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 **Columbus Southern Power Company, Conesville Generating Station**

Public Notice No.: 07-10-033
Public Notice Date: October 24, 2007
Comment Period Ends: November 24, 2007

OEPA Permit No.: **0IB00013*LD**
Application No.: (OH #) **OH0005371**

Name and Address of Applicant:

Columbus Southern Power Company
c/o American Electric Power
1 Riverside Plaza
Columbus, Ohio 43215

Name and Address of Facility Where Discharge Occurs:

Columbus Southern Power Company
Conesville Generating Station
47201 County Road 273
Conesville, Ohio 43811
Coshocton County

Receiving Water: **Muskingum River**

Subsequent Stream Network: **Ohio River**

Introduction

Development of a Fact Sheet for NPDES permits is required 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 and other treatment-technology based standards, existing effluent quality, instream biological, chemical and physical conditions, and the allocations of pollutants to meet Ohio Water Quality Standards. 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 Proposed Permit Conditions

Most of the requirements in the existing permit for the Conesville Power Plant are proposed to continue in the draft permit. However, there are also a number a new requirements, including the authorization of a variance from meeting water quality standards for mercury. The development of a pollutant minimization program in order to reduce mercury discharge concentrations is required as a condition of the variance.

Internal monitoring stations have been added in order to monitor the effluent from a new treatment plant for the flue-gas desulfurization wastestream from generating unit # 4. A monitoring station has also been added to track the quantity of sewage sludge removed from the site and taken to another NPDES permit holder. Requirements for operator certification, outfall signage, and submittal of fish impingement and entrainment data have been included in Part II of the permit. Since the NPDES permit application requested an increase in the discharge of pollutants from outfall 001, an anti-degradation review has been conducted in association with this permit renewal, and the Director of Ohio EPA has determined that a lowering of water quality in the Muskingum River is necessary.

This permit renewal is proposed for a term of approximately **four and one-half years**, expiring on **July 31, 2012**. This schedule will allow the Conesville Power Plant permit to be on a similar schedule with the other facilities within the same watershed basin.

Table of Contents

Table of Contents (continued)

List of Figures

List of Tables

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
Lazarus Government Center
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
Water Resource Management Section
Lazarus Government Center
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.

The application, fact sheet, public notice, permit including effluent limitations, special conditions, comments received and other documents are available for inspection and may be copied at a cost of 25 cents per page at the Ohio Environmental Protection Agency at the address shown above any time between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday. Copies of the Public Notice are available at no charge at the same address.

Location of Discharge/Receiving Water Use Classification

The Conesville Power Plant, a Columbus Southern Power Company affiliated with American Electric Power is located near Conesville, Ohio, in Coshocton County. The facility discharges into the Muskingum River at River Mile (RM) 102.89. This segment of the Muskingum River is described by Ohio EPA River Code 17-001, U.S. EPA River Reach # 05040004-071, and the Western Allegheny Plateau (WAP) Ecoregion. The Muskingum River is presently designated for the following uses: Warmwater Habitat (WWH), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), and Primary Contact Recreation (PCR). The approximate location of the Conesville Plant is shown in Figure 1.

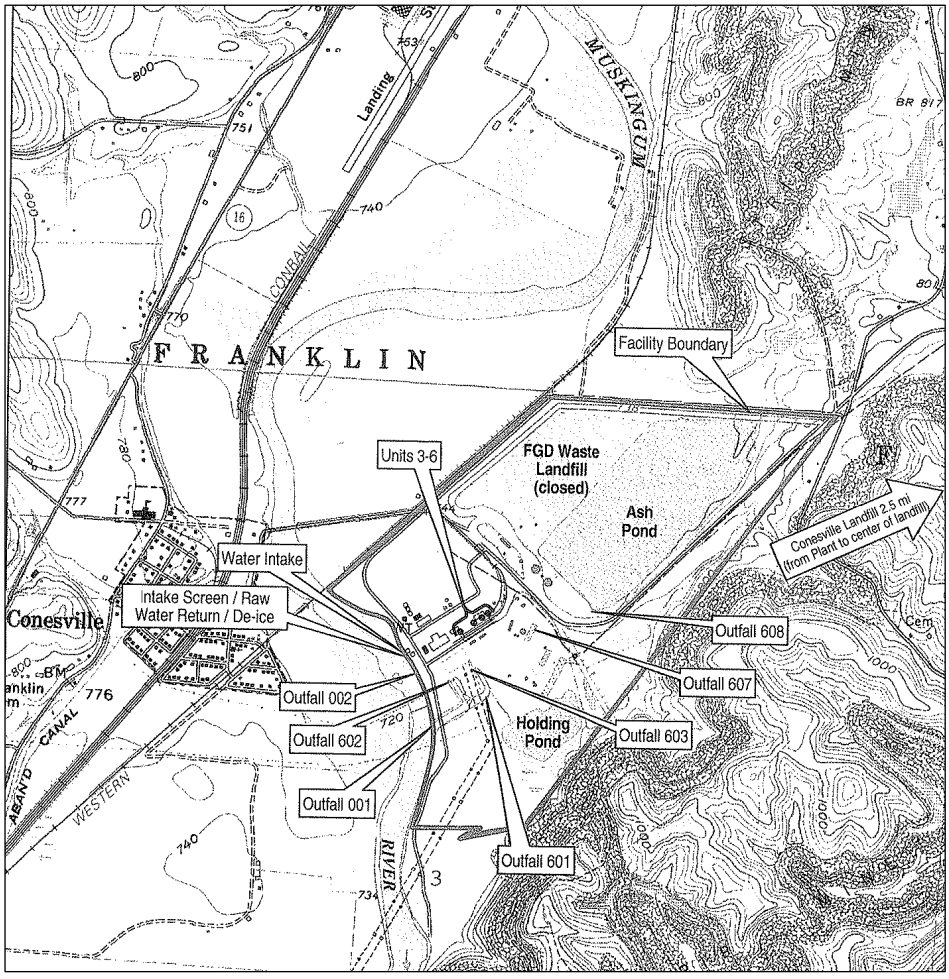

Figure 1. Location of Conesville Power Plant

Use designations define the goals and expectations for a waterbody. These goals are set for aquatic life protection, recreation use and water supply use, and are defined in the Ohio Water Quality Standards, or the Ohio Administrative Code (OAC 3745-1-07). The use designations for individual waterbodies are listed in rules -08 through -32 of the OAC. Once the goals are set, numeric water quality standards are developed to protect these uses; higher quality uses typically have more protective water quality criteria.

Use designations for aquatic life protection include habitats for coldwater fish and macroinvertebrates, warmwater aquatic life and waters with exceptional communities of warmwater organisms. These uses all meet the goals of the federal Clean Water Act. Ohio Water Quality Standards (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 Conesville Plant is a pulverized coal-fired steam-electric generating station. This facility is involved in the generation, transmission, and distribution of electric power. The total generating capacity is 1945 megawatts of electricity based upon the operation of six units.

The Conesville Plant's processes generate wastewaters which are regulated by the federal effluent guidelines (FEGs) listed in 40 CRF Part 423, Steam Electric Power Generating Point Source Category. The process operations at this facility are also defined by the standard industrial classification (SIC) category 4911 - Electric Services.

Description of Existing Discharge

Table 1. Flow Rates for Outfalls 001 and 601 (in MGD)

Year	Outfall 001			Outfall 601		
	50th Perc.*	95th Perc.	Maximum	50th Perc.	95th Perc.	Maximum
2002	259.9	311.0	311.0	20.8	24.3	26.6
2003	259.9	311.0	311.0	20.8	24.3	44.7
2004	259.9	311.0	355.3	16.8	24.3	36.0
2005	186.5	288.7	506.2	14.2	17.4	21.5
2006	237.6	288.7	297.2	14.2	17.4	22.9
Overall	237.6	311.0	506.2	17.4	24.3	44.7

* "Perc." means percentile.

The Conesville Power Plant samples at five internal monitoring stations all of which discharge wastewater through external outfall 001 to the Muskingum River. The majority of the wastewater discharged from outfall 001 is comprised of once-through cooling water while a much smaller amount comes from a holding pond whose discharge is monitored at internal station 601. Table 1 shows the reported flow rates for the Conesville Generating Station for the years 2002 through 2006. The flow rates are constant at outfall 001 for 2002 through 2004 followed by lower discharge rates in 2005 and 2006. The pattern for internal station 601 is similar, although the decrease in flow rate occurs in 2004 for this outfall.

