

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 the **Conneaut Wastewater Treatment Plant**

Public Notice No.: 11-11-065
Public Notice Date: November 28, 2011
Comment Period Ends: December 28, 2011

OEPA Permit No.: **3PD00002*ND**
Application No.: **OH0024767**

Name and Address of Applicant:

**City of Conneaut
294 Main Street
Conneaut, Ohio 44030**

Name and Address of Facility Where
Discharge Occurs:

**Conneaut WWTP
1206 Broad Street Extension
Conneaut, Ohio 44030
Ashtabula 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, 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, 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 and Ohio Water Pollution Control Law (ORC 6111). Decisions to award variances to Water Quality Standards 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 Clean Water Act. Many of these have already been established by 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 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 wasteload allocation for a pollutant to a measure of the effluent quality. The measure of effluent quality is called PEQ - Projected Effluent Quality. This is a statistical measure of the average and maximum effluent values for a pollutant. As with any statistical method, the more data that exists for a given pollutant, the more likely that PEQ will match the actual observed data. If there is a small data set for a given pollutant, the highest measured value is multiplied by a statistical factor to obtain a PEQ; for example if only one sample exists, the factor is 6.2, for two samples - 3.8, for three samples - 3.0. The factors continue to decline as samples sizes increase. These factors are intended to account for effluent variability, but if the pollutant concentrations are fairly constant, these factors may make PEQ appear larger than it would be shown to be if more sample results existed.

Summary of Permit Conditions

The Ohio EPA risk assessment places mercury in group 5. This placement indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. A variance based limit for the monthly average is proposed to continue.

Limits for 5-day carbonaceous biological oxygen demand (CBOD₅), chlorine, pH, phosphorus, oil and grease, and total suspended solids (TSS) are proposed to continue from the existing permit.

New weekly average *Escherichia coli* (*E.coli*) limits are being included based on water quality standards.

Based on best engineering judgment, monitoring is proposed for total dissolved solids (total filterable residue).

Based on best engineering judgment and OAC 3745-33-07(B), annual chronic toxicity testing with the determination of acute end points is proposed for the life of the permit. The proposed monitoring will provide four tests conducted over the term of the permit and will adequately characterize toxicity in the plants effluent.

New monitoring requirements for overflows from the equalization basin and bypasses around primary treatment have been included.

This permit renewal is proposed for a term of approximately **5 years**, expiring on July 31, 2016. This schedule will allow the Conneaut wastewater treatment plant permit to be on a similar schedule with the other facilities within the same watershed basin.

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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 OEPA 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 draft permit, contact Tim Fulks by phone at (614) 644-2009 or by email at tim.fulks@epa.state.oh.us.

Location of Discharge/Receiving Water Use Classification

The Conneaut Wastewater Treatment Plant (WWTP) discharges to Lake Erie. The approximate location of the facility is shown in Figure 1.

This area of Lake Erie is described by Ohio EPA River Code: 24-800, U.S. EPA River Reach #: 04120101, County: Ashtabula, Ecoregion: Erie-Ontario Lake Plain. Lake Erie is designated for the following uses under Ohio's Water Quality Standards (OAC 3745-1-31): Exceptional Warmwater Habitat (EWH), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), Public Water Supply (PWS), Bathing Waters and Superior High Quality Water.

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 Clean Water Act. Ohio WQS also include aquatic life use designations for waterbodies which can not meet the Clean Water Act 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 (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. Public Water Supply designations apply near existing water intakes so that waters are safe to drink with standard treatment. Most other waters are designated for agricultural and industrial water supply.

Facility Description

The Conneaut wastewater treatment plant has an average daily design flow of 3.0 million gallons per day (MGD) serving a population of approximately 11,260. Wet stream processes are influent screening, flow equalization, grit removal, comminution, primary settling, activated sludge aeration, secondary clarification, chlorination and dechlorination. Solid stream processes are anaerobic digestion followed by land application at agronomic rates.

The Conneaut wastewater treatment plant is served by a separate sanitary sewer system, which experiences inflow and filtration during wet weather. An equalization basin is located at the plant to capture wet weather flow in excess of the plants capacity. The equalization basin has overflow that discharges to disinfection. The plant also has the ability to bypass primary treatment to secondary treatment.

The City implements an Ohio EPA-approved industrial pretreatment program. Three categorical industrial users and three significant non-categorical industrial users discharge to the Conneaut WWTP. The total average daily flow from all industrial users is 0.117 MGD based on information in the latest NPDES permit renewal application.

Description of Existing Discharge

Table 1 shows the annual effluent flow rates through outfall 3PD00002001 for the Conneaut WWTP from 2006 through 2010.

Table 1. Outfall 001 Flow Rates

Year	Annual Flow in MGD		
	50 th Percentile	95 th Percentile	Maximum
2006	2.39	3.79	6.14
2007	2.14	4.64	6.81
2008	2.41	4.93	6.76
2009	2.11	3.63	6.25
2010	1.77	3.01	4.59

Table 2 presents chemical specific data compiled from the NPDES renewal application, data reported in annual pretreatment reports, and data collected by the Ohio EPA.

Table 3 presents a summary of unaltered Discharge Monitoring Report (DMR) data for outfall 3PD00002001. Data are presented for the period of January 2006 through December 2010, and current permit limits are provided for comparison.

Table 4 summarizes the chemical specific data for outfall 001 by presenting the average and maximum Projected Effluent Quality (PEQ) values.

Table 5 summarizes the results of acute whole effluent toxicity tests of the final effluent.

Assessment of Impact on Receiving Waters

Recent biological data for Lake Erie is not currently available. However, the *Ohio EPA 2010 Integrated Report* includes results from sampling conducted from 2002 showing that the Lake Erie Central Basin Shoreline is in partial attainment of the aquatic life designated use at 23.5 percent of the monitored sites and non-attainment for 58.8% of the monitored sites. The causes of non-attainment include municipal point sources, combined sewer overflows, and urban runoff. There is also impairment with regard to the recreational designated use. A full summary of this assessment unit can be view at the following web address: <http://www.wapp.epa.ohio.gov/dsw/ir2010/leau002.html>.

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 Conneaut WWTP were used to determine what parameters should undergo wasteload allocation. The parameters discharged are identified by the data available to the Ohio EPA - Discharge Monitoring Report (DMR) data submitted by the permittee, compliance sampling data collected by Ohio EPA, and any other data submitted by the permittee, such as priority pollutant scans required by the NPDES application or by pretreatment, or other special conditions in the NPDES permit. The sources of effluent data used in this evaluation are as follows:

Self-monitoring data (DMR)	January 2006 through December 2010
NPDES Application data / Pretreatment data	2006 - 2010

The data was reviewed for outliers and one outlier for mercury (59.5 ng/l on 7/18/2008) was removed.

This data is evaluated statistically, and Projected Effluent Quality (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 PEQ_{avg} and PEQ_{max} values are presented in Table 4.

The PEQ values are used according to Ohio rules to compare to applicable water quality standards (WQS) and allowable wasteload allocation (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 wasteload allocation is done for that parameter. If either PEQ_{avg} or PEQ_{max} is greater than 25 percent of the applicable WQS, a wasteload allocation is conducted to determine whether the parameter exhibits reasonable potential and needs to have a limit or if monitoring is required. See Table 9 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 for average criteria using this method are done using the following general equation for direct discharges to Lake Erie: Discharge WLA = (11 x WQS) – (10 x background concentration).

For direct dischargers to lakes, the waste load allocations for maximum criteria (or Outside Mixing Zone Maximum, OMZM) are set equal to the Inside Mixing Zone Maximum criteria. The values for the OMZM are left blank in Table 8 to indicate that any limits based upon a maximum WLA are actually represented by the Inside Mixing Zone Maximum criteria. The wasteload allocation values in Table 8 would allow the Conneaut WWTP to maintain all applicable water quality criteria. Allocations cannot exceed the Inside Mixing Zone Maximum criteria.

Ohio's water quality standard 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 is 1.3 ng/l in the Lake Erie Basin.

The data used in the WLA are listed in Tables 6 and 7. The wasteload allocation results to maintain all applicable criteria are presented in Table 8.

Whole Effluent Toxicity WLA Whole effluent toxicity (WET) is the total toxic effect of an effluent on aquatic life measured directly with a toxicity test. Acute WET measures short term effects of the effluent while chronic WET measures longer term and potentially more subtle effects of the effluent.

Water quality standards 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). Wasteload allocations can then be calculated using TUs as if they were water quality criteria.

The wasteload allocation calculations for WET are similar to those for aquatic life criteria above. For the Conneaut WWTP, the wasteload allocation values are 1.0 TU_a and 11 TU_c.

