

National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

Regarding an NPDES Permit to Discharge to Waters of the State of Ohio
For the City of Lakewood Wastewater Treatment Plant (WWTP)

Public Notice No.: 14-03-062
Public Notice Date: March 31, 2014
Comment Period Ends: May 1, 2014

Ohio EPA Permit No.: 3PE00004*PD
Application No.: OH0026018

Name and Address of Applicant:

City of Lakewood
12650 Detroit Ave.
Lakewood, OH 44107

Name and Address of Facility Where
Discharge Occurs:

Lakewood WWTP
1699 Park Drive, Metropolitan Park
Lakewood, OH 44107
Cuyahoga County

Receiving Water: Lake Erie

Subsequent
Stream Network: N/A

Introduction

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

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

Effluent limits based on available treatment technologies are required by Section 301(b) of the 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

A summary of current permit limits can be found on Table 2. A summary of proposed permit limits can be found on Table 9.

Final Outfall Station 3PE00004001

The effluent limits and monitoring requirements proposed for the following parameters are the same as in the current permit, although some monitoring frequencies may have changed: flow, temperature, dissolved oxygen, chemical oxygen demand (COD), oil and grease, five-day carbonaceous biochemical oxygen demand (CBOD₅), total suspended solids (TSS), total filterable residue (total dissolved solids (TDS)), ammonia, nitrite+nitrate-nitrogen, total Kjeldahl nitrogen (TKN), free cyanide, pH, cadmium, copper, chromium, dissolved hexavalent chromium (Cr⁶⁺), lead, nickel, zinc, *E. coli*, and mercury.

Annual acute toxicity monitoring and chronic toxicity monitoring with the determination of acute endpoints for *Pimephales promelas* and *Ceriodaphnia dubia* 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 monitoring requirements proposed for silver are the same as in the current permit, however, the permittee shall use analytical procedures approved under 40 CFR 136 with method detection limits (MDLs) less than or equal to 0.5 µg/L for silver.

Lakewood has applied for a renewal of the mercury variance effective December 1, 2010. The 30-day average mercury limit developed from sampling data submitted by Lakewood is 23.0 ng/L in the proposed permit. This limit is the same as the current permit limit. The daily maximum of 1700 ng/L mercury also remains the same as the current permit.

CSO Monitoring Stations 002, 052-059

Each permitted combined sewer overflow (CSO) Monitoring Station in the proposed permit has requirements for reporting overflow occurrence, overflow volume, duration of discharge when the overflows are discharging, and quarterly reporting requirements for CBOD₅ and TSS.

Part II Requirements

In Part II of the permit, special conditions are included that address schedules of compliance, sanitary sewer overflow (SSO) reporting; operator certification, minimum staffing and operator of record; whole effluent toxicity testing (WET); outfall signage; mercury variance requirements; and other items.

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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 and Compliance Section
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 Erm Gomes at (330)963-1196, Erm.Gomes@epa.ohio.gov or Andy Bachman at (614)646-3075, Andrew.Bachman@epa.ohio.gov

Information Regarding Certain Water Quality Based Effluent Limits

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

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

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

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

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

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

Location of Discharge/Receiving Water Use Classification

The City of Lakewood WWTP discharges to Lake Erie on the northern edge of Cuyahoga County. Lake Erie is designated for the following uses under Ohio's WQS: Exceptional Warmwater Habitat (EWH), Superior High Quality Water (SHQW), Public Water Supply (PWS), Agricultural Water Supply (AWS), Industrial Water supply (IWS), and Bathing Waters. The Lakewood WWTP is located in the Erie-Ontario Lake Plain ecoregion. Figure 1 shows the approximate location of the facility.

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; higher quality uses typically have more protective water quality criteria.

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

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

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

Facility Description

The Lakewood WWTP, built in 1965, is an activated sludge facility that has an average design flow of 18 million gallons per day (MGD). Wet stream processes include screening, grit removal, flow meter, primary sedimentation, aeration, alum addition, conventional activated sludge, secondary sedimentation, and ultraviolet disinfection. Waste activated sludge is treated in primary and secondary digesters prior to land application at agronomic rates. For 2011 and 2012, Lakewood reported that 997 and 906 tons, respectively, of sludge were removed from the WWTP for land application.

Lakewood WWTP has one non-categorical significant industrial user (SIU) that contributes an average daily flow of 0.20 MGD to the WWTP. The Lakewood WWTP does not have an approved pretreatment program, but does have technically-based local limits.

Collection System

The Lakewood WWTP sewage collection system is a combined sewerage system that serves a population of 52,551 in the municipalities of Lakewood and Rocky River. The sewer collection system is comprised of approximately 75% separate sanitary and 25% combined storm and sanitary sewers. The combined portion of the system contains nine CSOs which discharge to Lake Erie and the Rocky River when the system is hydraulically overloaded; six discharge to Lake Erie and three discharge to the Rocky River. The City of Lakewood is negotiating with the U.S.EPA to develop a Long Term Control Plan (LTCP) to address the CSOs.

The inflow and infiltration rate for the sewer system is estimated to be 6.292 MGD.

Description of Existing Discharge

The City reports CSO occurrences under Stations 3PE00004002 and 3PE00004052-3PE00004059 in its NPDES permit. Flow data for the nine CSO outfalls listed in the Lakewood NPDES permit is collected using flow monitors.

CSO outfall 3PE00004002 is located nearest to the plant (just before the aerial sewer) and generally discharges the largest volume the most frequently. The average annual overflow volume at this CSO outfall for the data period July 2007 through June 2012 was 47 million gallons. The average volume discharged per occurrence was 0.97 million gallons per day. The total occurrences at each CSO station are shown in Table 1.

Table 1. System Overflow Summary for the Data Period July 2007-June 2012.

Station Number	2007	2008	2009	2010	2011	2012
CSO						
002	21	53	43	40	105	19
052	18	38	74	71	130	30
053	12	31	81	92	100	27
054	0	1	16	23	59	24
055	8	25	57	80	131	12
056	8	26	39	34	105	25
057	8	14	43	43	97	25
058	11	16	35	43	91	25
059	12	11	39	43	94	21
SSO						
300	0	0	0	0	1	0

Table 2 presents a summary of unaltered Discharge Monitoring Report (DMR) data for the period of July, 2007 to June, 2012 for the Lakewood WWTP outfall 3PE00004001, as well as current permit limits.

Table 3 summarizes the data for outfall 3PE00004001 by presenting the average and maximum PEQ values.

Table 4 presents results from acute toxicity tests conducted by EnviroScience Inc. *Pimephales promelas* (fathead minnows), and *Ceriodaphnia dubia* (water flea) were the test organisms.

The City reports SSO occurrences under Station 3PE00004300. The City reported one SSO occurrence over the data analysis period.

