverable	Annual	ug/l	Monitor		20	0	0	0-0
Copper, Total Recoverable	Annual	ug/l	20	32	67	0	24.1	0-53
Chromium, Dissolved Hexavalent	Annual	ug/l	11	17	60	0	0	0-0
Fecal Coliform	Annual	#/100 ml	1000	2000 ^a	359	36	520	1-2020
Bis(2-ethylhexyl) Phthalate	Annual	ug/l	Monitor		20	0	0	0-0
Flow Rate	Summer	MGD	Monitor		920	2.12	4.11	1.15-19.5
Flow Rate	Winter	MGD	Monitor		906	2.51	5.24	0.962-13.4
Flow Rate	Annual	MGD	Monitor		1826	2.3	4.9	0.962-19.5
Chlorine, Total Residual	Annual	mg/l		0.02	920	0.02	0.032	0.001-0.15
Mercury, Total	Annual	ng/l	13	1100	66	5.21	26.2	0.7-57.9
pH, Maximum	Annual	S.U.		9.0	1826	7.18	7.62	6.21-8.77
pH, Minimum	Annual	S.U.		6.5	1826	6.93	7.36	5.8-9.96
CBOD 5 day	Summer	mg/l	15	22 ^a	384	3.1	8.27	0.53-15.5
CBOD 5 day	Winter	mg/l	15	22 ^a	379	4.1	10.7	1.1-118

Table 5. Projected Effluent Quality for Outfall 001 – May 2010 through April 2015

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Ammonia-S	mg/l	251	251	0.283	0.52
Ammonia-W	mg/l	188	188	0.456	1.011
Bis(2-ethylhexyl)phthalate	ug/l	20	0	--	--
Cadmium	ug/l	60	0	--	--
Chlorine - TRes	mg/l	920	920	0.025	0.046
Chromium	ug/l	20	0	--	--
Chromium VI - Diss	ug/l	60	0	--	--
Copper	ug/l	73	20	26.8	37.4
Cyanide - free	mg/l	20	0	--	--
Dissolved solids	mg/l	238	238	1465	1772
Iron	ug/l	1	1	2045.752	2802.4
Lead	ug/l	20	0	--	--
Mercury	ng/l	66	66	19.3	30.6
Methyl bromide	ug/l	6	1	7.665	10.5
Nickel	ug/l	25	4	13.286	18.2
Nitrate-N + Nitrite-N	mg/l	59	59	34.6	46.5
Phosphorus*	mg/l	100	100	2.08	3.87
Strontium	ug/l	1	1	778.472	1066.4
Zinc	ug/l	66	52	104.5	165.1

MDL = analytical method detection limit

PEQ = projected effluent quality

* = period of record for phosphorus is May 2014 – April 2015

Table 6. Summary of Acute and Chronic Toxicity Results

Acute Test Date(a)	<i>Ceriodaphnia dubia</i> 48 hours			<i>Fathead Minnows</i> 96 hours		
	UP ^b	TUa ^b	NF ⁱ	UP ^b	TUa ^b	NF ⁱ
12/17/2008(E)	BD	BD	BD	5	BD	5
6/18/2009(E)	BD	BD	BD	18	BD	2
12/15/2009(E)	BD	BD	BD	BD	BD	2
6/18/2010(E)	BD	BD	BD	15	BD	12
12/14/2010(E)	BD	BD	BD	5	BD	BD
6/21/2011(E)	BD	BD	BD	15	BD	BD
12/14/2011(E)	BD	BD	BD	5	BD	2
6/19/2012(E)	BD	BD	BD	12	BD	2
12/9/2012(E)	BD	BD	BD	2	BD	8
6/16/2013(E)	BD	BD	BD	2	BD	2
12/4/2013(E)	BD	BD	BD	BD	BD	BD
6/3/2014(E)	BD	BD	BD	15	BD	10
12/2/2014(E)	BD	BD	BD	28	BD	2
4/26/11(O)*	0	BD	0	0	BD	0