The chronic toxicity unit (TU_c) is defined as 100 divided by the 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):

$$TU_c = 100/\text{geometric mean of NOEC and LOEC}$$

The acute toxicity unit (TU_a) is defined as 100 divided by the LC₅₀ for the most sensitive test species:

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

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

Reasonable Potential/ Effluent Limits/Hazard Management Decisions

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the water quality standards must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a water quality standard or do not require a wasteload allocation 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 wasteload allocations are selected from Table 8. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 4, and the PEL_{max} is compared to the PEQ_{max}. Based on the calculated percentage of the allocated value [(PEQ_{avg} ÷ PEL_{avg}) X 100, or (PEQ_{max} ÷ PEL_{max}) X 100], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 9.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 10 presents the final effluent limits and monitoring requirements proposed for the Conneaut wastewater treatment plant outfall 3PD00002001 and the basis for their recommendation.

The limits proposed for TSS and CBOD₅ are all based on plant design criteria. These limits are protective of water quality standards.

Limits proposed for oil and grease, pH, and *E.coli* are based on Water Quality Standards (OAC 3745-1-07). The draft limits for *E.coli* are based on the Bathing Waters use designation.

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

The limit for total residual chlorine is proposed to continue from the existing permit based on the wasteload allocation as limited by the inside mixing zone maximum (IMZM). The IMZM is a value calculated to avoid rapidly lethal conditions in the effluent mixing zone. The effluent limit for chlorine at outfall 001 is less than the quantification level of 0.050 mg/l. However, a pollutant minimization program is not required because the dosing rate of dechlorination chemicals ensures that the water quality based effluent limit is being met.

Based on best engineering judgment, monitoring is proposed for total dissolved solids (total filterable residue). No effluent data is available for this parameter, which is an emerging water quality issue for municipal wastewater treatment plants. The purpose of the monitoring is to obtain data on the level and variability of total dissolved solids in the Conneaut WWTP effluent.

The Ohio EPA risk assessment (Table 9) places mercury in group 5 which recommends limits to protect water quality. This placement as well as the data in Tables 3 and 4 indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. For this parameter, PEQ is greater than 100% of the wasteload allocation. Pollutants that meet this requirement must have permit limits under OAC Rule 3745-33-07(A)(1).

Mercury Reasonable Potential and Mercury Variance

The Conneaut WWTP permit was modified in December 2009 to include a mercury variance, and variance-based limits for mercury. Based on the monitoring results from January 2006 to December 2010, and the new application information, the City of Conneaut has determined that the facility will not meet the 30-day average permit limit of 1.3 nanograms per liter (ng/l). However, the effluent data shows that the permittee can meet the mercury annual average value of 12 ng/l. The permittee's application has also demonstrated to the satisfaction of Ohio EPA that there is no readily apparent means of complying with the WQBEL without constructing prohibitively expensive end-of-pipe controls for mercury. Based upon these demonstrations, the Conneaut wastewater treatment plant is eligible for the mercury variance under Rule 3745-33-07(D)(10)(a) of the Ohio Administrative Code (OAC).

The City of Conneaut submitted information supporting the renewal of the variance. The permittee has taken the following actions to reduce the amount of mercury being discharged: conducted system sampling, removed 18 lbs. of material containing mercury from the facility in 2011 and is in discussion with the UHHS-Conneaut Medical Center to have a one-time, community-wide thermometer exchange. The calculation of the PEQ_{avg} value from April 2006 to through May 2011 compared to the PEQ_{avg} (5.2 ng/l) calculated at the time the original variance was issued shows a reduction from 5.2 ng/l to 3.4 ng/l.

The City is continuing to implement the PMP schedule developed from the original variance.

A monthly average mercury effluent limit of 3.6 ng/l is proposed for outfall 001 based on the sampling data submitted by the permittee for the period of April 2006 through May 2011.

Ohio EPA has reviewed the mercury variance application and has determined that the application meets the requirements of the OAC. As a result, the variance is proposed to be issued as a condition in Part II of the NPDES permit, and the following requirements have been incorporated into the draft permit:

- Mercury effluent limits developed from sampling data submitted by the Conneaut WWTP of 3.6 ng/l for the 30-day average limit;
- A requirement that Conneaut WWTP make reasonable progress to meet the water-quality-based effluent limit for mercury by implementing the plan of study which has been developed as part of the pollutant minimization program;
- Influent and effluent monitoring for mercury;
- A requirement that the average annual effluent concentration for mercury 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 for the Conneaut WWTP to use the most sensitive analytical method approved by U.S. EPA; and
- A requirement that Conneaut WWTP submit a certification to Ohio EPA stating that all required permit conditions for the plan of study have been satisfied once these have been completed. In addition, the certification must state that compliance with the WQBEL for mercury has not been achieved.

Ohio EPA risk assessment (Table 9) places cadmium, chromium, copper, dissolved hexavalent chromium, free cyanide, lead, nitrate+nitrite, nickel and zinc in groups 2 and 3. This placement as well as the data in Tables 3 and 4 support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring at a low frequency is proposed to document that these pollutants continue to remain at low levels.

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

New monitoring requirements for overflows from the equalization basin and bypasses around primary treatment have been included.

Additional monitoring requirements proposed at the final effluent and 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.

Whole Effluent Toxicity Reasonable Potential

For the Conneaut WWTP, the chronic WLA is 11.0TU_c and acute WLA is 1.0 TU_a. For dischargers in the Lake Erie Basin, toxicity is assessed by comparing this WLA value to a PEQ value calculated from the effluent toxicity data available. If the PEQ is greater than the WLA, toxicity limits are needed in the

permit. This procedure was put in place by USEPA's promulgation of toxicity reasonable potential rules for Ohio on August 4, 2000. These rules replaced Ohio's rules for dischargers in the Lake Erie basin.

Based on best engineering judgment and OAC 3745-33-07(B), chronic toxicity testing with the determination of acute end points is proposed for the life of the permit. The one acute toxicity test conducted (Table 5) does not show evidence of toxicity. However, one test conducted over a five year period does not adequately characterize the Conneaut WWTP discharge with respect to toxicity. The proposed monitoring will provide four tests conducted over the term of the permit and will adequately characterize toxicity in the plants effluent.

Other Requirements

Sanitary Sewer Overflow Reporting

Provisions for reporting sanitary sewer overflows (SSOs) are also 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 Conneaut WWTP to have a Class III wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 3PD00002001.

Operator of Record

In December 2006, Ohio Administrative Code rule revisions became effective which 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 represents language necessary to implement rule 3745-7-02 of the Ohio Administrative Code (OAC), and requires the permittee to designate one or more operator of record to oversee the technical operation of the treatment works.

Storm Water Compliance

In order to comply with industrial storm water regulations, the permittee submitted a form for "No Exposure Certification" which was signed on May 27th, 2011. Compliance with the industrial storm water regulations must be re-affirmed every five years. No later than May 27th, 2016, the permittee must submit a new form for "No Exposure Certification" or make other provisions to comply with the industrial storm water regulations.

Outfall Signage

Part II of the permit includes requirements for signs to be placed at each outfall to Lake Erie, providing information about the discharge. Signage at outfalls is required pursuant to Ohio Administrative Code 3745-33-08(A).

Local Limits

A compliance schedule has been included in Part I.C. of the permit which requires the City to reevaluate the local limits for the pretreatment program.

