

National Pollutant Discharge Elimination System (NPDES) Permit Program

F A C T S H E E T

Regarding an NPDES Permit to Discharge to Waters of the State of Ohio
for North Royalton "A" Wastewater Treatment Plant (WWTP)

Public Notice No.: 14-05-070
Public Notice Date: May 28, 2014
Comment Period Ends: June 29, 2014

Ohio EPA Permit No.: 3PD00030*KD
Application No.: OH0026794

Name and Address of Applicant:

City of North Royalton
13834 Ridge Road
North Royalton, OH 44133

Name and Address of Facility Where
Discharge Occurs:

North Royalton "A" Wastewater Treatment Plant
11675 Royalton Road
North Royalton, OH 44133
Cuyahoga County

Receiving Water: North Royalton "A" Tributary

Subsequent
Stream Network: East Branch Rocky River, Rocky River,
Lake Erie

Introduction

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

This fact sheet is prepared in order to document the technical basis and risk management decisions that are considered in the determination of water quality based NPDES permit effluent limitations. The technical basis for the fact sheet may consist of evaluations of promulgated effluent guidelines, existing effluent quality, instream biological, chemical and physical conditions, and the relative risk of alternative effluent limitations. This fact sheet details the discretionary decision-making process empowered to the Director by the Clean Water Act (CWA) and Ohio Water Pollution Control Law, Chapter 6111 of the Ohio Revised Code (ORC). 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,

Fact Sheet for NPDES Permit Renewal, North Royalton "A" WWTP, 2014

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 wasteload allocation 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

Permit limits and monitoring requirements will remain the same as in the existing permit, with the following proposed changes.

The monthly average limit for mercury will be more restrictive in accordance with the permittee's mercury variance.

Zinc monitoring is being reduced from a frequency of monthly to quarterly.

New monitoring is proposed for total filterable residue (dissolved solids) for the purpose of gathering more data to determine if limits are necessary.

Based on calculations showing reasonable potential, quarterly whole effluent toxicity (WET) monitoring of *Ceriodaphnia dubia* is proposed for the first 27 months of the permit with semi-annual monitoring thereafter and limits that go into effect 51 months after the permit effective date. Annual monitoring is proposed to continue for *Pimephales promelas*.

Final effluent limits are proposed for *Escherichia coli*. New WQS for *E. coli* became effective in March 2010.

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; WET testing; 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 Erm Gomes, erm.gomes@epa.ohio.gov, (330) 963-1196, or Sara Hise, sara.hise@epa.ohio.gov, (614) 644-4824.

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 Ohio Administrative Code (OAC) Rule 3745-33-07(D). The permittee shall submit this application to the above address no later than 30 days after the Public Notice Date.

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

Location of Discharge/Receiving Water Use Classification

North Royalton “A” WWTP discharges to North Royalton “A” Tributary at river mile (RM) 0.5. Figure 1 shows the approximate location of the facility.

The North Royalton “A” Tributary is described by Ohio EPA River Code: 13-103, U.S. EPA River Reach #: 04110001070020, County: Cuyahoga, Ecoregion: Erie/Ontario Lake Plain. The North Royalton “A” Tributary is designated for the following uses under Ohio’s WQS (OAC 3745-1-20): Warmwater Habitat (WWH), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), and Class B Primary Contact Recreation (PCR).

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 water quality standards 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 can not meet the CWA goals because of human-caused conditions that can not 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 (PCR) and wading only (Secondary Contact - generally waters too shallow for swimming or canoeing).

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

Facility Description

The North Royalton “A” WWTP is a tertiary treatment plant with an average daily design flow of 3.3 million gallons per day (MGD). Wet stream processes are influent pumping, bar screens, grit removal, primary settling/clarification and scum removal, conventional activated sludge aeration, phosphorus removal by ferrous chloride addition, secondary clarification, sand filtration, and ultraviolet disinfection.

Solid stream processes include aerobic digestion, and mechanical dewatering using a belt filter press. Sludge is disposed in a municipal solid waste landfill or transferred to another NPDES permit holder.

The North Royalton collection system is 100 percent separate sanitary sewers serving approximately 21,000 persons in North Royalton and approximately 600 people in Strongsville.