Assessment of Impact on Receiving Waters

The Division of Surface Water Watershed Assessment Unit Summary for the Lake Erie Central Basin Shoreline shows that the shoreline of the lake was only meeting full attainment at 25% of the sites monitored in 2002. Sources of impairment included both municipal point sources and CSOs. A Total Maximum Daily Load (TMDL) is scheduled to take place in 2016. This report can be found at the following Internet site: Lake Erie : <http://wwwapp.epa.ohio.gov/dsw/ir2012/leau002.html>

The Lakewood CSO outfalls 3PE00004052, 3PE00004053, and 3PE00004054 all discharge to the Rocky River. A TMDL was conducted on the Rocky River in 2001 and data shows that the mainstem from the East Branch of the Rocky River to Lake Erie is not in full attainment. The results of this TMDL, *Total Maximum Daily Loads for the Rocky River Basin, October 2001*, are available at the following Internet site: http://www.epa.state.oh.us/portals/35/tmdl/Rocky_final_usepa_101601_revision.pdf

Development of Water-Quality-Based Effluent Limits

Determining appropriate effluent concentrations is a multiple-step process in which parameters are identified as likely to be discharged by a facility, evaluated with respect to Ohio water quality criteria, and examined to determine the likelihood that the existing effluent could violate the calculated limits.

Parameter Selection

Effluent data for the Lakewood WWTP were used to determine what parameters to include in the WLA evaluation. The parameters discharged are identified by the data available to Ohio EPA – DMR data submitted by the permittee and compliance sampling data collected by Ohio EPA. The sources of effluent data used in this evaluation are as follows:

Self-monitoring data (DMR)	June 2007 through July 2012
EnviroScience bioassay	October 14, 2011

The effluent data were examined, and the following value was removed from the evaluation to give a more reliable PEQ: nitrate + nitrite value of 162 mg/L(9/13/11).

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. The average and maximum PEQ values are presented in Table 3.

The PEQ values are used according to Ohio rules to compare to applicable WQS and allowable WLA values for each pollutant evaluated. Initially, PEQ values are compared to the applicable average and maximum WQS. If both PEQ values are less than 25 percent of the applicable WQS, the pollutant does not have the reasonable potential to cause or contribute to exceedances of WQS, and no WLA is done for that parameter. If either PEQ_{avg} or PEQ_{max} is greater than 25 percent of the applicable WQS, a WLA is conducted to determine whether the parameter exhibits reasonable potential and needs to have a limit or if monitoring is required. See Table 8 for a summary of the screening results.

Wasteload Allocation

For those parameters that require a WLA, the results are based on the uses assigned to the receiving waterbody in OAC 3745-1. Dischargers are allocated pollutant loadings/concentrations based on the Ohio WQS (OAC 3745-1). Most pollutants are allocated by a mass-balance method because they do not degrade in the receiving water. Lakewood discharges directly to Lake Erie. WLAs for direct discharges to lakes are done using the following equation for average criteria: $WLA = (11 \times \text{Water Quality Criteria}) - (10 \times \text{Background Concentration})$. Allocations for maximum criteria are set equal to the Inside Mixing Zone Maximum (IMZM) values.

Allocations are developed using a percentage of stream design flow as specified in Table 5, and allocations cannot exceed the IMZM criteria.

Ohio's WQS implementation rules [OAC 3745-2-05(A)(2)(d)(iv)] required a phase out of mixing zones for bioaccumulative chemicals of concern (BCCs) as of November 15, 2010. This rule applied statewide. Mercury is a BCC. The mixing zone phase-out means that as of November 15, 2010 all dischargers requiring mercury

limits in their NPDES permit must meet WQS at the end-of-pipe, which are 1.3 ng/L (average) and 1700 ng/L (maximum) in the Lake Erie basin.

The data used in the WLA are listed in Tables 5 and 6. The WLA results to maintain all applicable criteria are presented in Table 7.

Whole Effluent Toxicity WLA

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 Lakewood WWTP, the WLA values are 1.0 TU_a and 11.0 TU_c .

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:

$$TU_a = \frac{100}{LC_{50}}$$

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

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}):

$$TU_c = \frac{100}{IC_{25}}$$

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):

$$TU_c = \frac{100}{\text{geometric mean of no observed (NOEC) and lowest observed concentration effect (LOEC)}}$$

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 7. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 3, and the PEL_{max} is compared to the PEQ_{max} . Based on the calculated percentage of the allocated value

$[(PEQ_{avg} \div PEL_{avg}) \times 100, \text{ or } (PEQ_{max} \div PEL_{max}) \times 100]$, the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 8.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 9 presents the final effluent limits and monitoring requirements proposed for Lakewood WWTP outfall 3PE00004001 and the basis for their recommendation.

Water Temperature, Flow Rate, COD, and TKN

Monitoring is proposed to continue for these parameters in order to assist in the evaluation of effluent quality and treatment plant performance in accordance with Ohio EPA guidance.

pH and E. Coli

Limits proposed for pH and *E. coli* are based on WQS (OAC 3745-1-07), and are a continuation of existing permit limits.

Oil and Grease

Limits proposed for oil and grease are based on WQS (OAC 3745-1-07). The data for oil and grease was analyzed and the 95th percentile for the data set was less than 5 mg/L. The monitoring frequency for oil & grease has been reduced from the current permit to once per two weeks based on best engineering judgment (BEJ).

CBOD₅, TSS, DO, and Ammonia

Limits proposed for CBOD₅, TSS, and DO are technology based treatment standards included in 40 CFR Part 133, Secondary Treatment Regulation. Secondary treatment is defined by the Best Practicable Waste Treatment Technology criteria, which are minimum standards required of all publicly owned treatment works. For a facility to meet secondary treatment standards, monitoring of ammonia-nitrogen is appropriate and is proposed.

Total Filterable Residue

Total Filterable Residue (TDS) was included in the last permit modification, however monitoring for this parameter was not required until 7/1/12. As stated in the Parameter Selection section of this factsheet, the DMR data analyzed in this permit renewal only extends through this date and thus no data for TDS was used in the development of PEQs. Therefore, monitoring at a continued frequency is proposed.

Phosphorous

Recent observances of harmful algal blooms in Lake Erie has led to the evaluation of phosphorus loading from several sources potentially contributing to the proliferation of the problem. There is an ongoing process, under the Great Lakes Water Quality Agreement, to further evaluate the causes of these harmful algal blooms and recommend courses of action. Currently, all major WWTPs in Ohio that discharge directly to Lake Erie have a monthly average concentration limit of 1.0 mg/L in accordance with OAC 3745-33-06(C).

While further studies and evaluations are being completed, Ohio EPA and the City of Lakewood are taking a proactive approach to reducing total phosphorus loading to Lake Erie. In addition to the current daily and monthly concentration and loading limits included in Part 1.A, the proposed permit also includes a seasonal average concentration limit of 0.7 mg/L total phosphorus. The permittee shall comply with the seasonal average concentration of 0.7 mg/L total phosphorus for the period March 1 through November 30. Beginning 24 months after the effective date of the proposed permit and annually thereafter, the seasonal average shall be calculated as the arithmetic mean of the daily concentrations of total phosphorus for the entire season. The calculated seasonal average shall be reported on the DMR as a single value in the month of December. During all months, the permittee must also comply with the permitted monthly and weekly concentration and loading limits of OAC 3745-33-06(C).

Cadmium, Total Recoverable Chromium, Dissolved Hexavalent Chromium, Free Cyanide, Lead, Nickel, Zinc, and Nitrate + Nitrite

The Ohio EPA risk assessment (Table 8) places cadmium, total recoverable chromium, hexavalent chromium, free cyanide, lead, and nickel in Group 2 and zinc and nitrate + nitrite in Group 3. This placement, as well as the data in Tables 2 and 3, support that these parameters do not have reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. The purpose of the monitoring is to maintain a current data base on the level of these contaminants in the plant effluent. This data will be used to assess reasonable potential at future permit renewals.