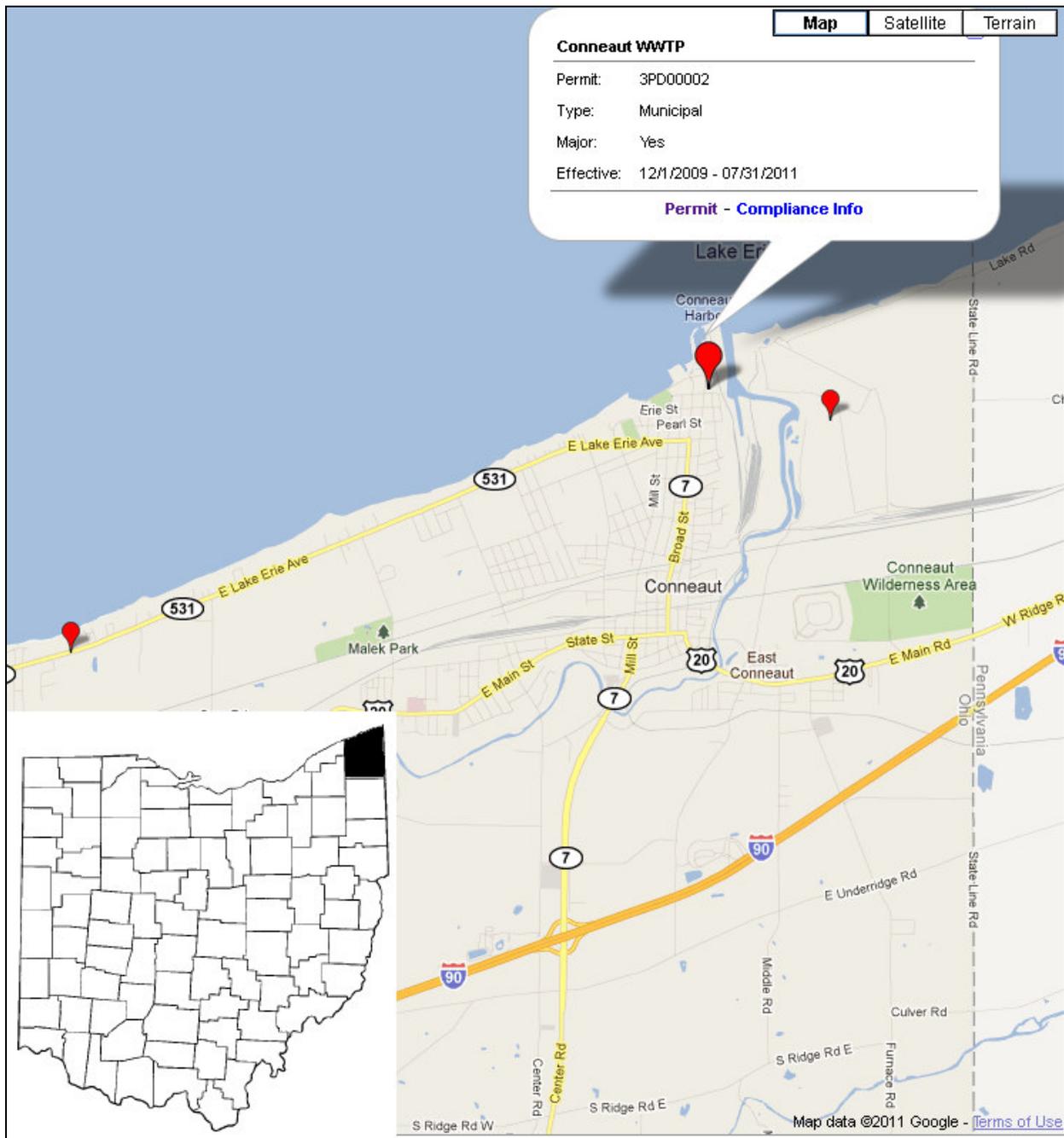


Figure 1. Approximate Location of the Conneaut WWTP

Table 2. Effluent Characterization Based on Pretreatment Data

Summary of analytical results for the Conneaut wastewater treatment plant outfall 3PD00002001. All values are in µg/l unless otherwise indicated. OEPA = data from analyses by Ohio EPA; PT = data from pretreatment program reports; ND = below detection (reporting level or detection limit); NA = not analyzed.

PARAMETER	PT 3/29/06	PT 4/27/07	PT 5/28/08	PT 4/30/09	PT 3/24/10
Zinc	21	21	22	ND	21
Copper	ND	ND	15	ND	ND

Table 3. Effluent Characterization Based on Self Monitoring Data

Summary of current permit limits and unaltered monthly operating report (MOR) data for Conneaut WWTP outfall 3PD00002001. All values are based on annual records unless otherwise indicated. N = Number of Analyses. * = For pH, 5th percentile shown in place of 50th percentile; ** = For dissolved oxygen, 5th percentile shown in place of 95th percentile; A = 7 day average.

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
<u>Outfall 001</u>								
Water Temperature	Annual	C	Monitor		1583	15.2	21.9	8.8-23.5
Dissolved Oxygen**	Summer	mg/l	Monitor		797	2.385	5.42	1.6-6.3
Dissolved Oxygen**	Winter	mg/l	Monitor		786	3.3	6.6	2.2-8
Total Suspended Solids	Annual	mg/l	20	30 ^A	1526	6	16	0-203
Oil and Grease	Annual	mg/l	--	10	104	0	0	0-11
Nitrogen, Ammonia (NH3)	Summer	mg/l	Monitor		341	0.0527	6.62	0.00473-46.4
Nitrogen, Ammonia (NH3)	Winter	mg/l	Monitor		337	0.0462	5.1	0.00213-16.9
Nitrite Plus Nitrate, Total	Annual	mg/l	Monitor		26	14	23.3	5.92-27.1
Phosphorus, Total (P)	Annual	mg/l	1.0	1.5 ^A	434	0.56	1	0.11-2
Cyanide, Free	Annual	mg/l	Monitor		25	0	0	0-0
Nickel, Total Recoverable	Annual	ug/l	Monitor		25	0	0	0-0
Zinc, Total Recoverable	Annual	ug/l	Monitor		25	19	43.8	0-138
Cadmium, Total Recoverable	Annual	ug/l	Monitor		25	0	0	0-0
Lead, Total Recoverable	Annual	ug/l	Monitor		25	0	0	0-0
Chromium, Total Recoverable	Annual	ug/l	Monitor		25	0	0	0-0
Copper, Total Recoverable	Annual	ug/l	Monitor		52	0	15	0-27
Chromium, Diss. Hexavalent	Annual	ug/l	Monitor		25	0	0	0-0
Fecal Coliform	Annual	#/100 ml	1000	2000 ^A	261	20	190	0-6100
E. coli	Annual	#/100 ml	126	--	337	10	112	0-2400
Flow Rate	Summer	MGD	Monitor		797	1.84	3.48	1.12-6.36
Flow Rate	Winter	MGD	Monitor		786	2.64	5.18	1.22-6.76
Flow Rate	Annual	MGD	Monitor		1583	2.1	4.72	1.12-6.76

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
Chlorine, Total Residual	Annual	mg/l	-	0.038	979	0.01	0.01	0-0.06
Mercury, Total (Low Level)	Annual	ng/l	5.2	1700	37	1.5	3.71	0-59.5
pH, Maximum	Annual	S.U.	-	9.0	1583	7.1	7.4	6.7-7.8
pH, Minimum*	Annual	S.U.	-	6.5	1583	6.7	7.2	6.3-7.5
CBOD 5 day	Summer	mg/l	15	20 ^A	342	2	5.95	1-10
CBOD 5 day	Winter	mg/l	15	20 ^A	336	4	9	1-14

Outfall 601

Water Temperature	Annual	C	Monitor	366	15.2	21.2	8.9-21.8
Total Suspended Solids	Annual	mg/l	Monitor	1583	106	176	0-644
Cyanide, Total	Annual	mg/l	Monitor	24	0	0	0-0
Nickel, Total Recoverable	Annual	ug/l	Monitor	24	0	13	0-17
Zinc, Total Recoverable	Annual	ug/l	Monitor	24	74.5	212	0-254
Cadmium, Total Recoverable	Annual	ug/l	Monitor	24	0	0	0-0
Lead, Total Recoverable	Annual	ug/l	Monitor	24	0	35.8	0-42
Chromium, Total Recoverable	Annual	ug/l	Monitor	24	0	0	0-16
Copper, Total Recoverable	Annual	ug/l	Monitor	51	45	104	0-145
Chromium, Diss. Hexavalent	Annual	ug/l	Monitor	24	0	0	0-0
Mercury, Total (Low Level)	Annual	ng/l	Monitor	24	34.6	339	8.55-3190
pH, Maximum	Annual	S.U.	Monitor	1583	7.5	7.7	7.1-8.5
pH, Minimum*	Annual	S.U.	Monitor	1583	7.1	7.5	6.4-7.7
CBOD 5 day	Summer	mg/l	Monitor	342	65	114	16-192
CBOD 5 day	Winter	mg/l	Monitor	335	45	121	8-303

Table 4. Effluent Data for Conneaut WWTP

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Arsenic - TR	ug/l			--	--
Cadmium - TR	ug/l	25	0	--	--
Chlorine - TRes	mg/l	979	498	0.026	0.036
Chromium - TR	ug/l	25	0	--	--
Chromium VI - Diss	ug/l	25	0	--	--
Copper - TR	ug/l	52	19	13.483	18.828
Cyanide - free	mg/l	25	0	--	--
Lead - TR	ug/l	25	0	--	--
Mercury - TR (BCC)	ng/l	36	33	3.3244	5.2463
Molybdenum	ug/l			--	--
Nickel - TR	ug/l	25	0	--	--
Nitrate-N + Nitrite-N	mg/l	26	26	20.537	28.39
Phosphorus	mg/l	434	434	0.748	1.1164
Selenium - TR	ug/l			--	--
Zinc - TR	ug/l	25	23	46.201	73.26

Table 5. Summary of Acute Toxicity Test Results

Test Date(a)	<i>Ceriodaphnia dubia</i> 48 hours								<i>Fathead Minnows</i> 96 hour							
	UP ^b	C ^c	LC ₅₀ ^d	EC ₅₀ ^e	%A	%M ^g	TUa ^h	NF ⁱ	UP ^b	C ^c	LC ₅₀ ^d	EC ₅₀ ^e	%A ^f	%M ^g	TUa ^h	NF ⁱ
12/21/10 (E)	0	0	>100%	>100%	0	0	<1.0	NT	0	0	>100%	>100%	0	0	<1.0	NT