The City does not implement an Ohio EPA-approved industrial pretreatment program at the “A” plant. No significant industrial users discharge to the treatment plant.

Description of Existing Discharge

The City reports SSO occurrences under station 300 in its NPDES permit. The City reported four SSOs in 2011, one in 2012, and two in 2013. The infiltration/inflow rate is estimated to be 0.438 MGD.

Table 1 presents chemical specific data collected by Ohio EPA.

Table 2 presents a summary of unaltered discharge monitoring report (DMR) data for outfall 3PD00030001. Data are presented for the period March 2009 through February 2014, and current permit limits are provided for comparison.

Table 3 summarizes the chemical specific data for outfall 001 by presenting the average and maximum PEQ values.

Table 4 summarizes the results of WET tests of the final effluent.

Assessment of Impact on Receiving Waters

A Total Maximum Daily Load (TMDL) study of the Rocky River Basin conducted by Ohio EPA (October 2001) did not include any recommendations for the North Royalton A WWTP.

The draft 2014 *Ohio Integrated Water Quality Monitoring and Assessment Report* lists the East Branch Rocky River as impaired for human health and aquatic life. The report is available for viewing at <http://epa.ohio.gov/dsw/tmdl/OhioIntegratedReport.aspx>.

Intensive monitoring is scheduled to take place in 2014. The TMDL study report to address any impairment identified will be available in the future at <http://www.epa.state.oh.us/dsw/tmdl/BlackRockyRivers.aspx>.

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 North Royalton “A” 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)

March 2009 through February 2014

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 2.

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 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 water quality standards (OAC 3745-1). Most pollutants are allocated by a mass-balance method because they do not degrade in the receiving water. Wasteload allocations using this method are done using the following general equation: Discharger WLA = (downstream flow x WQS) - (upstream flow x background concentration). Discharger WLAs are divided by the discharge flow so that the allocations are expressed as concentrations.

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

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

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

Ohio’s WQS implementation rules [OAC 3745-2-05(A)(2)(d)(iv)] required a phase out of mixing zones for bioaccumulative chemicals of concern (BCCs) as of November 15, 2010. This rule applied statewide. Mercury is a BCC. The mixing zone phase-out means that as of November 15, 2010 all dischargers requiring mercury limits in their NPDES permit must meet water quality standards 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 2, 4, and 5. The WLA results to maintain all applicable criteria are presented in Table 6. The current ammonia limits have been evaluated using the WLA procedures and are protective of WQS for ammonia toxicity.

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 North Royalton WWTP, the WLA values are 0.3 TU_a and 1.0 TU_c.

The chronic toxicity unit (TU_c) is defined as 100 divided by the estimate of the effluent concentration which causes a 25% reduction in growth or reproduction of test organisms (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% chance of causing death to aquatic life (LC_{50}) for the most sensitive test species:

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

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

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

<u>Dilution Ratio</u> <u>(downstream flow to discharger flow)</u>	<u>Wasteload Allocation</u> <u>(percent effects in 100% effluent)</u>
up to 2 to 1	30
greater than 2 to 1 but less than 2.7 to 1	40
2.7 to 1 to 3.3 to 1	50

The acute wasteload allocation for North Royalton “A” WWTP is 30 percent mortality in 100 percent effluent based on the dilution ratio of 1.0 to 1.

Reasonable Potential/ Effluent Limits/Hazard Management Decisions

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the WQS must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a WQS or do not require a WLA based on the initial screening are assigned to either group 1 or 2. For the allocated parameters, the preliminary effluent limits (PEL) based on the most restrictive average and maximum WLAs are selected from Table 6. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 2, and the PEL_{max} is compared to the PEQ_{max} . Based on the calculated percentage of the allocated value [$(PEQ_{avg} \div PEL_{avg}) \times 100$, or $(PEQ_{max} \div PEL_{max}) \times 100$], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 7.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 8 presents the final effluent limits and monitoring requirements proposed for North Royalton “A” WWTP outfall 3PD00030001 and the basis for their recommendation.