Copper

The Ohio EPA risk assessment (Table 8) places copper in Group 4. This parameter assignment, as well as the data in Table 2 and 3, indicate the reasonable potential to exceed WQS. Monitoring for Group 4 pollutants (where PEQ exceeds 50 percent of the WLA) is required by OAC Rule 3745-33-07(A)(2). For copper, the PEQ is below 75 percent of the WLA. The monitoring frequency for copper is proposed to continue at once per month.

Silver

The Ohio EPA risk assessment (Table 8) places silver in group 5, which recommends limits to protect water quality. Using the discretion of the Director allowed under OAC 3745-33-07(A)(5), monitoring for silver is proposed, rather than limits. Silver had only one (1) data point reported at or above the MDL; a lack of a sufficient amount of data at or above the MDL indicates the PEQs may not be representative of the actual levels in the plant effluent. 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 permittee shall use analytical procedures approved under 40 CFR 136 with MDLs less than or equal to those listed below to comply with the monitoring requirements for the following parameters at stations 3PE00004001 and 3PE00004601:

Parameter	MDL (µg/L)
Silver	0.5

Mercury

The Ohio EPA risk assessment (Table 8) places mercury in group 5. This placement as well as the data in Tables 2 and 3 indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. For this parameter, the PEQ is greater than 100 percent of the WLA. Pollutants that meet this requirement must have permit limits under OAC Rule 3745-33-07(A)(1).

To comply with mercury limits, the permittee has applied for coverage under the general mercury variance, Rule 3745-33-07(D)(10) of the OAC. Based on the results of low-level mercury monitoring, the permittee has determined that its wastewater treatment plant cannot meet the 30-day average WQBEL of 1.3 ng/L. However, the permittee believes that the plant will be able to achieve an annual average mercury effluent concentration of 12 ng/L. The variance application also demonstrated to the satisfaction of Ohio EPA that there is no readily apparent means of complying with the WQBEL without constructing prohibitively expensive end-of-pipe controls for mercury. Based on these factors, the permittee is eligible for coverage under the general mercury variance.

Ohio EPA has reviewed the mercury variance application and has determined that it meets the requirements of the OAC. Items Z, AA, AB and AC in Part II of the draft NPDES permit list the provisions of the mercury variance, and include the following requirements:

- A variance-based monthly average effluent limit of 23.0 ng/L, which was developed from sampling data submitted by the permittee;

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

Whole Effluent Toxicity Reasonable Potential

Annual acute toxicity monitoring and chronic toxicity monitoring with the determination of acute endpoints is proposed for the life of the permit for *Pimephales promelas* and *Ceriodaphnia dubia*. Evaluating the toxicity data presented in Table 4 under the provisions of 40 CFR Part 132, Appendix F, Procedure 6 does not show reasonable potential with respect to WET. While this indicates that the plant's effluent does not currently pose a toxicity problem, annual toxicity testing is proposed consistent with the minimum monitoring requirements at OAC 3754-33-07(B)(11). The proposed monitoring will adequately characterize toxicity in the plant's effluent.

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 (Station 581) and removal to sanitary landfill (Station 586).

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

Other Requirements

Schedule of Compliance

A schedule of compliance for developing a LTCP, evaluating control alternatives for CSOs and bypasses, incorporating a municipal separate storm sewer system characterization study, detection and elimination of illicit dischargers and annual progress reports for wet weather can be found in Part 1.C of the permit.

Sanitary Sewer Overflow Reporting

Provisions for reporting SSOs have been included in the proposed permit. These provisions include: the reporting of the system-wide number of SSO occurrences on Discharge Monitoring 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.

Any discharge that occurs in the locations listed in the table under Attachment A must be reported in accordance with Part I,B Station 300 and Part II, Item I of the permit. Newly discovered SSOs must also be reported under the same conditions.

Operator Certification

Operator certification requirements have been included in Part II, Item A of the permit in accordance with rules adopted in December 2006. These rules require the City of Lakewood to have a Class IV wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 3PE0004001 .

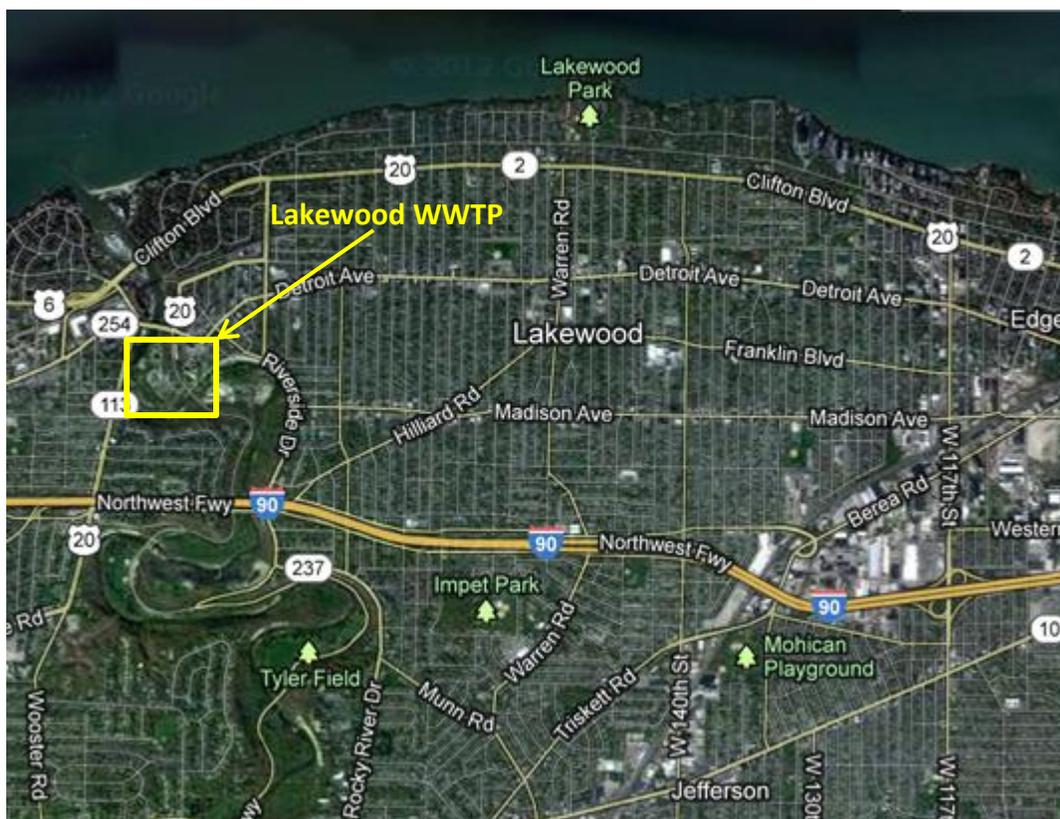
Operator of Record

In December 2006, OAC rule revisions became effective that affect the requirements for certified operators for sewage collection systems and treatment works regulated under NPDES permits. Part II, Item A of this NPDES permit is included to implement rule 3745-7-02 of the OAC. It requires the permittee to designate one or more operator of record to oversee the technical operation of the Lakewood WWTP.