Chronic Test Date(a)	<i>Ceriodaphnia dubia</i> 7 days			<i>Fathead Minnows</i> 7 days		
	UP ^b	TUc ^b	FF ⁱ	UP ^b	TUc ^b	FF ⁱ
6/18/2010(E)	BD	BD	BD	22	BD	BD
12/14/2010(E)	BD	1.54	BD	5	BD	BD
6/21/2011(E)	BD	BD	BD	18	BD	18
12/14/2011(E)	BD	1.2	BD	5	BD	2
6/19/2012(E)	BD	1.2	BD	35	BD	12
12/9/2012(E)	BD	BD	BD	2	BD	8
6/16/2013(E)	BD	1.4	BD	12	BD	2
12/4/2013(E)	BD	1.54	BD	BD	BD	5
6/3/2014(E)	BD	1.04	BD	15	BD	10
12/2/2014(E)	BD	BD	BD	32	BD	2

^a O = EPA test; E = entity test

^b TUc = chronic toxicity units

^b UP = upstream control water, % affected

ⁱ FF = far field sample, % affected

BD = below detection

Table 7. Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria			Maximum Aquatic Life	Inside Mixing Zone Maximum
		Average				
		Human Health	Agri-culture	Aquatic Life		
Ammonia-S	mg/l	--	--	1.6	--	--
Ammonia-W	mg/l	--	--	7.6	--	--
Arsenic - TR	ug/l	--	100	150	340	680
Bis(2-ethylhexyl)phthalate	ug/l	59c	--	8.4	1100	2100
Cadmium	ug/l	--	50	5	12	25
Chlorine - TRes	mg/l	--	--	0.011	0.019	0.038
Chromium	ug/l	--	100	180	3800	7500
Chromium VI - Diss	ug/l	--	--	11	16	31
Copper	ug/l	1300	500	20	33	65
Cyanide - free	mg/l	220	--	0.012	0.046	0.092
Dissolved solids	mg/l	--	--	1500	--	--
Iron	ug/l	--	5000	--	--	--
Lead	ug/l	--	100	20	390	770
Mercury	ng/l	12	10000	910	1700	3400
Methyl bromide	ug/l	4000	--	16	38	75
Molybdenum	ug/l	--	--	20000	190000	370000
Nickel	ug/l	4600	200	110	1000	2000
Nitrate-N + Nitrite-N	mg/l	--	100	--	--	--
Phosphorus	mg/l	--	--	--	--	--
Selenium	ug/l	11000	50	5	--	--
Silver	ug/l	--	--	1.3	7.5	15
Strontium	ug/l	--	--	21000	40000	81000
Zinc	ug/l	69000	25000	260	260	510