The limits proposed for dissolved oxygen, total suspended solids, ammonia-nitrogen and 5-day carbonaceous biochemical oxygen demand ($CBOD_5$) are all based on plant design criteria. These limits are protective of WQS.

Limits proposed for oil and grease, pH, and *E. coli* are based on WQS (OAC 3745-1-07). Because the receiving water is only 0.5 RM from the East Branch Rocky River, *E. coli* standards are based on the classification of that stream, which is Class A PCR.

Phosphorus is limited based on provisions of OAC 3745-33-06(C).

Monthly monitoring for nitrate + nitrite and total Kjeldahl nitrogen is proposed to continue based on best engineering judgment. The purpose of the monitoring is to maintain a nutrient data set for use in the future TMDL study.

The Ohio EPA risk assessment (Table 7) places copper in group 5. This placement, as well as the data in Tables 1 and 2, indicate that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. For these parameters, the PEQ is between 75 and 100 percent of the WLA. Pollutants that meet this requirement must have permit limits under OAC 3745-33-07(A)(1). Although the current WLA would allow slightly higher limits for the facility, anti-backsliding provisions in the OAC prevent the imposition of less stringent limits than those in the existing permit unless specific conditions have been satisfied. In the case of the North Royalton "A" WWTP, none of those conditions have been satisfied, so the existing limits are proposed to continue.

Ohio EPA risk assessment (Table 7) places total filterable residue (dissolved solids) in group 4. This placement, as well as the data in Tables 1 and 2, 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).

Ohio EPA risk assessment (Table 7) places Cadmium, Chromium, Dissolved Hexavalent Chromium, Lead, Nickel, Nitrate+Nitrite, Strontium, and Zinc in groups 2 and 3. This placement as well as the data in Tables 1 and 2 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 continue to document that these pollutants continue to remain at low levels.

Mercury Reasonable Potential and Mercury Variance

The Ohio EPA risk assessment (Table 7) places mercury in group 5. This placement, as well as the data in Tables 1, 2 and 4, indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality.

To comply with mercury limits, the permittee originally applied for coverage under the general mercury variance, Rule 3745-33-07(D)(10) of the OAC, on June 5, 2006. Based on the results of low-level mercury monitoring, the permittee determined that its wastewater treatment plant could not meet the 30-day average WQBEL of 1.3 nanograms per liter (ng/L). However, the permittee believed that it could 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 was granted coverage under the general mercury variance.

Ohio EPA has reviewed the permittee's request for renewal of the mercury variance and has determined that it meets the requirements Rule 3745-33-07(D)(8) of the OAC. Items W, X, and Y in Part II of the draft NPDES permit list the provisions of the mercury variance, and includes the following requirements:

- A variance-based monthly average effluent limit of 2.4 ng/L, which was developed from sampling data submitted by the permittee;
- A requirement that the permittee continue to make reasonable progress to meet the WQBEL 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 WQBEL for mercury has not been achieved.

Whole Effluent Toxicity Reasonable Potential

Evaluating the acute and chronic toxicity results in Table 3 under the provisions of 40 CFR Part 132, Appendix F, Procedure 6, gives a chronic PEQ of 3.6 TU_c, using a coefficient of variation of 0.6. Reasonable potential for toxicity is demonstrated, since this value exceeds the WLA value of 1.0 TU_c. Consistent with Procedure 6 and OAC 3745-33-07(B), a monthly average limit of 1.0 TU_c and a daily maximum limit of 1.0 TU_a are proposed. It is proposed that the final effluent limits for toxicity become effective 51 months from the effective date of the permit. Quarterly monitoring for the first 27 months of the permit is proposed in order to collect an adequate sample set. Semi-annual monitoring with a trigger to conduct a toxicity reduction evaluation is proposed thereafter. The permittee may submit an application for a permit modification to remove the limits and return to annual sampling if it is shown that reasonable potential for toxicity does not exist after the first 27 months of quarterly sampling.

Sludge

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

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

Other Requirements

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

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 North Royalton “A” WWTP to have a Class III wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 001.

Operator of Record

In December 2006, 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 OAC 3745-7-02. It requires the permittee to designate one or more operator of record to oversee the technical operation of the treatment works.