Table 2 on the following page lists all the internal monitoring stations as well as external outfall 001. The treatment provided immediately upstream from each monitoring station, the sources of wastewater, and estimated current as well as projected discharge amounts are all included in Table 2. As stated above, internal station 601 monitors the wastewater from the holding pond, which receives wastewater from a number of different sources including a sewage treatment plant, coal pile runoff, storm water, cooling tower blowdown, and an ash pond.

Table 2. Description of Conesville Plant Outfalls

Outfall #	Source of Wastewater	Treatment Provided	Discharged to:	Flow Rate:*
001	- Once-through cooling - Boiler blowdown - Sanitary wastewater - Metal cleaning waste - Cooling tower blowdn. - Ash pond - Coal pile runoff - Storm water	- Screening	Muskingum River	317.811 MGD (current flow) 126.105 MGD (future flow)
601	- Ash sluice - Cooling tower blowdn. - Sanitary wastewater - Metal cleaning waste - Coal pile runoff - FGD system		Outfall 001	29.804 MGD (current flow) 30.098 MGD (future flow)
602	Sanitary wastewater	- Screening - Sedimentation - Slow sand filtration - Chlorination - Activated sludge - Aerobic digestion	Outfall 001	0.006 MGD
603	Boiler blowdown	- None	Outfall 001	0.001 MGD
607	Sanitary wastewater	- Screening - Sedimentation - Chlorination - Activated sludge - Pre-aeration - Aerobic digestion	Outfall 601	
608	Metal cleaning waste	- Chemical precipitation - Neutralization - Sedimentation	Outfall 601	

* Average discharge flow based upon 2007 NPDES renewal application.

Wastewater sources discharging to the ash pond include metal cleaning wastewater, ash sluice water, storm water, and coal pile runoff. The ash pond contributes more than 80 percent of the total flow to the holding pond. (See Figure 2 on page 10 for a diagram of the existing and future wastewater flows at the Conesville facility.)

During the past five years, the Conesville Plant has generally been in compliance with permit limits. The fully-mixed maximum temperature limit of 93 degrees F. at monitoring station 901 was exceeded once in July 2002. The pH limits were violated twice at station 601, selenium limits were exceeded three times in 2006 at outfall 001, total suspended solids limits were violated once in 2005. Four violations were reported at monitoring station 607: fecal coliform (2004), CBOD (2006), total suspended solids (2006), and pH (2006).

Table 4 on page 19 presents a summary of analytical results for effluent samples taken at outfall 001 for the year 2007 NPDES permit renewal application and chemical analysis conducted by Ohio EPA in conjunction with a bioassay. Table 5 presents a summary of unaltered monthly operational report data for

the period August 2002 through September 2006 for the Conesville Plant, as well as current permit limits, and monthly average projected effluent quality (PEQ_{avg}) and daily maximum PEQ_{max} values.

Anticipated Changes to Conesville Discharge

The permittee is planning to install additional environmental controls at the Conesville facility which will result in changes to the characteristics of the wastewater discharge. A flue gas desulfurization (FGD) system will be installed to remove sulfur dioxide from air emissions, and a selective catalytic reduction (SCR) system is planned in order to remove nitrogen oxides. The waste material created by operation of the FGD system will be discharged to a new treatment system which will include precipitation, primary clarification, and secondary clarification. According to the permit application, this treatment system will be, "…designed to remove solids, and will also remove some sulfates, some fluorides, and a large portion of the particulate metals…" As shown in Figure 2, the wastewater from this process will be routed to the existing ash pond while the dewatered solids will be removed to a landfill. The discharge to the ash pond is expected to increase the loading of trace metals, including mercury.

The SCR treatment system utilizes ammonia, carbon dioxide, and water vapor to capture the nitrogen oxides. It is possible that the discharge to the ash pond could increase in ammonia concentration due to the operation of this system.

In late 2009, Conesville expects to retire the unit 3 generating unit. After the retirement of this unit, all of the remaining generating units will operate with closed-cycle cooling, resulting in:

- a significant reduction in the discharge flow rate at outfall 001. The flow rate at outfall 001 will be roughly equivalent to the flow rate at internal station 601;
- a significant reduction in the quantity of water withdrawn at the plant intake (Station 801).

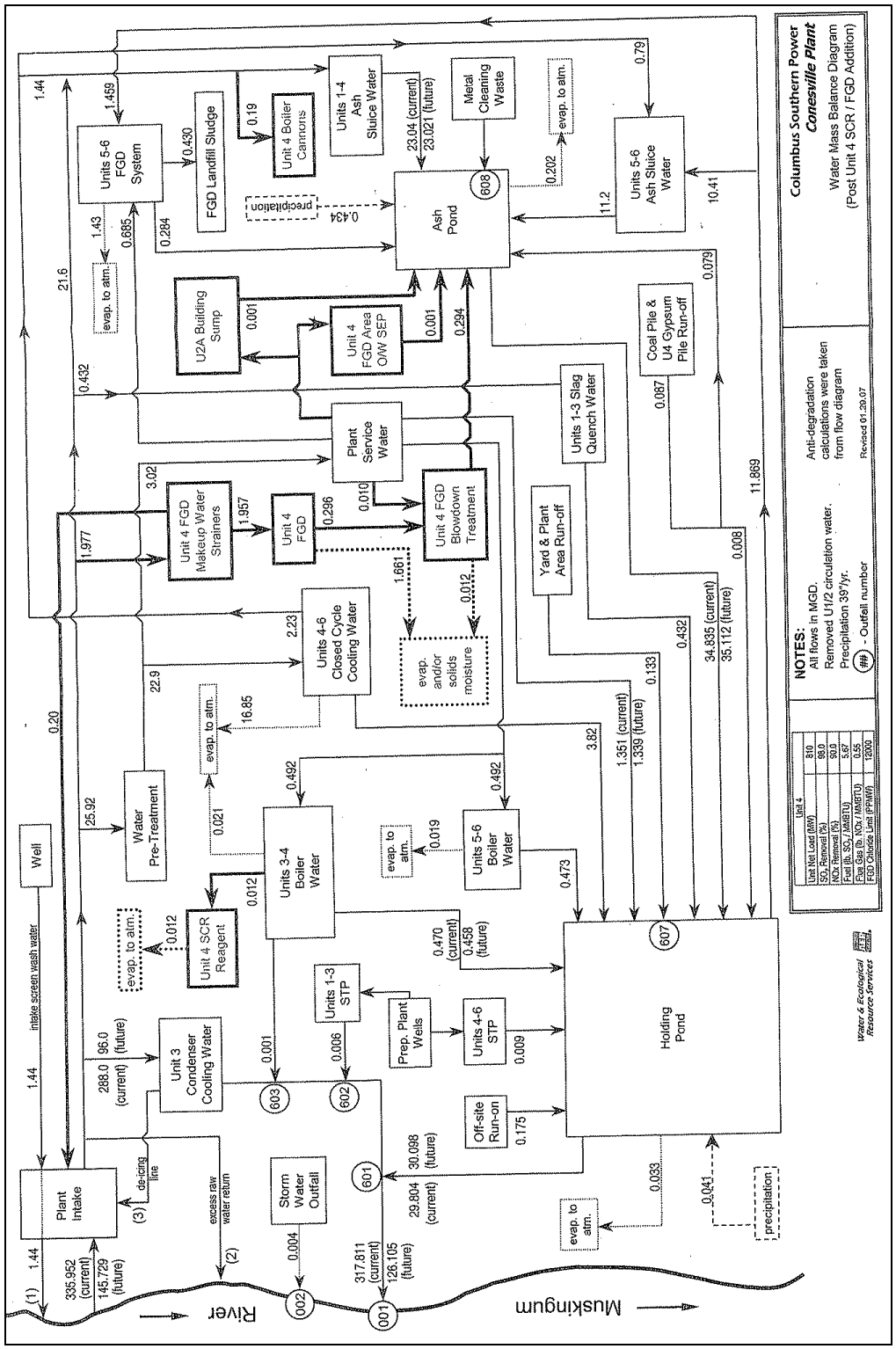

Figure 2. Wastewater Flow Diagram

Receiving Water Quality / Environmental Hazard Assessment

Fish and macroinvertebrate communities were sampled in the Muskingum River during 2006. Sampling stations located upstream and downstream from the AK Steel Coshocton plant, AEP Conesville EGS and AEP Muskingum River EGS were recently assessed. Results revealed full attainment of the Muskingum River WWH aquatic life use designation at sites located immediately downstream from all three facilities. Based on biological monitoring results from 2006, these facilities were not causing impairment to the Muskingum River biological communities.