Table 8. Instream Conditions and Discharger Flow

<u>Parameter</u>	<u>Units</u>	<u>Season</u>	<u>Value</u>	<u>Basis</u>
<i>Stream Flows</i>				
1Q10	cfs	annual	0.25	Index gage 03109000, Lisbon Creek
7Q10	cfs	annual	0.25	Index gage 03109000, Lisbon Creek
30Q10	cfs	summer	0.25	Index gage 03109000, Lisbon Creek
		winter	0.5	Index gage 03109000, Lisbon Creek
Harmonic Mean	cfs	annual	0.73	Index gage 03109000, Lisbon Creek
Mixing Assumption	%	average	100	
	%	maximum	100	
<i>Hardness</i>	mg/l	annual	246	Station 901, n=60, 2010-15
<i>pH</i>	S.U.	summer	7.42	Station 901, n=78, 2010-15
		winter	7.5	Station 901, n=61, 2010-15
<i>Temperature</i>	C	summer	24.45	Station 901, n=78, 2010-15
		winter	9.8	Station 901, n=61, 2010-15
<i>Salem WWTP flow</i>	cfs	annual	6.189	NPDES application
<i>Background Water Quality</i>				
Ammonia-S	mg/l		0.125	DMR; 2010-15; n=20; 0<MDL; Station 801
Ammonia-W	mg/l		0.12	DMR; 2010-15; n=14; 0<MDL; Station 801
Arsenic	ug/l		3.25	STORET; 1999-2007; n=4; 0<MDL; Station L01S33
Bis(2-ethylhexyl)phthalate	ug/l		0	No representative data available.
Cadmium	ug/l		0	STORET; 1999-2007; n=4; 4<MDL; Station L01S33
Chlorine - TRes	mg/l		0	No representative data available.
Chromium	ug/l		0	STORET; 1999-2007; n=4; 4<MDL; Station L01S33
Chromium VI - Diss	ug/l		0	No representative data available.
Copper	ug/l		0	STORET; 1999-2007; n=4; 4<MDL; Station L01S33
Cyanide - free	mg/l		0	No representative data available.
Dissolved solids	mg/l		467	STORET; 1999-2007; n=4; 0<MDL; Station L01S33
Iron	ug/l		606	STORET; 1999-2007; n=4; 0<MDL; Station L01S33
Lead	ug/l		0	STORET; 1999-2007; n=4; 4<MDL; Station L01S33
Mercury	ng/l		0	No representative data available.
Methyl bromide	ug/l		0	No representative data available.
Molybdenum	ug/l		0	No representative data available.
Nickel	ug/l		0	STORET; 1999-2007; n=4; 4<MDL; Station L01S33
Nitrate-N + Nitrite-N	mg/l		4.68	STORET; 1999-2007; n=5; 2<MDL; Station L01S33
Phosphorus	mg/l		2.69	STORET; 1999-2007; n=5; 0<MDL; Station L01S33
Selenium	ug/l		0	STORET; 1999-2007; n=4; 4<MDL; Station L01S33
Silver)	ug/l		0	No representative data available.
Strontium	ug/l		258	STORET; 1999-2007; n=4; 0<MDL; Station L01S33
Zinc	ug/l		12	STORET; 1999-2007; n=4; 2<MDL; Station L01S33

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

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum Aquatic Life	
		Human Health	Agri- culture	Aquatic Life		
Ammonia-S	mg/l	--	--	1.7	--	--
Ammonia-W	mg/l	--	--	--	--	--
Arsenic	ug/l	--	111	156	354	680
Bis(2-ethylhexyl)phthalate	ug/l	66	--	8.7	1144	2100
Cadmium	ug/l	--	56	5.2	12	25
Chlorine - TRes	mg/l	--	--	0.011	0.02	0.038
Chromium	ug/l	--	112	187	3953	7500
Chromium VI - Diss	ug/l	--	--	11	17	31
Copper	ug/l	1453	559	21	34	65
Cyanide - free	mg/l	246	--	0.012	0.048	0.092
Dissolved solids	mg/l	--	--	1542	--	--
Iron	ug/l	--	5518	--	--	--
Lead	ug/l	--	112	21	406	770
Mercury	ng/l	12	10000	910	1700	3400
Methyl bromide	ug/l	4472	--	17	40	75
Molybdenum	ug/l	--	--	20808	197675	370000
Nickel	ug/l	5143	224	114	1040	2000
Nitrate-N + Nitrite-N	mg/l	--	111	--	--	--
Phosphorus	mg/l	--	--	--	--	--
Selenium	ug/l	12297	56	5.2	--	--
Silver	ug/l	--	--	1.4	7.8	15
Strontium	ug/l	--	--	21838	41605	81000
Zinc	ug/l	77137	27947	270	270	510

Table 10. Parameter Assessment

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

No parameter in this group

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

Arsenic	Bis(2-ethylhexyl)phthalate	Cadmium
Chromium	Chromium VI - Diss	Cyanide - free
Lead	Molybdenum	Nickel
Selenium	Silver	Strontium