Storm Water Compliance

Parts IV, V, and VI have been included with the draft permit in order to ensure that any storm water flows from the facility site are properly regulated and managed. As an alternative to complying with Parts IV, V, and VI, the North Royalton "A" WWTP may seek permit coverage under the general permit for industrial stormwater (permit # OHR000005) or submit a "No Exposure Certification." Parts IV, V, and VI will be removed from the final permit if: 1) the North Royalton "A" WWTP submits a Notice of Intent (NOI) for coverage under the general permit for industrial stormwater or submits a No Exposure Certification, 2) Ohio EPA determines that the facility is eligible for coverage under the general permit or meets the requirements for a No Exposure Certification, and 3) the determination by Ohio EPA can be made prior to the issuance of the final permit.

Parts IV, V, and VI have been updated to make individual permits consistent with Ohio EPA's Industrial Storm Water General Permit.

Outfall Signage

Part II of the permit includes requirements for the permittee to maintain a sign at each outfall to the North Royalton "A" Tributary providing information about the discharge. Signage at outfalls is required pursuant to OAC 3745-33-08(A).

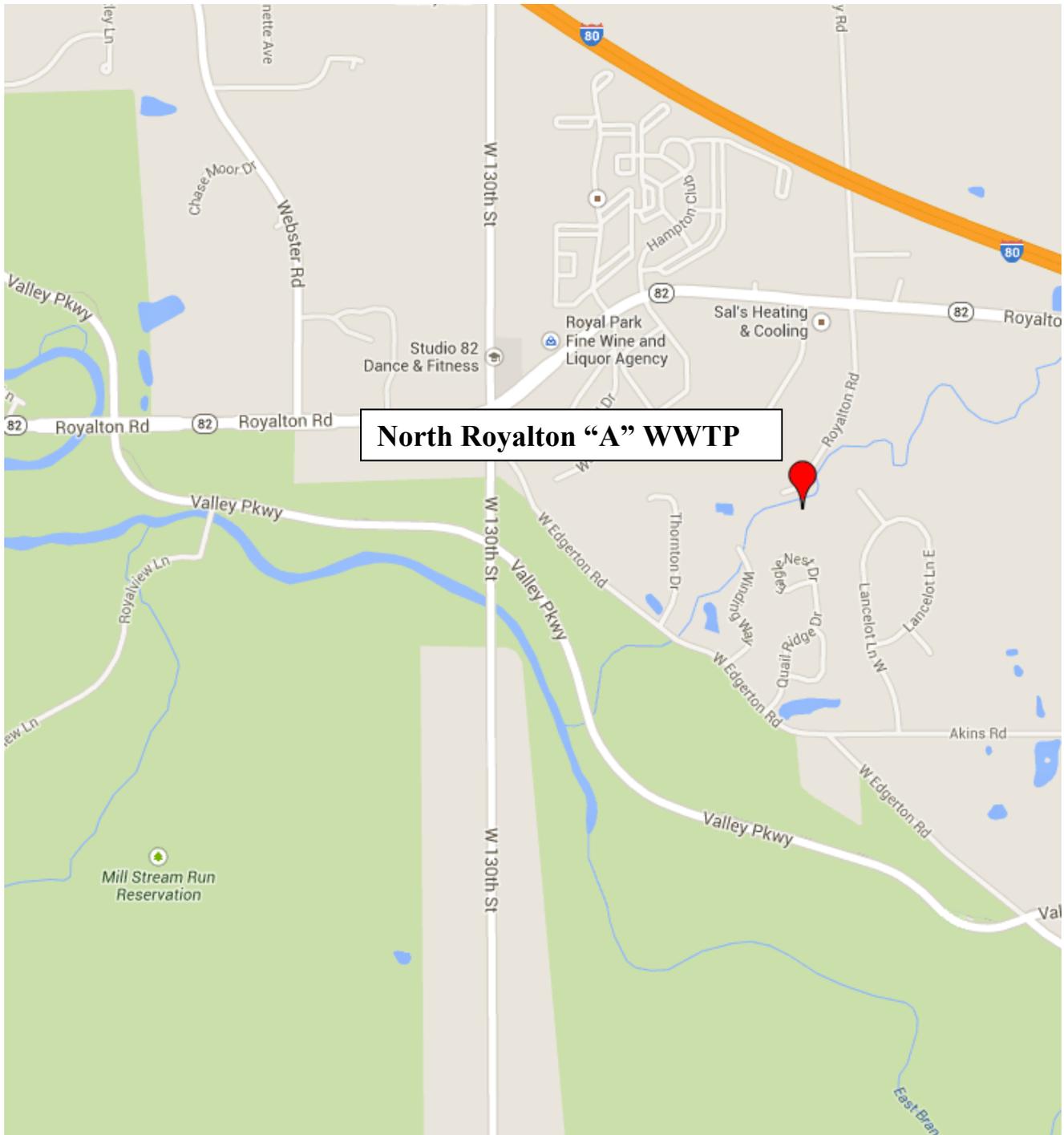


Figure 1. Location of North Royalton "A" wastewater treatment plant

Table 1. Effluent Characterization Using Self-Monitoring Data

Summary of current permit limits and unaltered discharge monitoring report data for North Royalton “A” WWTP outfall 3PD00030001 (March 2009 – February 2014). 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.

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50th	95th	
Water Temperature	Annual	°C	Monitor		1826	17.3	22.9	9.1-24.4