Datasonde © and HOBO © continuous water quality monitors were placed at locations upstream and downstream from the two AEP power plants. Water temperature levels were within water quality standards criteria downstream of the Conesville plant; however, elevated water temperatures were noted downstream from the Muskingum River plant. Dissolved oxygen measurements were within acceptable levels.

Table 3. Aquatic Life Use Attainment Status: Muskingum River in 2006

Sample Location River Mile	Attainment Status	IBI	MIwb	ICI	QHEI	Location
107.6	(FULL)	48	9.5	NA	83.0	Dst. Coshocton WWTP
105.0	FULL	47	9.3	48	83.5	Dst. AK Steel - Coshocton
101.8	FULL	43	9.5	56	82.0	Dst. Conesville EGS
29.2	FULL	48	10.2	50	64.0	Upst. Muskingum EGS
26.2	FULL	44	9.3	46	64.5	Dst. Muskingum EGS

Index - Site Type	WWH	EWH
IBI: Boat	40	48
MIwb: Boat	8.6	9.6
ICI	36	46

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.

This facility is considered to be interactive for conservative parameters with the Coshocton WWTP, the AK Steel-Coshocton Works and the Smurfit-Stone Corp.- Coshocton Mill. All of these entities discharge to the Muskingum River and lower Tuscarawas River in the vicinity of the AEP - Conesville Plant . The CONSWLA (conservative substance wasteload allocation) model was used to distribute effluent loadings between these entities. (See Figure 3.)

Parameter Selection

Effluent data for the Conesville Power Plant were used to determine what parameters should undergo wasteload allocation. The pollutants discharged are identified by the data available to Ohio EPA - Monthly Operating Report (MOR) 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 renewal application or by pretreatment, or other special conditions in the NPDES permit. The sources of effluent data are as follows:

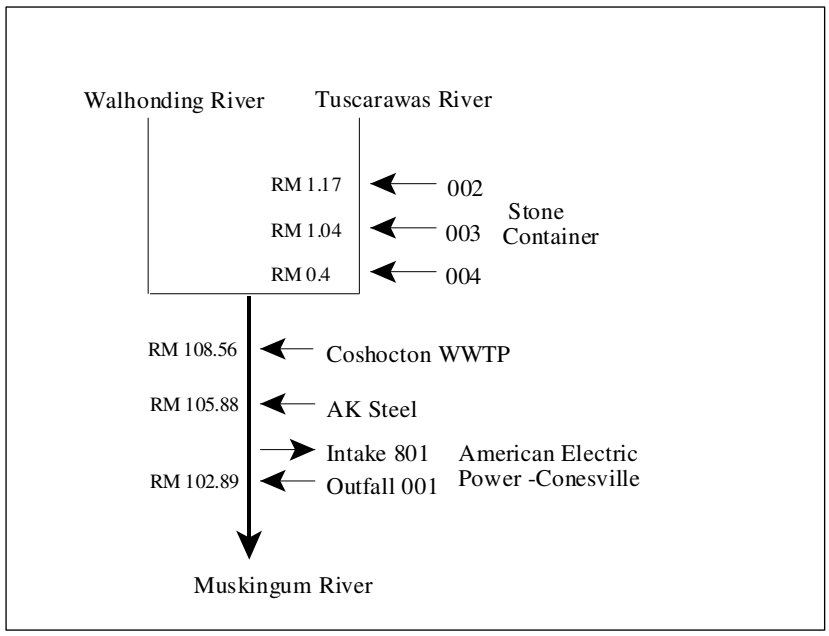

Figure 3. Muskingum River Study Area

Self-monitoring data (LEAPS)	August 2002 through September 2006
2.c. Application Data	2007
Ohio EPA data (compliance, survey)	2005-06

The effluent data were checked for outliers and one value for TDS of 1236 mg/l was removed. This data is evaluated statistically, and PEQ values are calculated for each pollutant. PEQ_{avg} values represent the 95th percentile of monthly average data, and PEQ_{max} values represent the 95th percentile of all data points. The average and maximum projected effluent quality (PEQ) values are presented in Table 6. For a summary of the screening results, refer to the parameter groupings on page 30.

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 parameter 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 the 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 be limited) or if monitoring is required.

Wasteload Allocation

For those parameters that require a wasteload allocation (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 (WQS - 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 WLAs are expressed as concentrations. However, as discussed previously, discharges from the Conesville Power Plant are considered to be interactive with the Coshocton WWTP, the AK

Steel-Coshocton Works and the Smurfit-Stone Corp.- Coshocton Mill and the WLAs have been developed as such. 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-N	Average	Summer/winter 30Q10
Agricultural Water Supply		Harmonic mean flow
Human Health (nondrinking)		Harmonic mean flow

Allocations are developed using a percentage of stream design flow (as specified in Table 8), and allocations cannot exceed the Inside Mixing Zone Maximum criteria.

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

Reasonable Potential

After appropriate effluent limits are calculated by wasteload allocation, the lowest most restrictive average and maximum values are selected from Table 9 and are referred to as Preliminary Effluent Limits (PEL_{avg} and PEL_{max} respectively). The reasonable potential of the discharger to exceed the wasteload allocation (PEL values) is determined by comparing the PEQ_{avg} (Table 6) to the PEL_{avg} and the PEQ_{max} to the PEL_{max} for each parameter. Based on this comparison, each parameter is placed in a defined "group". Parameters that do not have a water quality standard (WQS) or do not require a WLA based on the initial screening are assigned to either group 1 or 2. Parameters are assigned to group 3, 4, or 5 depending on how close the PEQ value is to the allocated value or PEL. The groupings listed in Table 10 reflect the reasonable potential hazard assessment done according to WLA procedures.

Whole Effluent Toxicity WLA

Whole effluent toxicity or "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 (using the chronic toxicity unit (TU_c) and 7Q10 for average and the acute toxicity unit (TU_a) and 1Q10 for maximum). These values are the levels of effluent toxicity that should not cause instream toxicity during critical low-flow conditions. For Conesville, the wasteload allocations are 0.54 TU_a and 2.56 TU_c.

When the calculated acute AET is less than 1.0 TU_a, Allowable Effluent Toxicity is defined as:

Dilution Ratio	Allowable Effluent Toxicity

(downstream flow to discharger flow)	(percent effects in 100% effluent)
up to 2 to 1	30
greater than 2 to 1 but less than 2.7 to 1	40
2.7 to 1 to 3.3 to 1	50

The AET is 30 percent effects in 100 percent effluent based on the dilution ratio of 1 to 1.

Effluent Limits/Hazard Management Decisions

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Tables 11-001, 11-091, 11-601, 11-602, 11-603, 11-604, 11-607, and 11-608 show the draft NPDES limits and monitoring requirements for the Conesville Power Plant.

Federal and State laws/regulations require that dischargers meet both treatment-technology-based limits and any more stringent standards needed to comply with state WQS. Permit limits are based on the more restrictive of the two. Treatment-technology-based limits for Conesville, found in 40 CFR Part 423, Steam Electric Power Generating Point Source Category, are based on the milligrams of pollutant allowed to be discharged per liter.

The Conesville Power Plant's NPDES permit application requested an increase in the discharge of pollutants from outfall 001. As a result, an anti-degradation review has been conducted in association with this permit renewal, and the Director of Ohio EPA has determined that a lowering of water quality in the Muskingum River is necessary. In accordance with OAC 3745-1-05, this decision was reached only after examining a series of technical alternatives, reviewing social and economic issues related to the degradation, and considering all public and appropriate intergovernmental comments. On the following four pages, a discussion of the limits and monitoring requirements for each outfall is presented in some detail.