Outfall Signage

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

Figure 1. Location of Lakewood WWTP



STORET = United States Environmental Protection Agency water quality Storage and Retrieval database

Table 2. Effluent Characterization Based on Self-Monitoring Data

Summary of current permit limits and unaltered Discharge Monitoring Report (DMR) data for the Lakewood WWTP outfalls 3PE00004001, 3PE00004002, 3PE00004052, 3PE00004053, 3PE00004054, 3PE00004055, 3PE00004056, 3PE00004057, 3PE00004058, 3PE00004059, 3PE00004300, 3PE00004581, 3PE00004586, and 3PE00004601. All values are based on annual records unless otherwise indicated. * = For minimum pH, 5th percentile shown in place of 50th percentile; ** = For dissolved oxygen, 5th percentile shown in place of 95th percentile; a = weekly average; CBOD5 = carbonaceous biochemical oxygen demand, TR = Total Recoverable, TKN = Total Kjeldahl Nitrogen.

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
Outfall 001								
Water Temperature	Annual	°C	Monitor		1827	18	24.5	7.54-25.5
Dissolved Oxygen	Summer	mg/L	Monitor		920	6.25	8	0.2-9
	Winter	mg/L	Monitor		905	7.3	8.8	0-9.7
Chemical Oxygen Demand	Annual	mg/L	Monitor		130	25	41	10-53
Total Suspended Solids	Annual	mg/L	20	30	1231	9	19	1-39
		kg/day	1363	2044	1231	206	871	19.2-5330
Oil and Grease, Total	Annual	mg/L	10	10	261	0	0	0-0
Ammonia	Summer	mg/L	Monitor		65	0.05	0.208	0.05-0.85
	Winter	mg/L	Monitor		65	0.05	0.51	0.05-0.75
TKN	Annual	mg/L	Monitor		128	0	2	0-3
Nitrate + Nitrite	Annual	mg/L	Monitor		63	20.7	28	6.66-162
Phosphorus	Annual	mg/L	1	1.5	514	0.76	1.17	0.1-1.48
		kg/day	68	102	514	16.3	50.4	4-190
Free Cyanide	Annual	mg/L	Monitor		21	0	0	0-0
Nickel TR	Annual	µg/L	Monitor		21	0	0	0-0
Silver TR	Annual	µg/L	Monitor		62	0	0	0-5
Zinc TR	Annual	µg/L	Monitor		21	20	32	12-35
Cadmium TR	Annual	µg/L	Monitor		21	0	0	0-0
Lead TR	Annual	µg/L	Monitor		21	0	0	0-0
Chromium TR	Annual	µg/L	Monitor		21	0	0	0-10
Copper TR	Annual	µg/L	Monitor		62	12	20	0-48

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
Hexavalent Chromium	Annual	µg/L	Monitor		21	0	0	0-0
E. coli	Summer	#/100 ml	126	284	484	16	355	1-6480
Flow Rate	Summer	MGD	Monitor		920	5.25	17.8	3.35-33.3
	Winter	MGD	Monitor		907	6.24	25	3.62-40.3
	Annual	MGD	Monitor		1827	5.71	22	3.35-40.3
Mercury, Total (Low Level)	Annual	ng/L	23	1700	60	7.4	34.4	1.4-84.9
		kg/day	0.00157	0.12	60	0.000239	0.00142	0.0000208-0.00169
pH, Maximum	Annual	S.U.	--	9	1827	7.3	7.6	6.6-8.6
pH, Minimum	Annual	S.U.	--	6.5	1827	7	7	6.5-7
CBOD5	Summer	mg/L	15	23	496	1.4	3.2	0.1-30
		kg/day	1022	1567	496	29.8	99.6	1.74-573
CBOD5	Winter	mg/L	15	23	481	1.7	4.6	0.1-7.7
		kg/day	1022	1567	481	42.5	264	1.83-1070
Outfall 002								
Total Suspended Solids	Annual	mg/L	Monitor		23	123	416	22-474
Flow Rate	Summer	MGD	Monitor		1	0.012	0.012	0.012-0.012
Flow Rate	Winter	MGD	Monitor		0	0	0	0-0
Flow Rate	Annual	MGD	Monitor		1	0.012	0.012	0.012-0.012
Overflow Occurrence	Annual	No./Month	Monitor		280	1	1	0-30
Overflow Volume	Annual	Million Gallons	Monitor		269	0.376	3.37	0-10.2
CBOD 5 day	Summer	mg/L	Monitor		13	42	129	4-152
CBOD 5 day	Winter	mg/L	Monitor		9	57	142	17-150
Bypass Occurrence, Number per month	Annual	No./Month	Monitor		1	1	1	1-1
Bypass Duration, Hours per month	Annual	Hr/Month	Monitor		1	2	2	2-2
Duration of Discharge	Annual	Hours	Monitor		248	4	16	1-52

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
Outfall 052								
Total Suspended Solids	Annual	mg/L	Monitor		19	250	837	45-976
Overflow Occurrence	Annual	No./Month	Monitor		361	1	1	1-1
Overflow Volume	Annual	Million Gallons	Monitor		360	0.139	2.02	0.001-6
CBOD 5 day	Summer	mg/L	Monitor		9	46	135	29-138
CBOD 5 day	Winter	mg/L	Monitor		10	57.5	196	22-200
Duration of Discharge	Annual	Hours	Monitor		360	5	18	1-24
Outfall 053								
Total Suspended Solids	Annual	mg/L	Monitor		18	174	726	37-1140
Overflow Occurrence	Annual	No./Month	Monitor		343	1	1	1-1
Overflow Volume	Annual	Million Gallons	Monitor		336	0.0395	0.269	0.001-1.03
CBOD 5 day	Summer	mg/L	Monitor		9	44	172	31-200
CBOD 5 day	Winter	mg/L	Monitor		9	130	178	68-183
Duration of Discharge	Annual	Hours	Monitor		344	4	20	1-24
Outfall 054								
Total Suspended Solids	Annual	mg/L	Monitor		12	99	427	20-538
Overflow Occurrence	Annual	No./Month	Monitor		123	1	1	1-1
Overflow Volume	Annual	Million Gallons	Monitor		123	0.012	0.192	0.001-0.773
CBOD 5 day	Summer	mg/L	Monitor		7	26	40.2	6-42
CBOD 5 day	Winter	mg/L	Monitor		5	20	29.6	11-30
Duration of Discharge	Annual	Hours	Monitor		123	2	13	1-24
Outfall 055								
Total Suspended Solids	Annual	mg/L	Monitor		16	146	462	20-480
Flow Rate	Summer	MGD	Monitor		4	0.0055	0.0145	0.004-0.016
Flow Rate	Winter	MGD	Monitor		0	0	0	0-0
Flow Rate	Annual	MGD	Monitor		4	0.0055	0.0145	0.004-0.016