Dissolved Oxygen	Summer	mg/L	7.0 Minimum		610	8.5	8	7.1-11.2
Dissolved Oxygen	Winter	mg/L	5.0 Minimum		451	9.5	8.85	8.2-11
Total Suspended Solids	Summer	mg/L	15	23	265	0	2.4	0-14.5
Total Suspended Solids	Winter	mg/L	20	30	193	0	1.94	0-50
Oil and Grease	Annual	mg/L	10 maximum		60	0	3.829	0-10
Ammonia	Summer	mg/L	0.8	1.2	265	0	0.206	0-1.68
Ammonia	Winter	mg/L	2.9	4.4	195	0	0.072	0-3.5
Nitrite + Nitrate	Annual	mg/L	Monitor		60	22.65	28.43	10.3-32.4
Phosphorus	Annual	mg/L	1	1.5	513	0.553	0.969	0.1-1.405
Nickel	Annual	µg/L	Monitor		20	0	1.095	0-21.9
Zinc	Annual	µg/L	Monitor		60	26.6	36.43	0-57.5
Cadmium	Annual	µg/L	Monitor		20	0	0	0-0
Lead	Annual	µg/L	Monitor		20	0	0	0-0
Chromium	Annual	µg/L	Monitor		20	0	0	0-0
Copper	Annual	µg/L	17	26	65	10.3	16.36	0-24.3
Chromium, Dissolved Hexavalent	Annual	µg/L	Monitor		20	0	0	0-0
Fecal Coliform	Annual	#/100mL	1000	2000	397	2	152	1-16000
Flow Rate	Annual	MGD	Monitor		1826	1.665	2.9488	0.67-8.09
Mercury	Annual	ng/L	2.8	1700	72	1.07	2.85	0.37-8.4
pH, Maximum	Annual	S.U.	9.0 max.		1826	7.4	7.7	6.7-8
pH, Minimum	Annual	S.U.	6.5 min.		1826	6.9	7.5	5.8-7.7
Carbonaceous Biochemical Oxygen Demand (5 day)	Summer	mg/L	10	15	254	0	3	0-5.4
Carbonaceous Biochemical Oxygen Demand (5 day)	Winter	mg/L	15	23	186	0	0	0-2.8

Table 2. Projected Effluent Quality Values

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Cadmium	µg/L	20	0	--	--
Chromium	µg/L	20	0	--	--
Hexavalent Chromium (Dissolved)	µg/L	20	0	--	--
Copper	µg/L	65	38	14.781	19.388
Total filterable residue (Dissolved solids)	mg/L	9	9	898.776	1231.2
Lead	µg/L	20	0	--	--
Mercury	ng/L	72	65	2.3987	3.6904
Nickel	µg/L	20	1	22.3818	30.66
Nitrate + Nitrite	mg/L	60	60	27.942	34.622
Phosphorus	mg/L	513	513	0.74725	1.136
Strontium	µg/L	3	3	597.87	819
TKN	mg/L	9	9	3.39012	4.644
Zinc	µg/L	60	59	35.666	44.785