^a O = EPA test; E = entity test
^b UP = upstream control water
^c C = laboratory water control
^d LC₅₀ = median lethal concentration
^e EC₅₀ = median effects concentration
 NT = not tested

^f %A = percent adversely affected in 100% effluent
^g %M = percent mortality in 100% effluent
^h TUa = acute toxicity units
ⁱ NF = near field sample in: Not Taken
 ND = not determined
 BD = below detection

Table 6. Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria					Maximum Aquatic Life	Inside Mixing Zone Maximum
		Wildlife	Average					
			Human Health	Agri-culture	Aquatic Life			
Arsenic - TR	ug/l	--	580	100	150	340	680	
Cadmium - TR	ug/l	--	730	50	3.2	6.6	13	
Chlorine - TRes	mg/l	--	--	--	0.011	0.019	0.038	
Chromium - TR	ug/l	--	14000	100	110	2400	4800	
Chromium VI - Diss	ug/l	--	14000	--	11	16	31	
Copper - TR	ug/l	--	64000	500	12	19	38	
Cyanide - free	mg/l	--	48	--	0.0052	0.022	0.044	
Lead - TR	ug/l	--	--	100	9.9	190	380	
Mercury - TR (BCC)	ng/l	1.3	3.1	10000	910	1700	3400	
Molybdenum	ug/l	--	10000	--	20000	190000	370000	
Nickel - TR	ug/l	--	43000	200	69	620	1200	
Nitrate-N + Nitrite-N	mg/l	--	--	100	--	--	--	
Phosphorus	mg/l	--	--	--	--	--	--	
Selenium - TR	ug/l	--	3100	50	5	--	--	
Zinc - TR	ug/l	--	35000	25000	160	160	320	

Table 7. Instream Conditions and Discharger Flow

Parameter	Units	Season	Value	Basis
<i>Hardness</i>	mg/l	annual	140	STORET
<i>pH</i>	S.U.	summer winter	- -	
<i>Temperature</i>	C	summer winter	- -	
<i>Conneaut WWTP flow</i>	cfs	annual	4.643	
<i>Background Water Quality</i>				
Arsenic - TR	ug/l		0	Station 204093; 7/6/2011; n=1; 1<MDL; average
Cadmium - TR	ug/l		0	Station 204093; 7/6/2011; n=1; 1<MDL; average
Chlorine - TRes	mg/l		0	No representative data available.
Chromium - TR	ug/l		15	BWQR; ; n=1641; 1388<MDL; Statewide 50th percentile
Chromium VI - Diss	ug/l		0	No representative data available.
Copper - TR	ug/l		5	BWQR; ; n=2867; 1597<MDL; Statewide 50th percentile
Cyanide - free	mg/l		0	No representative data available.
Lead - TR	ug/l		2	BWQR; ; n=2814; 1458<MDL; Statewide 50th percentile
Mercury - TR (BCC)	ng/l		0	No representative data available.
Molybdenum	ug/l		0	No representative data available.
Nickel - TR	ug/l		20	BWQR; ; n=1259; 1105<MDL; Statewide 50th percentile
Nitrate-N + Nitrite-N	mg/l		2.13	Station 204093; 7/6/2011; n=1; 0<MDL; average
Phosphorus	mg/l		0.06	BWQR; ; n=5820; 1769<MDL; Statewide 50th percentile
Selenium - TR	ug/l		0	Station 204093; 7/6/2011; n=1; 0<MDL; average
Zinc - TR	ug/l		15	BWQR; ; n=2284; 1119<MDL; Statewide 50th percentile

Table 8. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

Parameter	Units	Outside Mixing Zone Criteria					Maximum Aquatic Life	Inside Mixing Zone Maximum
		Wildlife	Average					
			Human Health	Agri-culture	Aquatic Life			
Arsenic - TR	ug/l	--	6380	1100	1650	--	680	
Cadmium - TR	ug/l	--	8030	550	35	--	13	
Chlorine - TRes	mg/l	--	--	--	0.12	--	0.038	
Chromium - TR	ug/l	--	153850	950	1060	--	4800	
Chromium VI - Diss	ug/l	--	154000	--	121	--	31	
Copper - TR	ug/l	--	703950	5450	82	--	38	
Cyanide - free	mg/l	--	528	--	0.057	--	0.044	
Lead - TR	ug/l	--	--	1080	89	--	380	
Mercury - TR (BCC)	ng/l	1.3	3.1	10000	910	--	1700	
Molybdenum	ug/l	--	110000	--	220000	--	370000	
Nickel - TR	ug/l	--	472800	2000	559	--	1200	
Nitrate-N + Nitrite-N	mg/l	--	--	1079	--	--	--	
Phosphorus	mg/l	--	--	--	--	--	--	
Selenium - TR	ug/l	--	34100	550	55	--	--	
Zinc - TR	ug/l	--	384850	274850	1610	--	320	

Table 9. Parameter Assessment for Outfall 001

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

Phosphorus

Group 2: PEQ < 25 percent of WQS or all data below minimum detection limit.

WLA not required. No limit recommended; monitoring optional.

Arsenic - TR	Cadmium - TR	Chromium - TR
Chromium VI - Diss	Cyanide - free	Lead - TR
Molybdenum	Nickel - TR	Nitrate-N + Nitrite-N
Selenium - TR		

Group 3: PEQ_{max} < 50 percent of maximum PEL and PEQ_{avg} < 50 percent of average PEL.

No limit recommended; monitoring optional.

Copper - TR Zinc - TR

Group 4: PEQ_{max} >= 50 percent, but < 100 percent of the maximum PEL or

PEQ_{avg} >= 50 percent, but < 100 percent of the average PEL. Monitoring is appropriate.

Chlorine - TRes

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

Limits to Protect Numeric Water Quality Criteria

<u>Parameter</u>	<u>Units</u>	<u>Period</u>	<u>Recommended Effluent Limits</u>	
			<u>Average</u>	<u>Maximum</u>
Mercury - TR (BCC)	ng/l		1.3	1700

Table 10. Final Effluent Limits and Monitoring Requirements for Outfall 001

Parameter	Units	Effluent Limits				Basis ^b
		Concentration		Loading (kg/day) ^a		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Flow	MGD	----- Monitor -----		-----		M ^c
Temperature	°C	----- Monitor -----		-----		M ^c
Dissolved Oxygen	mg/l	----- Monitor -----		-----		M ^c
CBOD ₅	mg/l	15	20 ^d	170	227 ^d	EP/PD
Suspended Solids	mg/l	20	30 ^d	227	341 ^d	EP/PD
Dissolved Solids (Total Filterable Residue)	mg/l	----- Monitor -----		-----		BEJ
Ammonia-N	mg/l	----- Monitor -----		-----		M ^c
Nitrite + Nitrate	mg/l	----- Monitor -----		-----		BEJ
Phosphorus	mg/l	1.0	1.5 ^d	11.4	17 ^d	P
Oil and Grease	mg/l	--	10	--	--	WQS
pH	S.U.	----- 6.5 to 9.0 -----		-----		WQS
<i>E.coli</i> (summer only)	#/100ml	126	284 ^d	--	--	WQS
Chlorine Residual (summer only)	mg/l	--	0.038	--	--	EP/WLA/IMZM
Cyanide, Free	mg/l	----- Monitor -----		-----		M ^c
Cadmium, T. R.	µg/l	----- Monitor -----		-----		M ^c
Chromium, T. R.	µg/l	----- Monitor -----		-----		M ^c
Hex. Chromium (Dissolved)	µg/l	----- Monitor -----		-----		M ^c
Copper, T. R.	µg/l	----- Monitor -----		-----		M ^c
Lead, T. R.	µg/l	----- Monitor -----		-----		M ^c
Mercury, T.	ng/l	3.6	1700	0.000041	0.0192	MV(ave.) WQS (max)
Nickel, T. R.	µg/l	----- Monitor -----		-----		M ^c
Zinc, T. R.	µg/l	----- Monitor -----		-----		M ^c
Whole Effluent Toxicity						
Acute	TUa	----- Monitor (w/o trigger) -----		-----		WET
Chronic	TUc	----- Monitor (w/o trigger) -----		-----		WET

^a Effluent loadings based on average design discharge flow of 3.0 MGD.

^b **Definitions:** EP = Existing Permit; BEJ = Best Engineering Judgment; M = BEJ of Permit Guidance 1: Monitoring Frequency Requirements for Sanitary Discharges; P = Phosphorus treatment under OAC 3745-33-06(C); PD = Plant Design Criteria; RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in NPDES permits (3745-33-07(A)); WET = Whole Effluent Toxicity (OAC 3745-33-07(B)) ; WLA = Wasteload Allocation procedures (OAC 3745-2); WLA/IMZM = Wasteload Allocation limited by Inside Mixing Zone Maximum; WQS = Ohio Water Quality Standards (OAC 3745-1).

^c Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.

^d 7 day average limit.