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
Overflow Occurrence	Annual	No./Month	Monitor		309	1	1	1-1
Overflow Volume	Annual	Million Gallons	Monitor		309	0.017	0.41	0.001-9
CBOD 5 day	Summer	mg/L	Monitor		9	42	99.6	10-100
CBOD 5 day	Winter	mg/L	Monitor		7	53	94.5	16-99
Bypass Occurrence, Number per month	Annual	No./Month	Monitor		4	1	1	1-1
Bypass Duration, Hours per month	Annual	Hr/Month	Monitor		4	1	1	1-1
Duration of Discharge	Annual	Hours	Monitor		309	4	15.6	1-24
Outfall 056								
Total Suspended Solids	Annual	mg/L	Monitor		17	160	422	28-624
Flow Rate	Summer	MGD	Monitor		3	0.005	0.0311	0.004-0.034
Flow Rate	Winter	MGD	Monitor		0	0	0	0-0
Flow Rate	Annual	MGD	Monitor		3	0.005	0.0311	0.004-0.034
Overflow Occurrence	Annual	No./Month	Monitor		234	1	1	1-1
Overflow Volume	Annual	Million Gallons	Monitor		234	0.2	4.04	0.001-13.8
CBOD 5 day	Summer	mg/L	Monitor		9	42	142	0-150
CBOD 5 day	Winter	mg/L	Monitor		8	31	56.4	10-62
Bypass Occurrence, Number per month	Annual	No./Month	Monitor		3	1	1	1-1
Bypass Duration	Annual	Hr/Month	Monitor		3	1	1.9	1-2
Duration of Discharge	Annual	Hours	Monitor		234	3	12	1-19
Outfall 057								
Total Suspended Solids	Annual	mg/L	Monitor		16	213	781	97-1150
Overflow Occurrence	Annual	No./Month	Monitor		230	1	1	1-1
Overflow Volume	Annual	Million Gallons	Monitor		230	0.0205	0.277	0.001-1.11
CBOD 5 day	Summer	mg/L	Monitor		8	61	166	25-210

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
CBOD 5 day	Winter	mg/L	Monitor		8	118	151	28-160
Duration of Discharge	Annual	Hours	Monitor		230	3	14.6	1-24
Outfall 058								
Total Suspended Solids	Annual	mg/L	Monitor		16	160	534	78-544
Overflow Occurrence	Annual	No./Month	Monitor		221	1	1	1-1
Overflow Volume	Annual	Million Gallons	Monitor		222	0.05	0.595	0.001-2.31
CBOD 5 day	Summer	mg/L	Monitor		10	41	181	13-250
CBOD 5 day	Winter	mg/L	Monitor		6	45.5	163	26-190
Duration of Discharge	Annual	Hours	Monitor		221	3	15	1-24
Outfall 059								
Total Suspended Solids	Annual	mg/L	Monitor		18	299	475	30-534
Overflow Occurrence	Annual	No./Month	Monitor		220	1	1	1-1
Overflow Volume	Annual	Million Gallons	Monitor		225	0.022	0.995	0.001-3.26
CBOD 5 day	Summer	mg/L	Monitor		10	82	200	35-249
CBOD 5 day	Winter	mg/L	Monitor		8	115	488	27-611
Duration of Discharge	Annual	Hours	Monitor		225	3	14	1-22
Outfall 300								
Overflow Occurrence	Annual	No./Month	Monitor		7	0	0.7	0-1
Station 581								
pH	Annual	S.U.	Monitor		21	8	8.6	7.6-8.7
Ammonia (NH3) In Sludge	Annual	mg/kg	Monitor		21	6390	7580	3080-8890
Nitrogen Kjeldahl, Total In Sludge	Annual	mg/kg	Monitor		21	41500	49400	34600-52400
Phosphorus, Total In Sludge	Annual	mg/kg	Monitor		21	24900	29900	13600-30200
Arsenic, Total In Sludge	Annual	mg/kg	--	75	20	8.1	13.3	5.2-19.5

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
Cadmium, Total In Sludge	Annual	mg/kg	--	85	20	0	4.05	0-5
Copper, Total In Sludge	Annual	mg/kg	--	4300	20	466	504	366-518
Lead, Total In Sludge	Annual	mg/kg	--	840	20	188	224	125-229
Nickel, Total In Sludge	Annual	mg/kg	--	420	20	52.5	63.2	12-67
Zinc, Total In Sludge	Annual	mg/kg	--	7500	20	902	1040	795-1060
Selenium, Total In Sludge	Annual	mg/kg	--	100	20	3.25	5.02	2.1-5.4
Sludge Fee Weight	Annual	dry tons	Monitor		20	239	354	134-354
Sludge Weight	Annual	Dry Tons	Monitor		38	142	332	3.64-354
Sludge Solids, Percent Total	Annual	%	Monitor		18	19.7	20.5	18.2-20.6
Sludge Solids, Percent Volatile	Annual	%	Monitor		18	44.9	47	40.7-47.1
Mercury, Total In Sludge	Annual	mg/kg	--	57	20	1.6	2.72	0.88-3.1
Molybdenum In Sludge	Annual	mg/kg	--	75	20	0	0	0-0
Station 586								
Sludge Fee Weight	Annual	dry tons	Monitor		1	37.5	37.5	37.5-37.5
Station 601								
Water Temperature	Annual	C	Monitor		1827	18.3	24.2	7.5-35.2
Total Precipitation	Annual	Inches	Monitor		1827	0	0.617	0-3.14
Total Suspended Solids	Annual	mg/L	Monitor		1231	100	232	13-550
Nitrogen Kjeldahl, Total	Annual	mg/L	Monitor		146	21	104	0-211
Cyanide, Free	Annual	mg/L	Monitor		22	0	0	0-0
Nickel, Total Recoverable	Annual	µg/L	Monitor		21	0	0	0-20
Silver, Total Recoverable	Annual	µg/L	Monitor		62	0	6.95	0-20
Zinc, Total Recoverable	Annual	µg/L	Monitor		22	65.5	100	0-400
Cadmium, Total Recoverable	Annual	µg/L	Monitor		22	0	0	0-43.7
Lead, Total Recoverable	Annual	µg/L	Monitor		51	7.6	8.1	0-72
Chromium, Total	Annual	µg/L	Monitor		51	7.1	21	0-120

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
Recoverable								
Copper, Total Recoverable	Annual	µg/L	Monitor		78	42	95.5	15-220
Chromium, Dissolved Hexavalent	Annual	µg/L	Monitor		21	0	0	0-0
Mercury, Total (Low Level)	Annual	ng/L	Monitor		60	95.4	422	20.6-781
pH, Maximum	Annual	S.U.	Monitor		1827	7.8	8.2	6.9-14
pH, Minimum	Annual	S.U.	Monitor		1827	7.3	7.7	3.2-8.3
CBOD 5 day	Summer	mg/L	Monitor		496	82	140	19-473
CBOD 5 day	Winter	mg/L	Monitor		481	70	140	8-220