Outfall 001: Tables 11-001 and 11-091

Monitoring for water temperature, thermal discharge, pH, total dissolved residue, total residual oxidants, flow rate, total residual chlorine, and duration of chlorination/bromination have been continued in the draft permit. Since a large portion of the discharge from this outfall is non-contact cooling water, it is important to monitor the temperature of the wastewater as it enters the Muskingum River. Monitoring of the quantity of heat discharged is required in units of million BTUs per hour. Total residual chlorine includes a limit of 0.2 milligrams per liter (mg/l), which allows chlorination at this outfall for not more than two hours each day, and is based upon the Federal Effluent Guidelines for steam-electric power plants. The limit of 0.05 mg/l for total residual oxidants, which is based upon best professional judgement regarding the relative toxicity of bromine, allows the Conesville Plant to discharge bromine or bromine and chlorine compounds for not more than two hours per day. The pH limits are based upon water quality standards.

When the duration of chlorination and/or bromination exceeds two hours per day, more stringent limits for total residual chlorine and total residual oxidants are proposed at 0.033 mg/l and 0.01 mg/l, respectively. The limit for total residual oxidants is a continuation of existing permit limits, and best professional judgement. The daily maximum as well as the 30-day average limits for total residual chlorine are based upon the wasteload allocation. When the duration of chlorination/bromination

exceeds two hours/day, the facility is required to report sample results for these parameters under permit Table 091.

The Ohio EPA risk assessment places selenium, and total residual chlorine in group 5. This placement indicates that an environmental hazard exists and limits for selenium are necessary to protect water quality. The limits for selenium have been increased based upon the anti-degradation review, and have also been adjusted based upon the projected decrease in the discharge rate from this outfall. The limits developed in the wasteload allocation have been included for outfall 091 in the draft permit.

Mercury has also been placed in Group 5 as of November 2010 when the use of mixing zones to determine wasteload allocations for bioaccumulative chemicals of concern (BCCs) will no longer be allowed. For the time period prior to November 2010, mercury is placed in risk assessment category Group 3 and monitoring only is proposed for the first three years of this permit. In November 2010, limits for mercury will become effective with a monthly average limit of 12 ng/l. Conesville will be required to use EPA Method 1631 (or EPA Method 245.7) to analyze samples for mercury.[1]

The Ohio EPA risk assessment places iron in group 4. This placement as well as the data in Tables 5 and 6 support that this pollutant should not pose environmental hazards and limits are not necessary to protect water quality. Monitoring is proposed at a frequency of once per month to provide a larger dataset to ensure that iron is not a parameter of concern at this outfall.

The Ohio EPA risk assessment places a number of parameters in groups 2 and 3. This placement as well as the data in Tables 5 and 6 support that these pollutants should not pose environmental hazards and limits are not necessary to protect water quality. Monitoring for these parameters is optional, and Ohio EPA believes it is not warranted for the majority of these pollutants. However, monitoring requirements have been continued for total dissolved based upon the reported sample results and the expectation that the discharge will continue to include this pollutant, especially with the start-up of the FGD wastewater treatment system for unit 4.

[1] In November 2010, the use of mixing zones to determine the waste load allocation for bioaccumulative chemicals of concern (BCCs) will no longer be allowed. This means that limits for BCCs after November 2010 must meet water quality standards with no allowances for dilution. Since mercury is considered a BCC, the use of Method 1631 should be used in order to properly evaluate reasonable potential for the subsequent permit renewal.

Mercury Variance at Outfall 001

In order to comply with the mercury limits discussed above, the permittee has applied for coverage under the general mercury variance, Rule 3745-33-07(D)(10) of the Ohio Administrative Code. Based on the results of low-level mercury monitoring, the permittee has determined that its discharge cannot meet the 30-day average water quality-based effluent limit (WQBEL) of 12 nanograms per liter (ng/l). However, the permittee believes that the facility will be able to achieve an annual average mercury effluent concentration of 12 ng/l. The variance application also demonstrated to the satisfaction of Ohio EPA that there is no readily apparent means of complying with the WQBEL without constructing prohibitively expensive end-of-pipe controls for mercury. Based on these factors, the permittee is eligible for coverage under the general mercury variance.

Ohio EPA has reviewed the mercury variance application and has determined that it meets the requirements of the Ohio Administrative Code. Items 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 167 ng/l, which was developed from sampling data analyzed by the permittee;
- A requirement that the permittee 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 (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 water quality-based effluent limit for mercury has not been achieved.

Outfall 601: Table 11-601

The draft permit includes limits for total suspended solids, oil and grease, and pH, which are all a continuation of the existing permit limits. A limit for total residual chlorine has replaced a limit for free available chlorine. In addition, another table has been added to the permit (station 691) for reporting total residual chlorine when discharge of chlorinated cooling tower blowdown into the holding pond exceeds two hours per day. Limits for total suspended solids, oil and grease, and pH are based upon Federal Effluent Guidelines for steam-electric power plants. Monitoring only is included for total precipitation, total dissolved residue, and flow rate which is also a continuation of existing permit requirements.

Outfall 602: Table 11-602

The draft permit includes limits for total suspended solids, oil and grease, pH, fecal coliform, and $CBOD_5$ at this outfall which discharges sanitary wastewater. These requirements are a continuation of existing permit limits.

Outfall 603: Table 11-603

This outfall discharges boiler blowdown. The limits for total suspended solids and oil and grease are proposed to continue from the existing permit, and are based upon Federal Effluent Guidelines for steam-electric power plants.

Outfall 604: Table 11-604

This outfall will monitor the discharge from the FGD chloride purge stream WWTP which will treat wastewater from the unit 4. The parameters to be monitored at this outfall are based upon best professional judgement and the expected pollutants identified in documents submitted by the permittee. Another monitoring station (station 605) has been added to monitor the concentration of mercury prior to treatment at the FGD chloride purge stream WWTP.

Outfall 607: Table 11-607

This outfall also discharges sanitary wastewater. The draft permit includes limits for total suspended solids, pH, fecal coliform, and CBOD which are all a continuation of existing permit limits.

Outfall 608: Table 11-608

Metal cleaning wastewater is discharged from this outfall. The draft permit includes limits for copper and iron based upon Federal Effluent Guidelines. These limits and monitoring for pH and flow rate are all a continuation of existing permit requirements.

Whole Effluent Toxicity

Ohio EPA conducted a bioassay for whole effluent toxicity at outfall 001 in November 2005 at the Conesville Generating Station, and found no evidence of acute toxicity. Biomonitoring is not recommended at this time as a permit requirement.

Thermal Management Plan

The existing thermal management plan for the Conesville Generating Station provides a variance to water quality standards for temperature. As a part of renewing this permit, the requirements of the thermal management plan were reviewed as well as the available biological and temperature data for the Muskingum River in the vicinity of the Conesville facility. Biological data shows that the Muskingum River is in attainment of use designation both upstream and downstream of the thermal discharge. The most recent evidence of this attainment status is based upon sampling conducted during the summer of 2006 by Ohio EPA. These results are consistent with those found in earlier years as well. It appears that elevated temperature conditions within the Conesville thermal plume may cause short-term avoidance of some thermally-sensitive fish species (or may impair thermally-sensitive fish life history stages). However, biological criteria are generally being maintained, and biological indices did not differ significantly between discharge and upstream locations under summer low flow/high temperature conditions.

Temperature data was examined for the years 1995 through 2006 for the Conesville facility, and in general, showed that all permit conditions in the thermal management plan are being met downstream of the discharge. Temperature never exceeded 93º F. and average summer temperature never exceeded 87º F. during this period.

Based upon this review and analysis, Ohio EPA does not believe there is any justification for relaxation or more stringent thermal management plan requirements.

Section 316(b) Data Submittal

Under rules which were promulgated July 9, 2004 under Section 316(b) of the federal Clean Water Act (33 U.S.C. section 1326), the permittee was required to collect and/or compile the following information pertaining to the facility's cooling water intake structure(s):

- source water physical data [40 CFR 122.21(r)(2)];
- cooling water intake structure data [40 CFR 122.21(r)(3)];
- cooling water system data [40 CFR 122.21(r)(5)]; and
- rates of impingement and/or entrainment of fish and shellfish at the facility's cooling water intake structure(s) based upon sampling conducted at the facility.

The permit requires all of this information listed above to be submitted with the permittee's next NPDES permit renewal application unless federal rules are promulgated which require the submittal of the information at an earlier date.

Other Permit Requirements

Operator certification requirements have been included in Part II, Items W and AE of the permit in accordance with rules adopted in December 2006. These rules require the Conesville Generating Plant to meet the rule requirements for a Class A wastewater treatment plant for the sewage treatment plant operations discharging through outfalls 602 and 607 when the permit is renewed or modified after December 21, 2008. The facility is also required to designate an operator in charge of sewage treatment plant operations in accordance with rule 3745-7-02 of the Ohio Administrative Code.