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 the **Conneaut Wastewater Treatment Plant**

Public Notice No.: 11-11-065
Public Notice Date: November 28, 2011
Comment Period Ends: December 28, 2011

OEPA Permit No.: **3PD00002*ND**
Application No.: **OH0024767**

Name and Address of Applicant:

**City of Conneaut
294 Main Street
Conneaut, Ohio 44030**

Name and Address of Facility Where
Discharge Occurs:

**Conneaut WWTP
1206 Broad Street Extension
Conneaut, Ohio 44030
Ashtabula 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, 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, 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 and Ohio Water Pollution Control Law (ORC 6111). Decisions to award variances to Water Quality Standards 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 Clean Water Act. Many of these have already been established by 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 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 wasteload allocation for a pollutant to a measure of the effluent quality. The measure of effluent quality is called PEQ - Projected Effluent Quality. This is a statistical measure of the average and maximum effluent values for a pollutant. As with any statistical method, the more data that exists for a given pollutant, the more likely that PEQ will match the actual observed data. If there is a small data set for a given pollutant, the highest measured value is multiplied by a statistical factor to obtain a PEQ; for example if only one sample exists, the factor is 6.2, for two samples - 3.8, for three samples - 3.0. The factors continue to decline as samples sizes increase. These factors are intended to account for effluent variability, but if the pollutant concentrations are fairly constant, these factors may make PEQ appear larger than it would be shown to be if more sample results existed.

Summary of Permit Conditions

The Ohio EPA risk assessment places mercury in group 5. This placement indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. A variance based limit for the monthly average is proposed to continue.

Limits for 5-day carbonaceous biological oxygen demand (CBOD₅), chlorine, pH, phosphorus, oil and grease, and total suspended solids (TSS) are proposed to continue from the existing permit.

New weekly average *Escherichia coli* (*E.coli*) limits are being included based on water quality standards.

Based on best engineering judgment, monitoring is proposed for total dissolved solids (total filterable residue).

Based on best engineering judgment and OAC 3745-33-07(B), annual chronic toxicity testing with the determination of acute end points is proposed for the life of the permit. The proposed monitoring will provide four tests conducted over the term of the permit and will adequately characterize toxicity in the plants effluent.

New monitoring requirements for overflows from the equalization basin and bypasses around primary treatment have been included.

This permit renewal is proposed for a term of approximately **5 years**, expiring on July 31, 2016. This schedule will allow the Conneaut wastewater treatment plant permit to be on a similar schedule with the other facilities within the same watershed basin.

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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 OEPA 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 draft permit, contact Tim Fulks by phone at (614) 644-2009 or by email at tim.fulks@epa.state.oh.us.

Location of Discharge/Receiving Water Use Classification

The Conneaut Wastewater Treatment Plant (WWTP) discharges to Lake Erie. The approximate location of the facility is shown in Figure 1.

This area of Lake Erie is described by Ohio EPA River Code: 24-800, U.S. EPA River Reach #: 04120101, County: Ashtabula, Ecoregion: Erie-Ontario Lake Plain. Lake Erie is designated for the following uses under Ohio's Water Quality Standards (OAC 3745-1-31): Exceptional Warmwater Habitat (EWH), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), Public Water Supply (PWS), Bathing Waters and Superior High Quality Water.

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 Clean Water Act. Ohio WQS also include aquatic life use designations for waterbodies which can not meet the Clean Water Act 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 (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. Public Water Supply designations apply near existing water intakes so that waters are safe to drink with standard treatment. Most other waters are designated for agricultural and industrial water supply.

Facility Description

The Conneaut wastewater treatment plant has an average daily design flow of 3.0 million gallons per day (MGD) serving a population of approximately 11,260. Wet stream processes are influent screening, flow equalization, grit removal, comminution, primary settling, activated sludge aeration, secondary clarification, chlorination and dechlorination. Solid stream processes are anaerobic digestion followed by land application at agronomic rates.

The Conneaut wastewater treatment plant is served by a separate sanitary sewer system, which experiences inflow and filtration during wet weather. An equalization basin is located at the plant to capture wet weather flow in excess of the plants capacity. The equalization basin has overflow that discharges to disinfection. The plant also has the ability to bypass primary treatment to secondary treatment.

The City implements an Ohio EPA-approved industrial pretreatment program. Three categorical industrial users and three significant non-categorical industrial users discharge to the Conneaut WWTP. The total average daily flow from all industrial users is 0.117 MGD based on information in the latest NPDES permit renewal application.

Description of Existing Discharge

Table 1 shows the annual effluent flow rates through outfall 3PD00002001 for the Conneaut WWTP from 2006 through 2010.

Table 1. Outfall 001 Flow Rates

Year	Annual Flow in MGD		
	50 th Percentile	95 th Percentile	Maximum
2006	2.39	3.79	6.14
2007	2.14	4.64	6.81
2008	2.41	4.93	6.76
2009	2.11	3.63	6.25
2010	1.77	3.01	4.59

Table 2 presents chemical specific data compiled from the NPDES renewal application, data reported in annual pretreatment reports, and data collected by the Ohio EPA.

Table 3 presents a summary of unaltered Discharge Monitoring Report (DMR) data for outfall 3PD00002001. Data are presented for the period of January 2006 through December 2010, and current permit limits are provided for comparison.

Table 4 summarizes the chemical specific data for outfall 001 by presenting the average and maximum Projected Effluent Quality (PEQ) values.

Table 5 summarizes the results of acute whole effluent toxicity tests of the final effluent.

Assessment of Impact on Receiving Waters

Recent biological data for Lake Erie is not currently available. However, the *Ohio EPA 2010 Integrated Report* includes results from sampling conducted from 2002 showing that the Lake Erie Central Basin Shoreline is in partial attainment of the aquatic life designated use at 23.5 percent of the monitored sites and non-attainment for 58.8% of the monitored sites. The causes of non-attainment include municipal point sources, combined sewer overflows, and urban runoff. There is also impairment with regard to the recreational designated use. A full summary of this assessment unit can be view at the following web address: <http://www.wapp.epa.ohio.gov/dsw/ir2010/leau002.html>.

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 Conneaut WWTP were used to determine what parameters should undergo wasteload allocation. The parameters discharged are identified by the data available to the Ohio EPA - Discharge Monitoring Report (DMR) data submitted by the permittee, compliance sampling data collected by Ohio EPA, and any other data submitted by the permittee, such as priority pollutant scans required by the NPDES application or by pretreatment, or other special conditions in the NPDES permit. The sources of effluent data used in this evaluation are as follows:

Self-monitoring data (DMR)	January 2006 through December 2010
NPDES Application data / Pretreatment data	2006 - 2010

The data was reviewed for outliers and one outlier for mercury (59.5 ng/l on 7/18/2008) was removed.

This data is evaluated statistically, and Projected Effluent Quality (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 PEQ_{avg} and PEQ_{max} values are presented in Table 4.

The PEQ values are used according to Ohio rules to compare to applicable water quality standards (WQS) and allowable wasteload allocation (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 wasteload allocation is done for that parameter. If either PEQ_{avg} or PEQ_{max} is greater than 25 percent of the applicable WQS, a wasteload allocation is conducted to determine whether the parameter exhibits reasonable potential and needs to have a limit or if monitoring is required. See Table 9 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 for average criteria using this method are done using the following general equation for direct discharges to Lake Erie: Discharge WLA = (11 x WQS) – (10 x background concentration).

For direct dischargers to lakes, the waste load allocations for maximum criteria (or Outside Mixing Zone Maximum, OMZM) are set equal to the Inside Mixing Zone Maximum criteria. The values for the OMZM are left blank in Table 8 to indicate that any limits based upon a maximum WLA are actually represented by the Inside Mixing Zone Maximum criteria. The wasteload allocation values in Table 8 would allow the Conneaut WWTP to maintain all applicable water quality criteria. Allocations cannot exceed the Inside Mixing Zone Maximum criteria.

Ohio's water quality standard 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 is 1.3 ng/l in the Lake Erie Basin.

The data used in the WLA are listed in Tables 6 and 7. The wasteload allocation results to maintain all applicable criteria are presented in Table 8.

Whole Effluent Toxicity WLA Whole effluent toxicity (WET) is the total toxic effect of an effluent on aquatic life measured directly with a toxicity test. Acute WET measures short term effects of the effluent while chronic WET measures longer term and potentially more subtle effects of the effluent.

Water quality standards 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). Wasteload allocations can then be calculated using TUs as if they were water quality criteria.

The wasteload allocation calculations for WET are similar to those for aquatic life criteria above. For the Conneaut WWTP, the wasteload allocation values are 1.0 TU_a and 11 TU_c.