Table 3. Summary of Effluent Data for Lakewood WWTP

Parameter	Units	# of Samples	# > MDL	Average PEQ	Maximum PEQ
Ammonia-Summer	mg/L	45	45	0.68255	0.935
Ammonia-Winter	mg/L	31	31	0.36792	0.504
Cadmium	µg/L	21	0	--	--
Chromium	µg/L	21	1	18.98	26
Dissolved Hexavalent Chromium	µg/L	21	0	--	--
Copper	µg/L	62	60	17.197	21.201
Free Cyanide	mg/L	21	0	--	--
Lead	µg/L	21	0	--	--
Mercury	ng/L	60	60	24.672	38.991
Nickel	µg/L	21	0	--	--
Nitrate + Nitrite	mg/L	62	62	27.003	35.6
Phosphorus	mg/L	514	514	0.64824	0.888
Silver	µg/L	62	1	3.65	5
Total Kjeldahl Nitrogen	mg/L	128	56	1.6001	2.3849
Zinc	µg/L	21	21	31.202	41.74

Table 4. Summary of Acute Toxicity Test Results of the Lakewood WWTP Effluent

Test Date	<i>Ceriodaphnia dubia</i> percent affected and (cumulative percent affected)		<i>Pimephales promelas</i> percent affected and (cumulative percent affected)	
	24-hour	48-hour	24-hour	48-hour
	10/14/2011	0 (0)	0 (0)	0 (0)

Table 5. Instream Conditions and Discharger Flow

Parameter	Units	Season	Value	Basis
Stream Flows				
1Q10	cfs	annual	0	
7Q10	cfs	annual	0	
		summer	0	
		winter	0	
30Q10	cfs	summer	0	
		winter	0	
90Q10	cfs	annual	0	
Harmonic Mean	cfs	annual	0	
Mixing Assumption	%	average	--	
	%	maximum	--	
Hardness	mg/L	annual	119	STORET Station 300895
pH	S.U.	summer	0	
		winter	0	
Temperature	C	summer	0	
		winter	0	
City of Lakewood WWTP flow	cfs	annual	27.8	DSW
Background Water Quality				
Ammonia-Summer	mg/L		0	STORET ; n=18; 0<MDL; Station 300895; 50th percentile
Ammonia-Winter	mg/L		0	STORET; n=18; 0<MDL; Station 300895; 50th percentile
Cadmium	µg/L		0	STORET; n=19; 0<MDL; Station 300895; 50th percentile
Chromium	µg/L		0	STORET; n=18; 0<MDL; Station 300895; 50th percentile
Dissolved Hexavalent Chromium	µg/L		0	No representative data available.
Copper	µg/L		1	STORET; n=19; 4<MDL; Station 300895; 50th percentile
Free Cyanide	mg/L		0	No representative data available.
Lead	µg/L		0	STORET; n=19; 0<MDL; Station 300895; 50th percentile

Background Water Quality (continued)

Mercury	ng/L	0	No representative data available.
Nickel	µg/L	1	STORET; n=19; 5<MDL; Station 300895; 50th percentile
Nitrate + Nitrite	mg/L	0.91	STORET; n=18; 18<MDL; Station 300895; 50th percentile
Phosphorus	mg/L	0.06	BWQR; thru 1988; n=5820; 1769<MDL; Statewide 50th percentile
Silver	µg/L	0	No representative data available.
Total Kjeldahl Nitrogen.	mg/L	0.1	STORET; n=13; 8<MDL; Station 300895; 50th percentile
Zinc	µg/L	0	STORET; n=19; 0<MDL; Station 300895; 50th percentile

Table 6. Water Quality Criteria for Lake Erie

Parameter	Units	Wildlife	Outside Mixing Zone Criteria			Maximum Aquatic Life	Inside Mixing Zone Maximum
			Human Health	Average Agri-culture	Aquatic Life		
Ammonia-Summer	mg/L	--	--	--	0.8	--	--
Ammonia-Winter	mg/L	--	--	--	1.5	--	--
Cadmium	µg/L	--	730	50	2.8	5.5	11
Chromium	µg/L	--	14000	100	99	2100	4200
Dissolved Hexavalent Chromium	µg/L	--	14000	--	11	16	31
Copper	µg/L	--	64000	500	11	16	33
Free Cyanide	mg/L	--	48	--	0.0052	0.022	0.044
Lead	µg/L	--	--	100	8	150	310
Mercury	ng/L	1.3	3.1	10000	910	1700	3400
Nickel	µg/L	--	43000	200	60	540	1100
Nitrate + Nitrite	mg/L	--	--	100	--	--	--
Phosphorus	mg/L	--	--	--	--	--	--
Silver	µg/L	--	11000	--	1.3	2.2	4.3
Total Kjeldahl Nitrogen	mg/L	--	--	--	--	--	--
Zinc	µg/L	--	35000	25000	140	140	280

Table 7. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

Parameter	Units	Wildlife	Outside Mixing Zone Criteria				Maximum Aquatic Life	Inside Mixing Zone Maximum
			Human Health	Average Agriculture	Aquatic Life	Average		
Ammonia-Summer	mg/L	--	--	--	--	--	--	
Ammonia-Winter	mg/L	--	--	--	--	--	--	
Cadmium	µg/L	--	8030	550	31	--	11	
Chromium	µg/L	--	154000	1100	1089	--	4200	
Dissolved Hexavalent Chromium	µg/L	--	154000	--	121	--	31	
Copper	µg/L	--	703990	5490	111	--	33	
Free Cyanide	mg/L	--	528	--	0.057	--	0.044	
Lead	µg/L	--	--	1100	88	--	310	
Mercury	ng/L	1.3	3.1	10000	910	--	3400	
Nickel	µg/L	--	472990	2190	650	--	1100	
Nitrate + Nitrite	mg/L	--	--	1091	--	--	--	
Phosphorus	mg/L	--	--	--	--	--	--	
Silver	µg/L	--	121000	--	14	--	4.3	
Total Kjeldahl Nitrogen.	mg/L	--	--	--	--	--	--	
Zinc	µg/L	--	385000	275000	1540	--	280	

Table 8. Parameter Assessment

<i>Group 1:</i>	Due to a lack of criteria, the following parameters could not be evaluated at this time.		
	Phosphorus	TKN	
<i>Group 2:</i>	PEQ < 25 percent of WQS or all data below minimum detection limit. WLA not required. No limit recommended; monitoring optional.		
	Cadmium	Chromium	Dissolved Hexavalent Chromium
	Free Cyanide	Lead	Nickel
<i>Group 3:</i>	PEQ _{max} < 50 percent of maximum PEL and PEQ _{avg} < 50 percent of average PEL. No limit recommended; monitoring optional.		
	Nitrate + Nitrite	Zinc	
<i>Group 4:</i>	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.		
	Copper		
<i>Group 5:</i>	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

Parameter	Units	Period	Recommended Effluent Limits	
			Average	Maximum
Mercury	ng/L		1.3	3400
Silver	µg/L		--	4.3

*TKN = Total Kjeldahl Nitrogen, WLA = Wasteload Allocation, PEQ = Projected Effluent Quality, PEL = Preliminary Effluent Limits, WQS = Water Quality Standards

Table 9. Final Effluent limits, monitoring and basis for Lakewood WWTP outfall 3PE00004001