Part II of the permit also includes requirements for signs to be placed at each outfall discharging to the Muskingum River, providing information about the discharge. Signage at outfalls is required pursuant to Ohio Administrative Code 3745-33-08(A). Requirements for monitoring sludge removed from the facility have been added to Part II of the permit to address sampling procedures and reporting.

Table 4. Concentrations of Chemicals Found in Outfall 001 Effluent

Parameter	2007 Permit Application Renewal Form 2C ----------Effluent---------- No. of Samples	Average*	Maximum	Ohio EPA Bioassay 11/28/2005
Outfall 001				
Aluminum (ug/l)	1		290.	< 200.
Ammonia (mg/l)	1		0.1	0.112
Antimony (ug/l)	1		0.2	
Arsenic (ug/l)	1		2.	2.
Barium (ug/l)	1		47.7.	52.
Boron (ug/l)	1		152.	NA
Calcium (mg/l)			NA	75.
Chloride (mg/l)			NA	70.2
Chlorine, Total Residual (mg/l)	1		0.0785	
Chromium (ug/l)	1		1.	< 30.
Cobalt (ug/l)	1		0.6	
Copper (ug/l)	1		3.8	< 10.
Diethylphthalate (ug/l)			NA	5.9
Fluoride (mg/l)	1		0.33	NA
Iron (ug/l)	1		679.	878.
Lead (ug/l)	1		0.9	< 2.
Magnesium (mg/l)	1		22.7	24.
Manganese (ug/l)	1		112.	218.
Mercury (ng/l)	24	19.06	44.8	< 200.
Molybdenum (ug/l)	1		4.3.	NA
Nitrate-Nitrite as N (mg/l)	1		2.4	1.97
Nickel (ug/l)	1		3.3	< 40.
Phenols (ug/l)	1		2.	< 100.
Phosphorus (mg/l)	1		0.3	0.125
Selenium (ug/l)	44	1.7	67.	< 2.
Strontium (ug/l)			NA	346.
Sulfate (mg/l)	1		210.	NA
Titanium (ug/l)	1		5.	NA
TKN (mg/l)			NA	0.51
Total Dissolved Solids (mg/l)			NA	468.
Total Suspended Solids (mg/l)	1		11.6	5.
Zinc (ug/l)	1		58.5	11.

Table 5. **Effluent Characterization and Decision Criteria: 2002-2006**

Summary of analytical results for Outfalls 001, 589, 601, 602, 603, 607, 801, 802, and 901. Decision Criteria: PEQ_{avg} = monthly averages; PEQ_{max} = daily maximum analytical results.

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range	Decision Criteria		
			30 day	Daily		50th	95th		# Obs.	PEQ_{ave}	PEQ_{max}
Outfall 001											
Water Temperature	Annual	F	--	--	1826	75.6	102	31.4-109			
Thermal Discharge	Annual	Million BTU/Hr	--	--	732	1430	3010	105-4210			
pH	Annual	S.U.	6.5 <= pH <= 9.0		280	7.8	8.22	6.61-8.86			
Residue, Total Dissolved	Annual	mg/l	--	--	19	402	673	278-1240	14	499.5	614.
Residue, Total Dissolved	Annual	kg/day	--	--	19	345000	793000	218000-1460000			
Selenium, Total Recoverable	Annual	ug/l	5.6	--	73	0	12.6	0-67	73	23.316	26.406
Selenium, Total Recoverable	Annual	kg/day	2.67	--	73	0	9.73	0-11.6			
Flow Rate	Summer	MGD			920	209	311	79.9-506			
Flow Rate	Winter	MGD			906	260	311	28.8-355			
Flow Rate	Annual	MGD	--	--	1826	238	311	28.8-506			
Mercury, Total (Low Level)	Annual	ng/l	--	--	53	14.2	40.4	2.17-44.8	50	32	44
Mercury, Total (Low Level)	Annual	kg/day	--	--	53	0.0127	0.0302	0.00121-0.0434			
Outfall 589											
Sludge Weight	Annual	Dry Tons	--	--	15	0.063	1.32	0.006-1.96			
Sludge Solids, Percent Total	Annual	%	--	--	15	0.3	14.2	0.06-27			
Sludge Solids, Percent Volatile	Annual	%	--	--	15	64.9	84	8.47-90.4			

Table 5. **Effluent Characterization and Decision Criteria: 2002-2006**

Summary of analytical results for Outfalls 001, 589, 601, 602, 603, 607, 801, 802, and 901. Decision Criteria: PEQ_{avg} = monthly averages; PEQ_{max} = daily maximum analytical results.

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range	Decision Criteria		
			30 day	Daily		50th	95th		# Obs.	PEQ_{ave}	PEQ_{max}
Outfall 601											
Total Precipitation	Annual	Inches	--	--	1400	0	0.7	0-3.3			
pH	Annual	S.U.	6.0 <= pH <= 9.0		575	7.12	8.14	6.22-11			
Residue, Total Dissolved	Annual	mg/l	--	--	17	1030	1490	377-2000			
Total Suspended Solids	Annual	mg/l	30	100	1228	15	28	2-92			
Oil and Grease, Total	Annual	mg/l			7	0	0	0-0			
Oil and Grease, Hexane Extr Method	Annual	mg/l	15	20	54	0	3	0-3			
Flow Rate	Summer	MGD			638	16.5	24.3	0.24-36			
Flow Rate	Winter	MGD			595	17.4	24.3	0.022-44.7			
Flow Rate	Annual	MGD	--	--	1233	17.4	24.3	0.022-44.7			
Chlorine, Free Available	Annual	mg/l	--	0.085	263	0	0.04	0-0.07			
Outfall 602											
Flow Rate	Summer	GPD			823	5350	9430	1.2-26000			
Flow Rate	Winter	GPD			740	4540	9610	359-121000			
Flow Rate	Annual	GPD	--	--	1563	4990	9550	1.2-121000			
pH	Annual	S.U.	6.0 <= pH <= 9.0		62	7.05	7.59	6-8.01			
Total Suspended Solids	Annual	mg/l	12	18	60	3	11	0-15			
Fecal Coliform	Annual	#/100 ml	1000	2000	31	0	108	0-212			
Flow Rate	Summer	MGD			92	0.004	0.005	0.002-0.007			
Flow Rate	Winter	MGD			120	0.003	0.004	0.001-0.011			
Flow Rate	Annual	MGD			212	0.003	0.005	0.001-0.011			
CBOD 5 day	Summer	mg/l	10	15	31	3	6	0-7			

Table 5. **Effluent Characterization and Decision Criteria: 2002-2006**

Summary of analytical results for Outfalls 001, 589, 601, 602, 603, 607, 801, 802, and 901. Decision Criteria: PEQ_{avg} = monthly averages; PEQ_{max} = daily maximum analytical results.

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range	Decision Criteria		
			30 day	Daily		50th	95th		# Obs.	PEQ_{ave}	PEQ_{max}
CBOD 5 day	Winter	mg/l	10	15	31	3	9	0-14			
Outfall 603											
Flow Rate	Summer	GPD			70	15800	45500	990-53500			
Flow Rate	Winter	GPD			52	18100	50700	5940-83200			
Flow Rate	Annual	GPD	--	--	122	16500	46500	990-83200			
Total Suspended Solids	Annual	mg/l	30	100	83	1.1	18.2	0-34			
Oil and Grease, Total	Annual	mg/l			10	0	0	0-0			
Oil and Grease, Hexane Extr Method	Annual	mg/l	15	20	74	1	2	0-3			
Flow Rate	Summer	MGD			6	0.026	0.0418	0.013-0.042			
Flow Rate	Winter	MGD			12	0.013	0.0345	0.01-0.04			
Flow Rate	Annual	MGD			18	0.02	0.0412	0.01-0.042			
Outfall 607											
Flow Rate	Summer	GPD			828	18600	21800	3050-32600			
Flow Rate	Winter	GPD			779	18600	18600	2590-24900			
Flow Rate	Annual	GPD	--	--	1607	18600	19900	2590-32600			
pH	Annual	S.U.	6.0 <= pH <= 9.0		63	7.23	7.99	6.4-8.2			
Total Suspended Solids	Annual	mg/l	30	45	66	13	37	1-45			
Fecal Coliform	Annual	#/100 ml	1000	2000	32	7.5	740	0-8100			
Flow Rate	Summer	MGD			92	0.011	0.016	0.008-0.019			
Flow Rate	Winter	MGD			120	0.01	0.0131	0.005-0.019			

Table 5. **Effluent Characterization and Decision Criteria: 2002-2006**

Summary of analytical results for Outfalls 001, 589, 601, 602, 603, 607, 801, 802, and 901. Decision Criteria: PEQ_{avg} = monthly averages; PEQ_{max} = daily maximum analytical results.