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

Iron	Methyl bromide	Nitrate-N + Nitrite-N
------	----------------	-----------------------

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

Zinc

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

Limits to Protect Numeric Water Quality Criteria

<u>Parameter</u>	<u>Units</u>	<u>Period</u>	<u>Recommended Effluent Limits</u>	
			<u>Average</u>	<u>Maximum</u>
Ammonia-S	mg/l	Annual	1.7	--
Chlorine	mg/l	Summer	0.0111	0.02
Copper	ug/l	Annual	21	34
Dissolved solids	mg/l	Annual	1542	--
Mercury	ng/l	Annual	12	1700

Dissolved solids becomes a Group 5 parameter based upon the loading test [OAC 3745-2-06(B)].

PEL = preliminary effluent limit
PEQ = projected effluent quality
WLA = wasteload allocation
WQS = water quality standard

Table 11. Final Effluent Limits for Outfall 001

Parameter	Units	Concentration		Loading (kg/day) ^a		Basis ^b
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Water Temperature	°C	----- Monitor -----				M
Specific Conductance	Umho/cm	2470	3705	--	--	BTJ
Dissolved Oxygen	mg/L	6.0 minimum				EP
Total Suspended Solids	mg/L	20	30 ^c	303	454 ^c	PD
Oil & Grease	mg/L	--	10	--	--	WQS
Ammonia						
Summer	mg/L	1.7	2.6 ^c	25.7	39.4 ^c	WLA
Winter	mg/L	7.1	10.6 ^c	107	160 ^c	BTJ
Total Kjeldahl Nitrogen	mg/L	----- Monitor -----				M
Nitrate+Nitrite	mg/L	----- Monitor -----				M
Phosphorus	mg/L	1.0	1.5 ^c	15.2	22.8 ^c	BTJ
Orthophosphate, Dissolved (as P)	mg/L	----- Monitor -----				SB1
Nickel	µg/L	----- Monitor -----				M
Zinc	µg/L	----- Monitor -----				RP
Cadmium	µg/L	----- Monitor -----				M
Lead	µg/L	----- Monitor -----				M
Chromium	µg/L	----- Monitor -----				M
Copper	µg/L	20	32	0.303	0.485	ABS
Hexavalent Chromium (Dissolved)	µg/L	----- Monitor -----				M
<i>E. coli</i>	#/100 mL	126	284 ^c	--	--	WQS
Flow Rate	MGD	----- Monitor -----				M
Chlorine, Total Residual	mg/L	--	0.02	--	--	WLA
Mercury	ng/L	12	1100	0.000182	0.0167	WLA (avg), ABS (max)
Free Cyanide	µg/L	----- Monitor -----				M
Toxicity						
Acute, <i>C. dubia</i> *, <i>P. promelas</i>	TU _a	----- Monitor (*With trigger) -----				WET
Chronic, <i>C. dubia</i> *, <i>P. promelas</i>	TU _c	----- Monitor (*With trigger) -----				WET
pH	SU	6.5 – 9.0				WQS
Total Filterable Residue (Total Dissolved Solids)	mg/L	----- Monitor -----				BTJ
Carbonaceous Biochemical Oxygen Demand (5 day)	mg/L	15	22 ^c	227	333 ^c	PD

Table 11. Continued

^a Effluent loadings based on average design discharge flow of 4.0 MGD.

^b Definitions: ABS = Antibacksliding Rule [OAC 3745-33-05(F) and 40 CFR Part 122.44(1)]
 BTJ = Best Technical Judgment
 M = BTJ of Division of Surface Water NPDES Permit Guidance 1: Monitoring Frequency
 Requirements for Sanitary Discharges
 PD = Plant Design
 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)
 WET = *C. dubia* - Reasonable potential for requiring water quality-based effluent limits and
 monitoring requirements for whole effluent toxicity in NPDES permits [OAC 3745-33-07(B)]; *P.*
 promelas - 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 7 day average limit.

Addendum 1. 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