Parameter	Units	Effluent Limits				Basis ^b
		Concentration		Loading (kg/day)		
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	
Flow Rate	MGD	-----		Monitor-----	M ^c	
Water Temperature	°C	-----		Monitor-----	M ^c	
Dissolved Oxygen	mg/L	-----		Monitor-----	PD	
Total Suspended Solids	mg/L	20.0	30.0 ^d	1363	2044 ^d	PD
CBOD ₅ ^e	mg/L	15.0	23.0 ^d	1022	1567 ^d	PD
Phosphorus	mg/L	1.0	1.5 ^d	68.0	102 ^d	PT
Phosphorus ^f	mg/L	----- Seasonal Calculated Loading of 0.7 -----				BEJ
Chemical Oxygen Demand	mg/L	-----		Monitor-----	PD	
Total Filterable Residue	mg/L	-----		Monitor-----	BEJ	
pH	S.U.	-----		6.5 to 9.0-----	WQS	
Oil and Grease	mg/L	----- Not to exceed 10 at any time -----				WQS, BEJ
<i>E. coli</i> (Summer Only)	#/100 mL	126	284 ^d	--	--	WQS
Mercury	ng/L	23.0	1700	0.00157	0.12	VAR
Silver	µg/L	-----		Monitor-----	RP, BEJ	
Copper	µg/L	-----		Monitor-----	M ^c , RP	
Total Kjeldahl Nitrogen	mg/L	-----		Monitor-----	BEJ	
Ammonia	mg/L	-----		Monitor-----	BEJ	
Nitrite + Nitrate	mg/L	-----		Monitor-----	M ^c	
Free Cyanide	mg/L	-----		Monitor-----	M ^c	
Nickel	µg/L	-----		Monitor-----	M ^c	
Zinc	µg/L	-----		Monitor-----	M ^c	
Cadmium	µg/L	-----		Monitor-----	M ^c	
Lead	µg/L	-----		Monitor-----	M ^c	
Chromium	µg/L	-----		Monitor-----	M ^c	
Dissolved Hexavalent Chromium	µg/L	-----		Monitor-----	M ^c	
Whole Effluent Toxicity						
Acute Toxicity	TU _a	-----		Monitor-----	WET	
Chronic Toxicity	TU _c	-----		Monitor-----	WET	

^a Effluent loadings based on average design discharge flow of 18 MGD.

^b **Basis Definitions**

- BEJ Best Engineering Judgment
- M BEJ of Permit Guidance 1: Monitoring Frequency Requirements for Sanitary discharges
- PD Plant Design Criteria
- PT Phosphorus treatment required under OAC 3745-33-06(C)
- RP Reasonable Potential for requiring water quality-based effluent limits and monitoring

	requirements in NPDES permits [OAC 3745-33-07(A)]
VAR	Mercury variance-based limits [OAC 3745-33-07(D)(10)]
WLA	Wasteload Allocation procedures (OAC 3745-2)
WQS	Ohio Water Quality Standards (OAC 3745-1-07)
WET	Minimum testing requirements for whole effluent toxicity [OAC 3745-33-07(B)(11)]
^c	Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance
^d	Weekly average limit
^e	Five-day carbonaceous biochemical oxygen demand
^f	Loading calculations are described in Part II, Item AF of the permit.

Attachment A: SSO Outfall Investigation and Listing (Updated 2/28/14)

This attachment comprises a listing of outfalls to Lake Erie (LEWS) or the Rocky River (RRES) which have the potential to contain untreated discharges. Based on the permittee's system investigation under the existing U.S. EPA Administrative Order on Consent (AOC), these potential sources of untreated flow have been located and documented. The probability of any release of flow during dry weather or wet weather has not yet been determined. The list includes issues that are contained in the AOC as well as issues previously reported to the Ohio EPA. The status of the Early Action Projects contained in the AOC is indicated on the list.

The permittee shall report any overflows that occur at the locations in the following table under the 300 station in the permit. Under Part II, Item I.(2)(b), the City is required to submit an annual SSO report. In this annual report, a total of SSO occurrences listed by individual outfall shall be included. Any SSO occurrence that takes place at any of the locations listed in the following table shall be included in this report.

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Outfall	MH Designation	Street/Intersection	Describe	Identified in Previous NPDES Application?
LEWS 1035	059-14	Thoreau Avenue at Clifton Blvd.	Combined sewer flow drops through offset invert plate to combined sewer on Clifton Blvd.; wet weather flow to bypasses invert plate to storm sewer.	-
	059-30	City Hall to Thoreau Avenue	Flow could overflow longitudinal weir in common MH.	-
	No MH #	Thoreau Avenue immediately south of NS Railroad crossing.	Flow from south on Thoreau could overflow weir to storm sewer.	Y
LEWS 1040	No MH #	Thoreau Avenue immediately south of NS Railroad crossing.	Old sewer from behind Garfield Middle School with potential lateral connections could overflow weir to storm sewer at Thoreau Avenue.	Y
	059A-36	Detroit Avenue at Robinwood Avenue	Diversion plate directs dry weather flow to sanitary, wet weather flow to storm.	Y
	059A-45	Detroit Avenue at Parkwood Road	Overflow pipe from MH to storm sewer on Detroit Avenue.	Y
	059A-46A	Detroit Avenue at Wyandotte Avenue	Flow could overflow weir to storm sewer.	Y
	059A-47	Detroit Avenue at Elbur Avenue	Pipe from MH to storm sewer could overflow.	Y
	059A-50	Detroit Avenue east of Elbur Avenue	Pipe from MH to storm sewer could overflow.	-
	SurveyPoint_1036	Cedarwood and Blossom Park	Combined sewer on Cedarwood could overflow open pipe into connection to storm sewer on Blossom Park.	-
	SurveyPoint_897	Grace Avenue at Detroit Avenue	Combined flow could bypass leaping weir during wet weather to storm sewer on Detroit.	-
	SurveyPoint_1911	Clarence Avenue at Detroit Avenue	Two outlets from common MH; one to combined sewer, one to storm sewer.	-
	059B-SAN	Wilbert Road at Cliff Drive	Flow could overflow weir to storm sewer.	-

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Outfall	MH Designation	Street/Intersection	Describe	Identified in Previous NPDES Application?
LEWS 1055/ LEWS 1060 ⁽²⁾	059A-76	Madison Avenue at Elbur Avenue	Flow could overtop weir to storm sewer.	Y
	059A-78	Madison Avenue at Lewis Avenue	Flow could overtop weir to storm sewer.	Y
	059B-15/057-37	Clifton Blvd. in front of Emerson School	Suspended sewer pipe in storm MH has broken crown that could allow overflow during peak flow.	-
	059B-06	Edgewater Drive west of Wilbert Road	Flow could overtop weir to outfall.	-
LEWS 1065	Undefined	North end of Homewood Drive (1032 Homewood)	Flow could overtop weir to outfall.	Y
LEWS 1110	058-14	Merle Avenue near Chase Avenue	Restaurant on Detroit Avenue has lateral connected to storm sewer on Merle Avenue, but invert plate open to sanitary.	-
LEWS 1135	Upstream of 056-36	Belle Avenue at Clifton Blvd.	Flow could overtop weir in MH to storm sewer on Belle Avenue.	Y