The chronic toxicity unit (TU_c) is defined as 100 divided by the 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):

$$TU_c = 100/\text{geometric mean of NOEC and LOEC}$$

The acute toxicity unit (TU_a) is defined as 100 divided by the LC₅₀ for the most sensitive test species:

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

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

Reasonable Potential/ Effluent Limits/Hazard Management Decisions

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the water quality standards must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a water quality standard or do not require a wasteload allocation 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 wasteload allocations are selected from Table 8. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 4, and the PEL_{max} is compared to the PEQ_{max}. Based on the calculated percentage of the allocated value [(PEQ_{avg} ÷ PEL_{avg}) X 100, or (PEQ_{max} ÷ PEL_{max}) X 100], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 9.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 10 presents the final effluent limits and monitoring requirements proposed for the Conneaut wastewater treatment plant outfall 3PD00002001 and the basis for their recommendation.

The limits proposed for TSS and CBOD₅ are all based on plant design criteria. These limits are protective of water quality standards.

Limits proposed for oil and grease, pH, and *E.coli* are based on Water Quality Standards (OAC 3745-1-07). The draft limits for *E.coli* are based on the Bathing Waters use designation.

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

The limit for total residual chlorine is proposed to continue from the existing permit based on the wasteload allocation as limited by the inside mixing zone maximum (IMZM). The IMZM is a value calculated to avoid rapidly lethal conditions in the effluent mixing zone. The effluent limit for chlorine at outfall 001 is less than the quantification level of 0.050 mg/l. However, a pollutant minimization program is not required because the dosing rate of dechlorination chemicals ensures that the water quality based effluent limit is being met.

Based on best engineering judgment, monitoring is proposed for total dissolved solids (total filterable residue). No effluent data is available for this parameter, which is an emerging water quality issue for municipal wastewater treatment plants. The purpose of the monitoring is to obtain data on the level and variability of total dissolved solids in the Conneaut WWTP effluent.

The Ohio EPA risk assessment (Table 9) places mercury in group 5 which recommends limits to protect water quality. This placement as well as the data in Tables 3 and 4 indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. For this parameter, PEQ is greater than 100% of the wasteload allocation. Pollutants that meet this requirement must have permit limits under OAC Rule 3745-33-07(A)(1).

Mercury Reasonable Potential and Mercury Variance

The Conneaut WWTP permit was modified in December 2009 to include a mercury variance, and variance-based limits for mercury. Based on the monitoring results from January 2006 to December 2010, and the new application information, the City of Conneaut has determined that the facility will not meet the 30-day average permit limit of 1.3 nanograms per liter (ng/l). However, the effluent data shows that the permittee can meet the mercury annual average value of 12 ng/l. The permittee's application has also demonstrated to the satisfaction of Ohio EPA that there is no readily apparent means of complying with the WQBEL without constructing prohibitively expensive end-of-pipe controls for mercury. Based upon these demonstrations, the Conneaut wastewater treatment plant is eligible for the mercury variance under Rule 3745-33-07(D)(10)(a) of the Ohio Administrative Code (OAC).

The City of Conneaut submitted information supporting the renewal of the variance. The permittee has taken the following actions to reduce the amount of mercury being discharged: conducted system sampling, removed 18 lbs. of material containing mercury from the facility in 2011 and is in discussion with the UHHS-Conneaut Medical Center to have a one-time, community-wide thermometer exchange. The calculation of the PEQ_{avg} value from April 2006 to through May 2011 compared to the PEQ_{avg} (5.2 ng/l) calculated at the time the original variance was issued shows a reduction from 5.2 ng/l to 3.4 ng/l.

The City is continuing to implement the PMP schedule developed from the original variance.

A monthly average mercury effluent limit of 3.6 ng/l is proposed for outfall 001 based on the sampling data submitted by the permittee for the period of April 2006 through May 2011.

Ohio EPA has reviewed the mercury variance application and has determined that the application meets the requirements of the OAC. As a result, the variance is proposed to be issued as a condition in Part II of the NPDES permit, and the following requirements have been incorporated into the draft permit:

- Mercury effluent limits developed from sampling data submitted by the Conneaut WWTP of 3.6 ng/l for the 30-day average limit;
- A requirement that Conneaut WWTP make reasonable progress to meet the water-quality-based effluent limit for mercury by implementing the plan of study which has been developed as part of the pollutant minimization program;
- Influent and effluent monitoring for mercury;
- A requirement that the average annual effluent concentration for mercury 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 for the Conneaut WWTP to use the most sensitive analytical method approved by U.S. EPA; and
- A requirement that Conneaut WWTP submit a certification to Ohio EPA stating that all required permit conditions for the plan of study have been satisfied once these have been completed. In addition, the certification must state that compliance with the WQBEL for mercury has not been achieved.

Ohio EPA risk assessment (Table 9) places cadmium, chromium, copper, dissolved hexavalent chromium, free cyanide, lead, nitrate+nitrite, nickel and zinc in groups 2 and 3. This placement as well as the data in Tables 3 and 4 support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring at a low frequency is proposed to document that these pollutants continue to remain at low levels.

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

New monitoring requirements for overflows from the equalization basin and bypasses around primary treatment have been included.

Additional monitoring requirements proposed at the final effluent and 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.

Whole Effluent Toxicity Reasonable Potential

For the Conneaut WWTP, the chronic WLA is 11.0TU_c and acute WLA is 1.0 TU_a. For dischargers in the Lake Erie Basin, toxicity is assessed by comparing this WLA value to a PEQ value calculated from the effluent toxicity data available. If the PEQ is greater than the WLA, toxicity limits are needed in the

permit. This procedure was put in place by USEPA's promulgation of toxicity reasonable potential rules for Ohio on August 4, 2000. These rules replaced Ohio's rules for dischargers in the Lake Erie basin.

Based on best engineering judgment and OAC 3745-33-07(B), chronic toxicity testing with the determination of acute end points is proposed for the life of the permit. The one acute toxicity test conducted (Table 5) does not show evidence of toxicity. However, one test conducted over a five year period does not adequately characterize the Conneaut WWTP discharge with respect to toxicity. The proposed monitoring will provide four tests conducted over the term of the permit and will adequately characterize toxicity in the plants effluent.

Other Requirements

Sanitary Sewer Overflow Reporting

Provisions for reporting sanitary sewer overflows (SSOs) are also 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 Conneaut WWTP to have a Class III wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 3PD00002001.

Operator of Record

In December 2006, Ohio Administrative Code rule revisions became effective which 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 represents language necessary to implement rule 3745-7-02 of the Ohio Administrative Code (OAC), and requires the permittee to designate one or more operator of record to oversee the technical operation of the treatment works.

Storm Water Compliance

In order to comply with industrial storm water regulations, the permittee submitted a form for "No Exposure Certification" which was signed on May 27th, 2011. Compliance with the industrial storm water regulations must be re-affirmed every five years. No later than May 27th, 2016, the permittee must submit a new form for "No Exposure Certification" or make other provisions to comply with the industrial storm water regulations.

Outfall Signage

Part II of the permit includes requirements for signs to be placed at each outfall to Lake Erie, providing information about the discharge. Signage at outfalls is required pursuant to Ohio Administrative Code 3745-33-08(A).

Local Limits

A compliance schedule has been included in Part I.C. of the permit which requires the City to reevaluate the local limits for the pretreatment program.