MDL = analytical method detection limit
 PEQ = projected effluent quality
 TKN = total Kjeldahl nitrogen

Table 3. Summary of Toxicity Test Results

AA=No detection; TU_a=acute toxicity units; TU_c=chronic toxicity units

Test Date	<i>Pimephales promelas</i>		<i>Ceriodaphnia dubia</i>	
	TU _a	TU _c	TU _a	TU _c
9/12/2010	AA	AA	AA	AA
9/13/2011	AA	AA	AA	AA
9/4/2012	-	-	AA	1.41
9/25/2012	AA	AA	-	-
9/10/2013	AA	AA	AA	AA

Table 4. Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria					Inside Mixing Zone Maximum
		Wildlife	Average			Maximum Aquatic Life	
			Human Health	Agri-culture	Aquatic Life		
Cadmium	µg/L	--	730	50	4.5	11	22
Chromium	µg/L	--	14000	100	160	3400	6800
Hexavalent Chromium – (Dissolved)	µg/L	--	14000	--	11	16	31
Copper	µg/L	--	64000	500	18	29	58
Dissolved solids	mg/L	--	--	--	1500	--	--
Lead	µg/L	--	--	100	17	330	650
Mercury	ng/L	1.3	3.1	10000	910	1700	3400
Nickel	µg/L	--	43000	200	100	900	1800
Nitrate + Nitrite	mg/L	--	--	100	--	--	--
Phosphorus	mg/L	--	--	--	--	--	--
Strontium	µg/L	--	1400000	--	21000	40000	81000
Total Kjeldahl Nitrogen	mg/L	--	--	--	--	--	--
Zinc	µg/L	--	35000	25000	230	230	460

Table 5. 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	0.02	USGS 04201498
7Q10	cfs	annual	0.03	USGS 04201498
		summer	0	
		winter	0	
30Q10	cfs	summer	0.05	USGS 04201498
		winter	0.44	USGS 04201498
90Q10	cfs	annual	0	
Harmonic Mean	cfs	annual	0.37	USGS 04201498
Mixing Assumption	%	average	25	
	%	maximum	100	
<i>Hardness</i>	mg/l	annual	216	901 Station average
<i>pH</i>	S.U.	summer	7.7925	901 Station
		winter	7.8	901 Station
<i>Temperature</i>	°C	summer	21.625	901 Station
		winter	8	901 Station
<i>North Royalton "A"</i>				
<i>WWTP flow</i>	cfs	annual	5.1051	NPDES Application
<i>Background Water Quality</i>				
Cadmium	µg/L		0	STORET; 1997; n=4; 4<MDL; T01W66
Chromium	µg/L		0	STORET; 1997; n=4; 4<MDL; T01W66
Hexavalent Chromium (Dissolved)	µg/L		0	No representative data available.
Copper	µg/L		6.3	STORET; 1997; n=4; 0<MDL; T01W66
Total filterable residue (Dissolved solids)	mg/L		465	STORET; 1997; n=4; 0<MDL; T01W66
Lead	µg/L		1.3	STORET; 1997; n=4; 3<MDL; T01W66
Mercury	ng/L		0	No representative data available.
Nickel	µg/L		0	STORET; 1997; n=4; 0<MDL; T01W66
Nitrate + Nitrite	mg/L		0.53	STORET; 1997; n=4; 1<MDL; T01W66
Phosphorus	mg/L		0	No representative data available. BWQR; 1988; n=348; 0<MDL; Ecoregion median
Strontium	µg/L		291	
Total Kjeldahl Nitrogen	mg/L		0	No representative data available.
Zinc	µg/L		14	STORET; 1997; n=4; 0<MDL; T01W66

BWQR = Analysis of Unimpacted Stream Data for the State of Ohio

MDL = analytical method detection limit

NPDES = National Pollutant Discharge Elimination System

STORET = United States Environmental Protection Agency Storage and Retrieval Database