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Outfall	MH Designation	Street/Intersection	Describe	Identified in Previous NPDES Application?
LEWS 1140	056-20	Andrews Avenue at Clifton Blvd.	Crown of combined sewer removed, could allow overflow into storm sewer.	Y
	056-49	Detroit Avenue at Mars Avenue	Mars Avenue combined sewer connects to storm sewer on Detroit Avenue.	-
	056-61	Hilliard Road at Victoria Avenue	Combined sewer from Victoria Avenue south of Hilliard Road connected to storm sewer.	Y
	056-B	Rosalie Avenue at Edgewater Drive	Flow could overflow weir to storm sewer.	Y
		Cook Avenue at railroad	Cook is combined from Detroit to the railroad where it become O/U with the combined flow going into the sanitary.	-
	MH south of 056-50	Detroit Avenue at Elmwood Avenue	Combined sewer from Elmwood Avenue connects to storm sewer on Detroit Avenue.	-
	056-42	1381 Andrews	Relief port between sanitary and storm.	-
		1347 Andrews	Relief port between sanitary and storm.	-
		1307 Andrews	Relief port between sanitary and storm.	-
		1279 Andrews	Relief port between sanitary and storm.	-
		1241 Andrews	Relief port between sanitary and storm.	-
	1201 Andrews	Relief port between sanitary and storm.	-	
	1171 Andrews	Relief port between sanitary and storm.	-	
LEWS 1180	002-188	Clifton and Lakeland	Flow could overflow longitudinal wier in common MH.	-

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Outfall	MH Designation	Street/Intersection	Describe	Identified in Previous NPDES Application?
LEWS 1195	002-184	Clifton Blvd. at Brockley Avenue	Storm sewer passes through common MH on a shelf. Storm sewer could overflow weir into combined sewer or combined sewer could backup into storm sewer.	-
	002-216	Lake Avenue at Summit Avenue	Lake Avenue combined sewer appears to connect to storm sewer on Summit Avenue. Need to confirm if 1) Lake Avenue sewer is combined, 2) if it connects to storm sewer (blind) south of this MH.	Y
	002-244	Summit Avenue at Edgewater Drive	Overflow pipe from interceptor MH to storm sewer. Pipe is approx 7 feet above invert. Not addressed at this time since staff gage indicates potential activation.	-
LEWS 1210	002-023	1606 Arthur	Relief port between sanitary and storm, appears to be blocked.	-
	002-242	Forest Cliff Drive at interceptor	Flow could overflow weir to storm sewer.	-
	002-240	Erie Cliff Drive at interceptor	Weir in a common MH could allow overflow to storm outfall.	-
LEWS 1215	002-213	Lake Avenue at Brockley Avenue	Overflow 3.4 feet above invert. Could discharge north to unknown location.	-
	002-238	End of Maple Cliff Drive	Flow could overflow weir in MH.	-
LEWS 1285	002-206	Lake Avenue at extension of Granger Avenue	Flow could overflow weir to MH 002-232.	Y
	002-232	Edgewater Dr. at extension of sewer from Granger Avenue	Flow could overflow weir to storm sewer.	-
	002-193	Clifton Blvd. at Granger Avenue	Piped overflow from combined sewer on the south side of Clifton Blvd. is connected to combined sewer on north side of Clifton Blvd.	-

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Outfall	MH Designation	Street/Intersection	Describe	Identified in Previous NPDES Application?	
LEWS 1295	002-197	Webb Road at Lake Avenue	Flow could overflow weir in MH to storm sewer on Webb Road.	-	
		17822 Lake Avenue	Relief port between sanitary and storm.	-	
		17864 Lake Avenue	Relief port between sanitary and storm.	-	
	002-107	17850 Lake Avenue	Relief port between sanitary and storm.	-	
		17834 Lake Avenue	Relief port between sanitary and storm.	-	
	002-103	17878 Lake Avenue at West Forest	Invert plate has large hole in it.	-	
		17891 Lake Avenue	Relief port between sanitary and storm.	-	
		1334 Nelson Court	Relief port between sanitary and storm.	-	
		1325 Granger	Relief port between sanitary and storm.	-	
		Survey Point 3994	Relief port between sanitary and storm.	-	
		002-159	Ethel and Detroit	Relief port between sanitary and storm- not sure how this one work since sanitary and storm are side by side at this location.	-
		002-149	Northwood, 1st MH west of Granger	Relief port between sanitary and storm, appears to be blocked.	-
		002-167	Clifton Blvd. at Webb Road	Webb Road sewer passes over combined sewer trough in MH 002-167 to storm sewer at MH 002-166. Clifton Blvd. flow could overflow weir to storm sewer at 002-166.	-
		002-169	Webb Road at Clifton Blvd.	Outlet from MH 002-169 connects to storm sewer on Webb Road.	Y

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Outfall	MH Designation	Street/Intersection	Describe	Identified in Previous NPDES Application?
RRS 1145	002-251	West Clifton Blvd. at Cannon Avenue	Weir wall in common manhole.	-
	002-252	West Clifton Blvd. south of NS Railroad underpass	Sewer has crown missing in MH.	-
	002-253	West Clifton Blvd. north of NS Railroad underpass	Possible overflow either C>ST or ST>C, but weir wall is very high. Activation doubtful.	Y
	002-125	17809 Northwood	Relief port between sanitary and storm, appears to be blocked.	-
	002-150	17415 Cannon	Relief port between sanitary and storm, appears to be blocked.	-
	002-264	West Clifton and Clifton	Flow could overflow weir to sanitary sewer.	-
	002-265	West Clifton and Clifton	Flow could overflow weir.	-
	Survey Point 4066	West Clifton and Arlington	Flow could overflow weir.	-
	002-092	18100 Sloane Avenue	Relief port between sanitary and storm.	-
	002-26.1	Detroit Avenue at Clifton Place	Two outlets from common MH; one to combined sewer, one to storm sewer.	-
	002-29.1	Detroit Avenue at Rockway Avenue	Two outlets from common MH; one to combined sewer, one to storm sewer.	-
	002-32.1	Detroit Avenue at Larchmont Avenue	Two outlets from common MH; one to combined sewer, one to storm sewer.	-
	002-39.1	Detroit Avenue at Wagar Avenue	Two outlets from common MH; one to combined sewer, one to storm sewer.	-
	002-009	1664 Cordova (near Madison)	Relief port between sanitary and storm.	-
	Survey Point 3683	1468 Cordova (south of Winton)	Relief port between sanitary and storm.	-
002-006	1564 Spring Garden	Relief port between sanitary and storm, appears to be blocked.	-	
002-010	1669 Winton	Relief port between sanitary and storm, appears to be blocked.	-	
002-258	Clifton Blvd. at West Clifton Blvd.	Flow in common manhole could overflow weir into storm sewer.	Y	

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Outfall	MH Designation	Street/Intersection	Describe	Identified in Previous NPDES Application?
RRES 1160	052-90	Olive Avenue at Hilliard Road	Underflow from combined sewer drops into sanitary sewer, upper pipe connects to storm sewer on Madison Avenue.	Y

Notes:

(1) All issues here represent only potential flows as understood under current information, and which are being evaluated through ongoing investigation, system modeling and repair work.

(2) Outfalls LEWS 1055 and LEWS 1060 are two outfall pipes connected to the same main sewer line

Legend:

	Scheduled Early Action Projects included in US EPA Administrative Order on Consent (AOC)
	Completed Early Action Projects included in US EPA AOC
	Additional Early Action Projects to be addressed in 2014 (not in AOC)