Fact Sheet for NPDES Permit Renewal, Conneaut WWTP, 2011

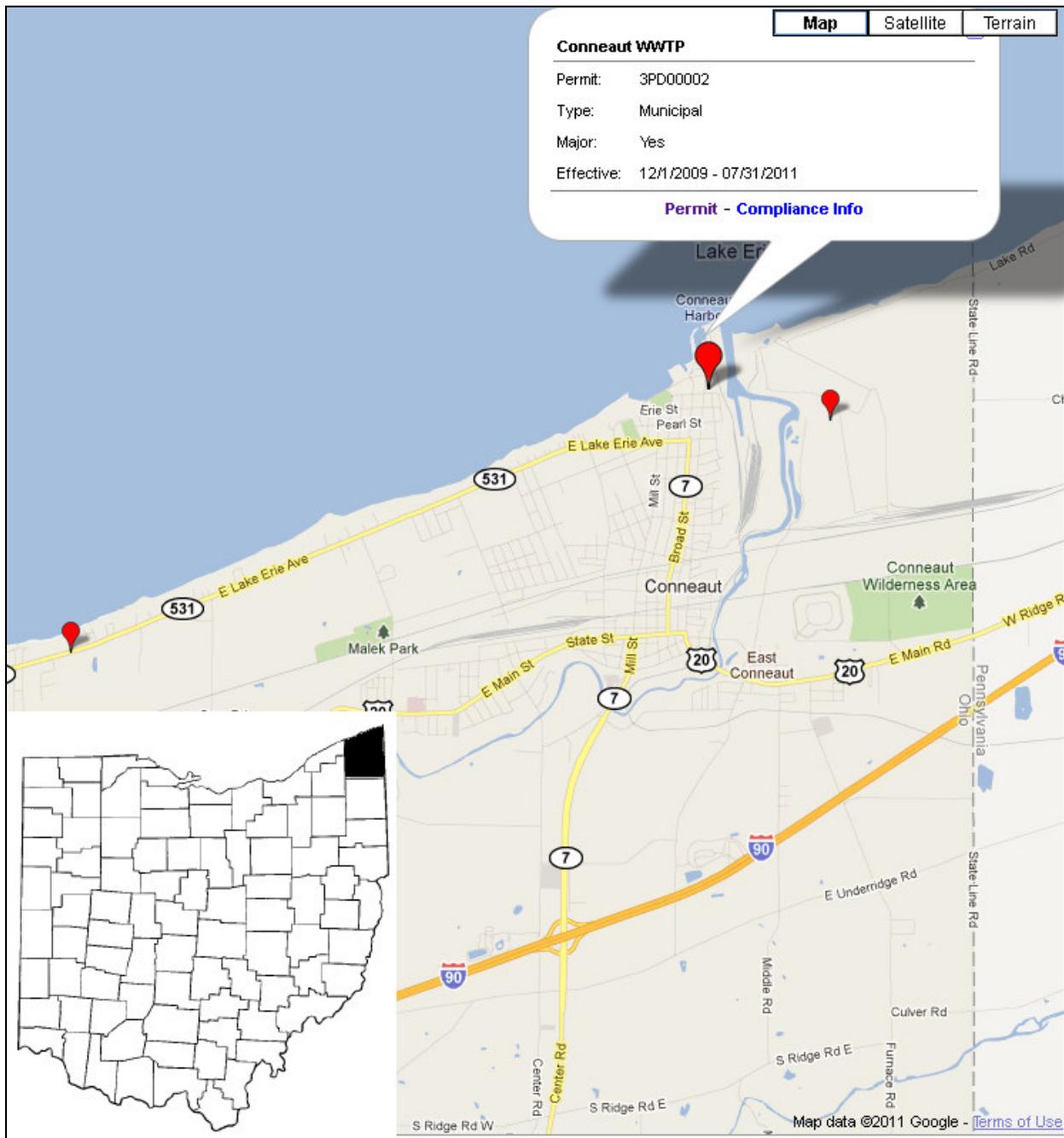


Figure 1. Approximate Location of the Conneaut WWTP

Table 2. Effluent Characterization Based on Pretreatment Data

Summary of analytical results for the Conneaut wastewater treatment plant outfall 3PD00002001. All values are in µg/l unless otherwise indicated. OEPA = data from analyses by Ohio EPA; PT = data from pretreatment program reports; ND = below detection (reporting level or detection limit); NA = not analyzed.

PARAMETER	PT 3/29/06	PT 4/27/07	PT 5/28/08	PT 4/30/09	PT 3/24/10
Zinc	21	21	22	ND	21
Copper	ND	ND	15	ND	ND

Table 3. Effluent Characterization Based on Self Monitoring Data

Summary of current permit limits and unaltered monthly operating report (MOR) data for Conneaut WWTP outfall 3PD00002001. All values are based on annual records unless otherwise indicated. N = Number of Analyses. * = For pH, 5th percentile shown in place of 50th percentile; ** = For dissolved oxygen, 5th percentile shown in place of 95th percentile; A = 7 day average.

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
<u>Outfall 001</u>								
Water Temperature	Annual	C	Monitor		1583	15.2	21.9	8.8-23.5
Dissolved Oxygen**	Summer	mg/l	Monitor		797	2.385	5.42	1.6-6.3
Dissolved Oxygen**	Winter	mg/l	Monitor		786	3.3	6.6	2.2-8
Total Suspended Solids	Annual	mg/l	20	30 ^A	1526	6	16	0-203
Oil and Grease	Annual	mg/l	--	10	104	0	0	0-11
Nitrogen, Ammonia (NH3)	Summer	mg/l	Monitor		341	0.0527	6.62	0.00473-46.4
Nitrogen, Ammonia (NH3)	Winter	mg/l	Monitor		337	0.0462	5.1	0.00213-16.9
Nitrite Plus Nitrate, Total	Annual	mg/l	Monitor		26	14	23.3	5.92-27.1
Phosphorus, Total (P)	Annual	mg/l	1.0	1.5 ^A	434	0.56	1	0.11-2
Cyanide, Free	Annual	mg/l	Monitor		25	0	0	0-0
Nickel, Total Recoverable	Annual	ug/l	Monitor		25	0	0	0-0
Zinc, Total Recoverable	Annual	ug/l	Monitor		25	19	43.8	0-138
Cadmium, Total Recoverable	Annual	ug/l	Monitor		25	0	0	0-0
Lead, Total Recoverable	Annual	ug/l	Monitor		25	0	0	0-0
Chromium, Total Recoverable	Annual	ug/l	Monitor		25	0	0	0-0
Copper, Total Recoverable	Annual	ug/l	Monitor		52	0	15	0-27
Chromium, Diss. Hexavalent	Annual	ug/l	Monitor		25	0	0	0-0
Fecal Coliform	Annual	#/100 ml	1000	2000 ^A	261	20	190	0-6100
E. coli	Annual	#/100 ml	126	--	337	10	112	0-2400
Flow Rate	Summer	MGD	Monitor		797	1.84	3.48	1.12-6.36
Flow Rate	Winter	MGD	Monitor		786	2.64	5.18	1.22-6.76
Flow Rate	Annual	MGD	Monitor		1583	2.1	4.72	1.12-6.76

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	
Chlorine, Total Residual	Annual	mg/l	-	0.038	979	0.01	0.01	0-0.06
Mercury, Total (Low Level)	Annual	ng/l	5.2	1700	37	1.5	3.71	0-59.5
pH, Maximum	Annual	S.U.	-	9.0	1583	7.1	7.4	6.7-7.8
pH, Minimum*	Annual	S.U.	-	6.5	1583	6.7	7.2	6.3-7.5
CBOD 5 day	Summer	mg/l	15	20 ^A	342	2	5.95	1-10
CBOD 5 day	Winter	mg/l	15	20 ^A	336	4	9	1-14

Outfall 601

Water Temperature	Annual	C	Monitor	366	15.2	21.2	8.9-21.8
Total Suspended Solids	Annual	mg/l	Monitor	1583	106	176	0-644
Cyanide, Total	Annual	mg/l	Monitor	24	0	0	0-0
Nickel, Total Recoverable	Annual	ug/l	Monitor	24	0	13	0-17
Zinc, Total Recoverable	Annual	ug/l	Monitor	24	74.5	212	0-254
Cadmium, Total Recoverable	Annual	ug/l	Monitor	24	0	0	0-0
Lead, Total Recoverable	Annual	ug/l	Monitor	24	0	35.8	0-42
Chromium, Total Recoverable	Annual	ug/l	Monitor	24	0	0	0-16
Copper, Total Recoverable	Annual	ug/l	Monitor	51	45	104	0-145
Chromium, Diss. Hexavalent	Annual	ug/l	Monitor	24	0	0	0-0
Mercury, Total (Low Level)	Annual	ng/l	Monitor	24	34.6	339	8.55-3190
pH, Maximum	Annual	S.U.	Monitor	1583	7.5	7.7	7.1-8.5
pH, Minimum*	Annual	S.U.	Monitor	1583	7.1	7.5	6.4-7.7
CBOD 5 day	Summer	mg/l	Monitor	342	65	114	16-192
CBOD 5 day	Winter	mg/l	Monitor	335	45	121	8-303

Table 4. Effluent Data for Conneaut WWTP

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Arsenic - TR	ug/l			--	--
Cadmium - TR	ug/l	25	0	--	--
Chlorine - TRes	mg/l	979	498	0.026	0.036
Chromium - TR	ug/l	25	0	--	--
Chromium VI - Diss	ug/l	25	0	--	--
Copper - TR	ug/l	52	19	13.483	18.828
Cyanide - free	mg/l	25	0	--	--
Lead - TR	ug/l	25	0	--	--
Mercury - TR (BCC)	ng/l	36	33	3.3244	5.2463
Molybdenum	ug/l			--	--
Nickel - TR	ug/l	25	0	--	--
Nitrate-N + Nitrite-N	mg/l	26	26	20.537	28.39
Phosphorus	mg/l	434	434	0.748	1.1164
Selenium - TR	ug/l			--	--
Zinc - TR	ug/l	25	23	46.201	73.26

Table 5. Summary of Acute Toxicity Test Results

Test Date(a)	<i>Ceriodaphnia dubia</i> 48 hours								<i>Fathead Minnows</i> 96 hour							
	UP ^b	C ^c	LC ₅₀ ^d	EC ₅₀ ^e	%A	%M ^g	TUa ^h	NF ⁱ	UP ^b	C ^c	LC ₅₀ ^d	EC ₅₀ ^e	%A ^f	%M ^g	TUa ^h	NF ⁱ
12/21/10 (E)	0	0	>100%	>100%	0	0	<1.0	NT	0	0	>100%	>100%	0	0	<1.0	NT