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range	Decision Criteria		
			30 day	Daily		50th	95th		# Obs.	PEQ_{ave}	PEQ_{max}
Flow Rate	Annual	MGD			212	0.01	0.016	0.005-0.019			
CBOD 5 day	Summer	mg/l	25	40	31	4	10.5	0-17			
CBOD 5 day	Winter	mg/l	25	40	30	8.5	16	2-125			
Outfall 801											
Water Temperature	Annual	F			702	70.8	80.4	42.9-88.5			
Outfall 802											
Flow Rate	Summer	MGD			732	2020	10200	367-15300			
Flow Rate	Winter	MGD			0	0	0	0-0			
Flow Rate	Annual	MGD			732	2020	10200	367-15300			
Outfall 901											
Water Temperature	Annual	F			701	73.6	90	43.1-94.9			

Table 6. Effluent Data for Conesville Power Plant

Parameter	Units		# of Samples	# > MDL	Average PEQ	Maximum PEQ
Self-Monitoring (LEAPS) Data						
Selenium	µg/l		73	21	23.316	26.406
Mercury	µg/l		50	50	0.032	0.044
TDS	mg/l		14	14	499.5	614.03
Ohio EPA Data						
Calcium	mg/l		1	1	339.45	465.
Diethylphthalate	µg/l		1	1	26.703	36.58
Strontium	µg/l		1	1	1566.	2145.2
AEP Sample Data						
Antimony	µg/l		3	3	17.52	24.
2.c. Application Data						
Chlorine, total res.	mg/l		1	1	0.355	0.487
Cobalt	µg/l		1	1	2.716	3.72
Titanium	µg/l		1	1	22.63	31.
Combined 2.c. Application, AEP Sample Data and Ohio EPA Data						
Aluminum	µg/l		4	3	13324.	18252.
Ammonia - S	mg/l		4	3	0.664	0.91
Arsenic	µg/l		5	4	20.15	27.6
Barium	µg/l		4	4	156.21	213.98
Beryllium	µg/l		2	1	0.832	1.14
Boron	µg/l		12	12	554.3	986.6
Chloride	mg/l		4	4	140.45	192.4
Chromium, tot.	µg/l		4	2	15.55	21.3
Copper	µg/l		5	4	19.31	26.45
Fluoride	µg/l		3	3	722.7	990.
Iron	µg/l		4	4	25243.	34580.
Lead	µg/l		4	2	14.8	20.28
Magnesium	mg/l		2	2	66.58	91.2
Manganese	µg/l		2	2	604.73	828.4
Molybdenum	µg/l		3	3	27.38	37.5
NO_3+NO_2	mg/l		2	2	6.66	9.12
Nickel	µg/l		4	3	22.995	31.5
Phenols	µg/l		2	1	9.025	12.4
Phosphorus	mg/l		2	2	0.832	1.14
Silver	µg/l		3	1	0.438	0.6
Sulfate	mg/l		4	4	398.58	546.
Thallium	µg/l		3	1	2.716	3.72
Zinc	µg/l		4	4	110.84	151.84

[c.] Carcinogen

Table 7. Water Quality Criteria in the Study Area

Parameter		Units	Outside Mixing Zone Criteria: Average: Human Health	Average: Agri-culture	Average: Aquatic Life	Maximum Aquatic Life	Inside Mixing Zone Maximum
All Segments							
Antimony		µg/l	4300.	--	190.	900.	1800.
Arsenic		µg/l	--	100.	150.	340.	680.
Barium		µg/l	--	--	220.	2000.	4000.
Bis(2-Ethylhexyl)phthalate		µg/l	59.	--	8.4	1100.	2100.
Boron		µg/l	--	--	950.	8500.	17000.
Chlorine, tot. res.		µg/l	--	--	11.	19.	38.
Chromium +6, diss.		µg/l	--	--	11.	16.	31.
Cyanide, free		µg/l	220000.	--	12.	46.	92.
Diethylphthalate		µg/l	120000.	--	220.	980.	2000.
Fluoride		µg/l	--	2000.	--	--	--
gamma BHC		µg/l	0.63	--	0.057	0.95	1.9
Isopropylbenzene		µg/l	--	--	4.8	43.	86.
Iron		µg/l	--	5000.	--	--	--
Mercury [A]		µg/l	0.012	10.	0.91	1.7	3.4
Molybdenum		µg/l	--	--	20000.	190000.	370000.
NO_3+NO_2		mg/l	--	100.	--	--	--
Naphthalene		µg/l	--	--	21.	170.	340.
Phenol		µg/l	4600000.	--	400.	4700.	9400.
Selenium		µg/l	11000.	50.	5.0	--	--
Strontium		µg/l	--	--	5300.	48000.	95000.
Thallium		µg/l	6.3	--	17.	79.	160.
Tetrachloroethylene		µg/l	89.	--	53.	430.	850.
Total Dissolved Solids		mg/l	--	--	1500.	--	–
Below CSP -Conesville							
Ammonia	S	mg/l	--	--	0.6	--	--
Ammonia	W	mg/l	--	--	4.0	--	--
Beryllium		µg/l	280.	100.	66.	560.	1100.
Cadmium		µg/l	--	50.	5.9	16.	32.
Chromium, tot.		µg/l	--	100.	210.	4500.	9000.
Copper		µg/l	1300.	500.	24.	40.	80.
Lead		µg/l	--	100.	27.	510.	1000.
Nickel		µg/l	4600.	200.	130.	1200.	2400.
Silver		µg/l	--	--	1.3	11.	22.
Zinc		µg/l	69000.	25000.	310.	310.	620.

[A] Bioaccumulative Chemical of Concern (BCC)

Table 8. Instream Conditions and Discharger Flow

Parameter	Units		Value	Basis
Tuscarawas River				
7Q10	cfs	annual	271.	USGS gage #03129000, 1937-97 data
1Q10	cfs	annual	258.	USGS gage #03129000, 1937-97 data
30Q10	cfs	summer	310.	USGS gage #03129000, 1937-97 data
			winter	
			549.	USGS gage #03129000, 1937-97 data
Harmonic Mean Flow	cfs	annual	1092.	USGS gage #03129000, 1937-97 data
Mixing Assumption	%	average	97	Stream-to-discharge ratio
	%	maximum	97	Stream-to-discharge ratio
Walhonding River				
7Q10	cfs	annual	233.	USGS gage #03138500, 1937-91 data
1Q10	cfs	annual	94.1	USGS gage #03138500, 1937-91 data
30Q10	cfs	summer	279.	USGS gage #03138500, 1937-91 data
			winter	
			417.	USGS gage #03138500, 1937-91 data
Harmonic Mean Flow	cfs	annual	836.	USGS gage #03138500, 1937-91 data
Mixing Assumption	%	average	97	Stream-to-discharge ratio
	%	maximum	97	Stream-to-discharge ratio
Instream Temperature	°C			
Below Smurfit-Stone		summer	25.6	STORET; 13 values, 1988-94
		winter	4.5	BWQR; 57 values
Below Coshocton WWTP		summer	25.5	STORET; 34 values, 1988-98
		winter	3.0	STORET; 19 values, 1988-94
Below AK Steel		summer	25.2	STORET; 11 values, 1988-94
		winter	3.0	STORET; 19 values, 1988-94
Below AEP Conesville		summer	28.5	LEAPS 901; 610 values, 2001-05
		winter	4.5	BWQR; 57 values
Instream pH	S.U.			
Below Smurfit-Stone		summer	8.21	STORET; 12 values, 1988-94
		winter	8.2	BWQR; 46 values
Below Coshocton WWTP		summer	8.2	STORET; 27 values, 1988-98
		winter	7.8	STORET; 13 values, 1988-94
Below AK Steel		summer	8.1	STORET; 10 values, 1988-94
		winter	7.8	STORET; 13 values, 1988-94
Below AEP Conesville		summer	8.1	LEAPS; 94 values, 2001-2005
		winter	7.9	LEAPS; 64 values, 2001-2005
Instream Hardness	mg/l			
Below Smurfit-Stone		annual	296.	STORET; 26 values, 1994-2005
Below Coshocton WWTP		annual	254.	LEAPS 901; 26 values, 2001-03
Below AK Steel		annual	289.	STORET; 15 values, 1988-94
Below CSP -Conesville		annual	305.	STORET; 15 values, 1988-94