USGS = United States Geological Survey

WWTP = wastewater treatment plant

Table 6. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

Parameter	Units	Outside Mixing Zone Criteria					Inside Mixing Zone Maximum
		Wildlife	Average			Maximum	
			Human Health	Agri-culture	Aquatic Life	Aquatic Life	
Cadmium	µg/L	--	743	51	4.5	11	22
Chromium	µg/L	--	14254	102	160	3413	6800
Hexavalent Chromium – (Dissolved)	µg/L	--	14254	--	11	16	31
Copper	µg/L	--	65160	509	18	29	58
Total Filterable Residue (Dissolved solids)	mg/L	--	--	--	1502	--	--
Lead	µg/L	--	--	102	17	331	650
Mercury	ng/L	1.3	3.1	10000	910	1700	3400
Nickel	µg/L	--	43779	204	100	904	1800
Nitrate + Nitrite	mg/L	--	--	102	--	--	--
Phosphorus	mg/L	--	--	--	--	--	--
Strontium	µg/L	--	1425362	--	21030	40156	81000
Total Kjeldahl Nitrogen	mg/L	--	--	--	--	--	--
Zinc	µg/L	--	35634	25453	230	231	460

Table 8. Final Effluent Limits and Monitoring Requirements

Parameter	Units	Effluent Limitations				Basis ^b
		Concentration		Loading (kg/day) ^a		
		Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	
Temperature	°C	----- Monitor -----				M
Dissolved Oxygen	mg/L	----- 7.0 Minimum -----				EP
Summer		----- 5.0 Minimum -----				EP
Winter						
Total Suspended Solids	mg/L					
Summer		15	23 ^c	187	287	PD, EP
Winter		20	30 ^c	249	374	PD, EP
Oil and Grease	mg/L	--	10	--	--	WQS, EP
Ammonia	mg/L					
Summer		0.8	1.2 ^c	10	15	EP
Winter		2.9	4.4 ^c	36	55	EP
Nitrite + Nitrate	mg/L	----- Monitor -----				M
Total Kjeldahl Nitrogen	mg/L	----- Monitor -----				M
Phosphorus	mg/L	1.0	1.5 ^c	13	19	PT, EP
Nickel	µg/L	----- Monitor -----				M
Zinc	µg/L	----- Monitor -----				M
Cadmium	µg/L	----- Monitor -----				M
Lead	µg/L	----- Monitor -----				M
Chromium	µg/L	----- Monitor -----				M
Copper	µg/L	17	26	0.21	0.32	PD, EP, ABS
Hexavalent Chromium (Dissolved)	µg/L	----- Monitor -----				M
<i>E. coli</i>						
Summer Only	#/100mL	126	284 ^c	--	--	WQS
Flow	MGD	----- Monitor -----				M
Mercury	ng/L	2.4	1700	0.00003	0.021	VAR
Whole Effluent Toxicity – <i>C. dubia</i> and <i>P. promelas</i>						
Acute (interim)	TU _a	----- Monitor -----				WET
Chronic (Interim)	TU _c	----- Monitor -----				WET
Acute (final)	TU _a	--	1.0	--	--	WET
Chronic (final)	TU _c	1.0	--	--	--	WET
pH	S.U.	----- 6.5 to 9.0 -----				WQS, EP
Total Filterable Residue (Dissolved Solids)	mg/L	----- Monitor -----				M
CBOD ₅	mg/L					
Summer		10	15 ^c	125	187	PD, EP
Winter		15	23 ^c	187	287	PD, EP

^a Effluent loadings based on average design discharge flow of 3.3 MGD.

^b Definitions: ABS = Antibacksliding Rule [OAC 3745-33-05(E) and 40 CFR Part 122.44(l)]

BEJ = Best Engineering Judgment

EP = Existing Permit;

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);
WET = Requiring water quality-based effluent limits and monitoring requirements for whole effluent toxicity in NPDES permits [40 CFR Part 132, Appendix F, Procedure 6 and OAC 3745-33-07(B)];
WLA = Wasteload Allocation procedures (OAC 3745-2);
WQS = Ohio Water Quality Standards (OAC 3745-1-07).

^c Weekly average limit.