^a O = EPA test; E = entity test
^b UP = upstream control water
^c C = laboratory water control
^d LC₅₀ = median lethal concentration
^e EC₅₀ = median effects concentration
 NT = not tested

^f %A = percent adversely affected in 100% effluent
^g %M = percent mortality in 100% effluent
^h TUa = acute toxicity units
ⁱ NF = near field sample in: Not Taken
 ND = not determined
 BD = below detection

Table 6. Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria					Maximum Aquatic Life	Inside Mixing Zone Maximum
		Wildlife	Average					
			Human Health	Agri-culture	Aquatic Life			
Arsenic - TR	ug/l	--	580	100	150	340	680	
Cadmium - TR	ug/l	--	730	50	3.2	6.6	13	
Chlorine - TRes	mg/l	--	--	--	0.011	0.019	0.038	
Chromium - TR	ug/l	--	14000	100	110	2400	4800	
Chromium VI - Diss	ug/l	--	14000	--	11	16	31	
Copper - TR	ug/l	--	64000	500	12	19	38	
Cyanide - free	mg/l	--	48	--	0.0052	0.022	0.044	
Lead - TR	ug/l	--	--	100	9.9	190	380	
Mercury - TR (BCC)	ng/l	1.3	3.1	10000	910	1700	3400	
Molybdenum	ug/l	--	10000	--	20000	190000	370000	
Nickel - TR	ug/l	--	43000	200	69	620	1200	
Nitrate-N + Nitrite-N	mg/l	--	--	100	--	--	--	
Phosphorus	mg/l	--	--	--	--	--	--	
Selenium - TR	ug/l	--	3100	50	5	--	--	
Zinc - TR	ug/l	--	35000	25000	160	160	320	

Table 7. Instream Conditions and Discharger Flow

Parameter	Units	Season	Value	Basis
<i>Hardness</i>	mg/l	annual	140	STORET
<i>pH</i>	S.U.	summer	-	
		winter	-	
<i>Temperature</i>	C	summer	-	
		winter	-	
<i>Conneaut WWTP flow</i>	cfs	annual	4.643	
<i>Background Water Quality</i>				
Arsenic - TR	ug/l		0	Station 204093; 7/6/2011; n=1; 1<MDL; average
Cadmium - TR	ug/l		0	Station 204093; 7/6/2011; n=1; 1<MDL; average
Chlorine - TRes	mg/l		0	No representative data available.
Chromium - TR	ug/l		15	BWQR; ; n=1641; 1388<MDL; Statewide 50th percentile
Chromium VI - Diss	ug/l		0	No representative data available.
Copper - TR	ug/l		5	BWQR; ; n=2867; 1597<MDL; Statewide 50th percentile
Cyanide - free	mg/l		0	No representative data available.
Lead - TR	ug/l		2	BWQR; ; n=2814; 1458<MDL; Statewide 50th percentile
Mercury - TR (BCC)	ng/l		0	No representative data available.
Molybdenum	ug/l		0	No representative data available.
Nickel - TR	ug/l		20	BWQR; ; n=1259; 1105<MDL; Statewide 50th percentile
Nitrate-N + Nitrite-N	mg/l		2.13	Station 204093; 7/6/2011; n=1; 0<MDL; average
Phosphorus	mg/l		0.06	BWQR; ; n=5820; 1769<MDL; Statewide 50th percentile
Selenium - TR	ug/l		0	Station 204093; 7/6/2011; n=1; 0<MDL; average
Zinc - TR	ug/l		15	BWQR; ; n=2284; 1119<MDL; Statewide 50th percentile

Table 8. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

Parameter	Units	Outside Mixing Zone Criteria					Maximum Aquatic Life	Inside Mixing Zone Maximum
		Wildlife	Average					
			Human Health	Agri-culture	Aquatic Life			
Arsenic - TR	ug/l	--	6380	1100	1650	--	680	
Cadmium - TR	ug/l	--	8030	550	35	--	13	
Chlorine - TRes	mg/l	--	--	--	0.12	--	0.038	
Chromium - TR	ug/l	--	153850	950	1060	--	4800	
Chromium VI - Diss	ug/l	--	154000	--	121	--	31	
Copper - TR	ug/l	--	703950	5450	82	--	38	
Cyanide - free	mg/l	--	528	--	0.057	--	0.044	
Lead - TR	ug/l	--	--	1080	89	--	380	
Mercury - TR (BCC)	ng/l	1.3	3.1	10000	910	--	1700	
Molybdenum	ug/l	--	110000	--	220000	--	370000	
Nickel - TR	ug/l	--	472800	2000	559	--	1200	
Nitrate-N + Nitrite-N	mg/l	--	--	1079	--	--	--	
Phosphorus	mg/l	--	--	--	--	--	--	
Selenium - TR	ug/l	--	34100	550	55	--	--	
Zinc - TR	ug/l	--	384850	274850	1610	--	320	

Table 9. Parameter Assessment for Outfall 001

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

Phosphorus

Group 2: PEQ < 25 percent of WQS or all data below minimum detection limit.

WLA not required. No limit recommended; monitoring optional.

Arsenic - TR	Cadmium - TR	Chromium - TR
Chromium VI - Diss	Cyanide - free	Lead - TR
Molybdenum	Nickel - TR	Nitrate-N + Nitrite-N
Selenium - TR		

Group 3: PEQ_{max} < 50 percent of maximum PEL and PEQ_{avg} < 50 percent of average PEL.

No limit recommended; monitoring optional.

Copper - TR Zinc - TR

Group 4: PEQ_{max} >= 50 percent, but < 100 percent of the maximum PEL or

PEQ_{avg} >= 50 percent, but < 100 percent of the average PEL. Monitoring is appropriate.

Chlorine - TRes

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

Limits to Protect Numeric Water Quality Criteria

<u>Parameter</u>	<u>Units</u>	<u>Period</u>	<u>Recommended Effluent Limits</u>	
			<u>Average</u>	<u>Maximum</u>
Mercury - TR (BCC)	ng/l		1.3	1700

Table 10. Final Effluent Limits and Monitoring Requirements for Outfall 001

Parameter	Units	Effluent Limits				Basis ^b
		Concentration		Loading (kg/day) ^a		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Flow	MGD	-----	Monitor	-----	-----	M ^c
Temperature	°C	-----	Monitor	-----	-----	M ^c
Dissolved Oxygen	mg/l	-----	Monitor	-----	-----	M ^c
CBOD ₅	mg/l	15	20 ^d	170	227 ^d	EP/PD
Suspended Solids	mg/l	20	30 ^d	227	341 ^d	EP/PD
Dissolved Solids (Total Filterable Residue)	mg/l	-----	Monitor	-----	-----	BEJ
Ammonia-N	mg/l	-----	Monitor	-----	-----	M ^c
Nitrite + Nitrate	mg/l	-----	Monitor	-----	-----	BEJ
Phosphorus	mg/l	1.0	1.5 ^d	11.4	17 ^d	P
Oil and Grease	mg/l	--	10	--	--	WQS
pH	S.U.	-----	6.5 to 9.0	-----	-----	WQS
<i>E.coli</i> (summer only)	#/100ml	126	284 ^d	--	--	WQS
Chlorine Residual (summer only)	mg/l	--	0.038	--	--	EP/WLA/IMZM
Cyanide, Free	mg/l	-----	Monitor	-----	-----	M ^c
Cadmium, T. R.	µg/l	-----	Monitor	-----	-----	M ^c
Chromium, T. R.	µg/l	-----	Monitor	-----	-----	M ^c
Hex. Chromium (Dissolved)	µg/l	-----	Monitor	-----	-----	M ^c
Copper, T. R.	µg/l	-----	Monitor	-----	-----	M ^c
Lead, T. R.	µg/l	-----	Monitor	-----	-----	M ^c
Mercury, T.	ng/l	3.6	1700	0.000041	0.0192	MV(ave.) WQS (max)
Nickel, T. R.	µg/l	-----	Monitor	-----	-----	M ^c
Zinc, T. R.	µg/l	-----	Monitor	-----	-----	M ^c
Whole Effluent Toxicity						
Acute	TUa	-----	Monitor (w/o trigger)	-----	-----	WET
Chronic	TUc	-----	Monitor (w/o trigger)	-----	-----	WET

^a Effluent loadings based on average design discharge flow of 3.0 MGD.

^b **Definitions:** EP = Existing Permit; BEJ = Best Engineering Judgment; M = BEJ of Permit Guidance 1: Monitoring Frequency Requirements for Sanitary Discharges; P = Phosphorus treatment under OAC 3745-33-06(C); PD = Plant Design Criteria; RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in NPDES permits (3745-33-07(A)); WET = Whole Effluent Toxicity (OAC 3745-33-07(B)) ; WLA = Wasteload Allocation procedures (OAC 3745-2); WLA/IMZM = Wasteload Allocation limited by Inside Mixing Zone Maximum; WQS = Ohio Water Quality Standards (OAC 3745-1).

^c Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.

^d 7 day average limit.