Table 8. Instream Conditions and Discharger Flow (continued)

Parameter	Units		Value	Basis
Background Water Quality				
All Segments				
Bis(2-Ethylhexyl) phthalate	µg/l	annual	0.	No representative data available.
Boron	µg/l	annual	0.	No representative data available.
Chlorine, total res.	µg/l	annual	0.	No representative data available.
Chromium^{+6}, diss.	µg/l	annual	0.	No representative data available.
Cyanide, free	µg/l	annual	0.	No representative data available.
Fluoride	µg/l	annual	0.	No representative data available.
gamma BHC	µg/l	annual	0.	No representative data available.
Isopropylbenzene	µg/l	annual	0.	No representative data available.
Molybdenum	µg/l	annual	0.	No representative data available.
Mercury	µg/l	annual	0.	No representative data available.
Naphthalene	µg/l	annual	0.	No representative data available.
Selenium	µg/l	annual	0.	No representative data available.
Silver	µg/l	annual	0.	No representative data available.
Strontium	µg/l	annual	0.	No representative data available.
Tetrachloroethyl.	µg/l	annual	0.	No representative data available.
Thallium	µg/l	annual	0.	No representative data available.
Tuscarawas River				
Ammonia	mg/l	summer	0.043	STORET; 5 values, 3<MDL, 1988-94
		winter	0.043	STORET; 5 values, 3<MDL, 1988-94
Arsenic	µg/l	annual	0.	No representative data available.
Barium	µg/l	annual	0.	No representative data available.
Cadmium	µg/l	annual	0.	STORET; 5 values, 5<MDL, 1988-94
Chromium, tot.	µg/l	annual	0.	STORET; 5 values, 5<MDL, 1988-94
Copper	µg/l	annual	0.	STORET; 5 values, 5<MDL, 1988-94
Iron	µg/l	annual	870.	BWQR; 562 values,0<MDL
Lead	µg/l	annual	1.8	STORET; 5 values, 4<MDL, 1988-94
Nickel	µg/l	annual	0.	STORET; 5 values, 5<MDL, 1988-94
NO_3+NO_2	mg/l	annual	1.24	STORET; 4 values, 0<MDL, 1988-94
TDS	mg/l	annual	638.	STORET; 4 values, 0<MDL, 1988-94
Zinc	µg/l	annual	30.8	STORET; 5 values, 2<MDL, 1988-94
Walhonding River				
Ammonia	mg/l	summer	0.025	STORET; 21 values, 16<MDL, ‘88-94
		winter	0.025	STORET; 21 values, 16<MDL, ‘88-94
Arsenic	µg/l	annual	2.0	STORET; 16 values, 6<MDL, ‘88-94
Barium	µg/l	annual	65.	STORET; 10 values, 0<MDL, 1988
Cadmium	µg/l	annual	0.1	STORET; 21 values, 20<MDL, ‘88-94
Chromium, tot.	µg/l	annual	0.	STORET; 19 values, 19<MDL, ‘88-94
Copper	µg/l	annual	0.	STORET; 19 values, 19<MDL, ‘88-94
Iron	µg/l	annual	1030.	STORET; 15 values, 0<MDL, ‘88-94
Lead	µg/l	annual	1.0	STORET; 21 values, 16<MDL, ‘88-94
Nickel	µg/l	annual	0.	STORET; 19 values, 19<MDL, ‘88-94
NO_3+NO_2	mg/l	annual	1.2	STORET; 21 values, 0<MDL, 1988-94
TDS	mg/l	annual	328.	STORET; 21 values, 0<MDL, 1988-94
Zinc	µg/l	annual	5.0	STORET; 19 values, 12<MDL, ‘88-94

Table 8. Instream Conditions and Discharger Flow (continued)

Parameter	Units		Value	Basis
Discharge Flows	cfs	outfall #		
Coshocton WWTP		001	6.81	DSW
AK Steel		001	3.09	DSW
CSP -Conesville		001	195.	CSP
		801 (Intake)	225.	CSP
Smurfit-Stone		002	11.9	DSW
		003	3.71	DSW
		004	0.42	DSW

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

Parameter	Units	Average			Maximum	Inside
		Human Health	Agri Supply	Aquatic Life	Aquatic Life	Mixing Zone Maximum
Ammonia Summer	mg/l	--	--	1.7	--	–
Winter	mg/l	--	--	19.	--	–
Barium	µg/l	--	--	470.	3283.	4000.
Boron	µg/l	--	--	2435.	15170.	17000.
Chlorine, tot. res.	µg/l	--	--	27.	33.	38.
Copper	µg/l	11340.[A]	4361.[A]	56.	66.	80.
Fluoride	µg/l	--	19080.	--	--	–
Iron	µg/l	--	38980.	--	--	–
Lead	µg/l	--	925.	64.	880.	1000.
Mercury [C]	µg/l	0.1	94.[A]	2.2	2.9	3.4
Selenium	µg/l	104900.	477.	12.	--	–
Silver	µg/l	--	--	3.2	19.	22.
Strontium	µg/l	--	--	13560.	85650.	95000.
Thallium	µg/l	60.	--	42.	138.	160.
TDS	mg/l	--	--	2927.	--	–
Zinc	µg/l	636700.[A]	230600.[A]	726.[A]	513.	620.

[A] Allocation must not exceed the Inside Mixing Zone Maximum.

[C] Bioaccumulative Chemical of Concern (BCC); no mixing zone allowed after 11/15/2010, WQS must be met at end-of-pipe; unless the requirements for an exception are met as listed in 3745-2-08(L).

Table 10. Parameter Assessment

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

Aluminum	Calcium	Chloride
Magnesium	Manganese	Phosphorus
Sulfate	Titanium	

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

Antimony	Arsenic	Beryllium
Chromium, tot.	Cobalt	Diethylphthalate
Molybdenum	Nickel	NO_3+NO_2
Phenol		

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

Ammonia	Barium	Boron
Copper	Fluoride	Lead
Silver	Mercury (before 11/15/2010)	Strontium
TDS	Thallium	Zinc

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

Iron

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

Limits to Protect Numeric Water Quality Criteria

Parameter	Units	Applicable Period	Recommended Effluent Limits Average	Maximum
Chlorine, tot. res.	µg/l	annual	27.	33.
Mercury (after 11/15/2010)	µg/l	annual	0.012	1.7
Selenium	µg/l	annual	12.	–

Table 11-001. Final Effluent Limits and Monitoring Requirements for Outfall 001: For Chlorination/Bromination Duration of 120 Minutes/Day or Less

		Effluent Limits				
		Concentration		Loading (kg/day)[a]		
Parameter	Units	30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	Basis[b]
Water Temperature	°F	- - - - - - - - - - - - Monitor - - - - - - - - - - - - - - -				M[c]
Thermal Discharge	Million BTU/Hr	- - - - - - - - - - - - Monitor - - - - - - - - - - - - - - -				M[c]
pH	S.U.	- - - - - - - - - - - - 6.5 to 9.0 - - - - - - - - - - - - - - -				EP/BPT
Residue, Total Diss.	mg/l	- - - - - - - - - - - - Monitor - - - - - - - - - - - - - - -				EP/BPJ
Selenium	µg/l	12	--	5.72	--	M[c] /AD
Iron	µg/l	- - - - - - - - - - - - Monitor - - - - - - - - - - - - - - -				WLA
Oxidants, Total Res.	mg/l	--	0.05	--	--	EP/BPJ
Flow	MGD	- - - - - - - - - - - - Monitor - - - - - - - - - - - - - - -				M[c]
Chlorine, Total Residual	mg/l	--	0.2	--	--	EP/BAT
Mercury	ng/l	167.	1700.	0.080	0.811	MV/MZP
Chlorination/Bromination Duration	minutes	--	120	--	--	EP/BAT

[a] Effluent loadings are based upon an average design flow of 126 MGD.
[b,c] See page 34 for definition of terms and explanation of monitoring requirements.

Table 11-091. Final Effluent Limits and Monitoring Requirements for Outfall 091: For Chlorination/Bromination Duration of Greater than 120 Minutes/Day

		Effluent Limits				
		Concentration		Loading (kg/day)[a]		
Parameter	Units	30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	Basis[b]
Oxidants, Total Res.	mg/l	--	0.01	--	--	EP/BPJ
Chlorine, Total Residual	mg/l	0.027	0.033	--	--	WLA
Chlorination/Bromination Duration	minutes	--	--	--	--	EP/BAT

[a] Effluent loadings are based upon an average design flow of 126 MGD.
[b,c] See page 34 for definition of terms and explanation of monitoring requirements.

Table 11-601. Final Effluent Limits and Monitoring Requirements for Outfall 601

		Effluent Limits				
		Concentration		Loading (kg/day)[a]		
Parameter	Units	30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	Basis[b]
Total Precipitation	Inches	- - - - - - - - - - - - Monitor - - - - - - - - - - - - -				EP
pH	S.U.	- - - - - - - - - - - - 6.0 to 9.0 - - - - - - - - - - - - -				EP/BPT
Residue, Total Dissolved	mg/l	- - - - - - - - - - - - Monitor - - - - - - - - - - - - -				EP/BPJ
Suspended Solids	mg/l	30	100	--	--	EP/BPT
Oil and Grease	mg/l	15	20	--	--	EP/BPT
Flow rate	MGD	- - - - - - - - - - - - Monitor - - - - - - - - - - - - -				M[c] /EP
Chlorine, Tot. Res.	mg/l	--	0.2	--	--	M[c] /BPJ
Chlorination/Bromination Duration	minutes	--	120	--	--	BPJ

[b,c] See page 34 for definition of terms and explanation of monitoring requirements.

Table 11-602. Final Effluent Limits and Monitoring Requirements for Outfall 602

		Effluent Limits				
		Concentration		Loading (kg/day)[a]		
Parameter	Units	30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	Basis[b]
Flow rate	GPD	- - - - - - - - - - - - Monitor - - - - - - - - - - - - -				M[c] /EP
pH	S.U.	- - - - - - - - - - - - 6.0 to 9.0 - - - - - - - - - - - - -				EP/BPT
Suspended Solids	mg/l	12	18	--	--	EP/BPT
Fecal Coliform	#/100 ml	1000	2000	--	--	EP/BPT
$CBOD_5$	mg/l	10	15	--	--	M[c] /EP

[b,c] See page 34 for definition of terms and explanation of monitoring requirements.

Table 11-603. Final Effluent Limits and Monitoring Requirements for Outfall 603

		Effluent Limits				
		Concentration		Loading (kg/day)[a]		
Parameter	Units	30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	Basis[b]
Flow rate	GPD	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - - - - -		M[c] /EP
Suspended Solids	mg/l	30	100	--	--	EP/BPT
Oil and Grease	mg/l	15	20	--	--	EP/BPT

[b,c] See page 34 for definition of terms and explanation of monitoring requirements.

Table 11-604. Final Effluent Limits and Monitoring Requirements for Outfall 604

		Effluent Limits				
		Concentration		Loading (kg/day)[a]		
Parameter	Units	30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	Basis[b]
Water Temperature	°C	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - - - - -		M[c]
pH	S.U.	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - - - - -		BPJ
Residue, Total Diss.	mg/l	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - - - - -		BPJ
Total Suspended Solids	mg/l	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - - - - -		BPJ
Ammonia	mg/l	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - - - - -		BPJ
Chloride, Total	mg/l	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - - - - -		BPJ
Sulfate	mg/l	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - - - - -		BPJ
Selenium	µg/l	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - - - - -		BPJ
Boron	µg/l	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - - - - -		BPJ
Nickel	µg/l	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - - - - -		BPJ
Cadmium	µg/l	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - - - - -		BPJ
Lead	µg/l	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - - - - -		BPJ
Flow	MGD	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - - - - -		M[c]
Mercury	ng/l	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - - - - -		BPJ

[b,c] See page 34 for definition of terms and explanation of monitoring requirements.

Table 11-607. Final Effluent Limits and Monitoring Requirements for Outfall 607

		Effluent Limits				
		Concentration		Loading (kg/day)[a]		
Parameter	Units	30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	Basis[b]
Flow rate	GPD	- - - - - - - - - - - - Monitor - - - - - - - - - - - - - - -				M[c] /EP
pH	S.U.	- - - - - - - - - - - - 6.0 to 9.0 - - - - - - - - - - - - - - - - -				EP/BPT
Suspended Solids	mg/l	30	45	--	--	EP/BPT
Fecal Coliform	#/100 ml	1000	2000	--	--	EP/BPT
$CBOD_5$	mg/l	25	40	--	--	M[c] /EP

[b,c] See below for definition of terms and explanation of monitoring requirements.

Table 11-608. Final Effluent Limits and Monitoring Requirements for Outfall 608

		Effluent Limits				
		Concentration		Loading (kg/day)[a]		
Parameter	Units	30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	Basis[b]
pH	S.U.	- - - - - - - - - - - - Monitor - - - - - - - - - - - - - - -				EP/BPT
Copper	µg/l	1000	1000	--	--	M[c] /EP/BPJ
Iron	µg/l	1000	1000	--	--	M[c] /EP/BPJ
Flow rate	MGD	- - - - - - - - - - - - Monitor - - - - - - - - - - - - - - -				M[c] /EP

[b,c] See below for definition of terms and explanation of monitoring requirements.

[b] Definitions:

ABS = Antibacksliding Rule (OAC 3745-33-05(E) and 40 CFR Part 122.44(l));
AD = Antidegradation (OAC 3745-1-05);
BPJ = Best Professional Judgment;
EP = Existing Permit for the Conesville Plant;
FEG-BAT = Best Available Control Technology Currently Available, 40 CFR Part 423.13(e);
FEG-BPT = Best Practicable Waste Treatment Technology, 40 CFR Part 423.12(b)(3) and (b)(4);
M = Monitoring;
MZP = Mixing Zone Phaseout for mercury wasteload allocation (OAC 3745-2);
MV = Mercury Variance [OAC 3745-33-07(D)(10)];
PD = Plant Design Criteria;
RP = Reasonable Potential for effluent to violate water quality standards (3745-33-07(A));
316(a) = Water Quality Variance demonstration
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.

Attachment A. Federal Effluent Guidelines Applicable to the Conesville Plant

40 CFR 423.12(b)(3) Steam Electric Power Generating Point Source Category
Best Practicable Control Technology Available (BPT)
for Low Volume Wastes

	---------- (mg/l) ----------	
Parameter	Daily Maximum	30-Day Average
Total Suspended Solids	100.0	30.0
Oil & Grease	20.0	15.0

40 CFR 423.12(b)(4) Steam Electric Power Generating Point Source Category
Best Practicable Control Technology Available (BPT)
for Fly Ash and Bottom Ash Transport Water

	---------- (mg/l) ----------	
Parameter	Daily Maximum	30-Day Average
Total Suspended Solids	100.0	30.0
Oil & Grease	20.0	15.0

40 CFR 423.12(b)(4) Steam Electric Power Generating Point Source Category
Best Practicable Control Technology Available (BPT)
for Metal-Cleaning Wastes

	---------- (mg/l) ----------	
Parameter	Daily Maximum	30-Day Average
Total Suspended Solids	100.0	30.0
Oil & Grease	20.0	15.0
Copper, total	1.0	1.0
Iron, total	1.0	1.0

40 CFR 423.12(b)(4) Steam Electric Power Generating Point Source Category
Best Practicable Control Technology Available (BPT)
for Coal Pile Run-off

	---------- (mg/l) ----------	
Parameter	Daily Maximum	30-Day Average
Total Suspended Solids	50.0	---

Attachment A. Federal Effluent Guidelines Applicable to the Conesville Plant

40 CFR 423.13(b) Steam Electric Power Generating Point Source Category

Best Available Technology Economically Achievable (BAT)

	---------- (mg/l) ----------	
Parameter	Daily Maximum	30-Day Average
Total Residual Chlorine	0.20	--