

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 **CEI Perry Nuclear Power Plant**

Public Notice No.: 07-05-087
Public Notice Date: May 23, 2007
Comment Period Ends: June 23, 2007

OEPA Permit No.: **3IB00016*ID**
Application No.: **OH0063461**

Name and Address of Applicant:

**CEI Perry Nuclear Power Plant
10 Center Road
Perry, Ohio 44081**

Receiving Water: **Lake Erie**

Name and Address of Facility Where
Discharge Occurs:

**CEI Perry Nuclear Power Plant
10 Center Road
Perry, Ohio 44081
Lake County**

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.

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 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.

Location of Discharge/Receiving Water Use Classification

CEI Perry Nuclear Power Plant discharges to Lake Erie. The approximate location of the facility is shown in Figure 1.

Lake Erie is presently designated for the following uses: Exceptional Warmwater Habitat (EWH), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), Public Water Supply (PWS), Bathing Waters (BW), and Superior High Quality Water (SHQW).

Facility Description

The CEI Perry Nuclear Power Plant generates electric power by steam turbine generators, and is capable of generating 1250 megawatts of electricity. The process operations performed at this facility are classified by the Standard Industrial Classification (SIC) codes 4911, "Electric Services, limited to steam electric power plants." Discharges resulting from these process operations are therefore subject to Federal Effluent Guideline Limitations, contained in Chapter 40 of the Code of Federal Regulations, Part 423, "Steam Electric Power Generating" Industrial Category.

Description of Existing Discharge

This plant has one final discharge point, outfall 004, that discharges approximately 57 million gallons per day (MGD) to Lake Erie. This discharge consists of blowdown from the cooling tower system, plus small volume discharges from the water plant regenerant (outfall 601 - 0.02 MGD), the chemical cleaning waste treatment lagoon (outfall 602 - 0.02 MGD), and the radioactive waste discharge (0.04 MGD). These small systems are batch discharges - the water plant and radwaste treatment systems discharge once per week, and the chemical cleaning discharge discharges once every two years. Outfall 094 is the same outfall as 004 and is applicable when chlorination/bromination is required for more than 120 minutes per day.

Outfalls 601 and 602 each has its own treatment system: The water plant regenerant is neutralized to control extreme pH levels; chemical cleaning wastewaters are treated in a settling lagoon before combining with plant cooling waters.

The combined discharge is treated by ion exchange, chlorination, moving bed filters, coagulation, de-chlorination and pH neutralization prior to discharge.

Table 1 presents the inventory for the Perry Nuclear Power Plant.

Tables 2 and 3 present summaries of unaltered monthly operation report data for the period July 2002 thru December 2006 for the CEI Perry Nuclear Power Plant as well as the monthly average PEQ_{avg} and the daily maximum PEQ_{max} values. Tables 1, 2 and 3 are presented after table 10 of this fact sheet.

Receiving Water Quality / Environmental Hazard Assessment

There is no recent biological data available to assess this discharge.

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 CEI Perry Nuclear Plant were used to determine what parameters should undergo wasteload allocation. The sources of effluent data are as follows:

Self-monitoring data (LEAPS)	July 2002 through December 2006
NPDES Application Form 2C Data	August 2006

The effluent data were checked for outliers - there was none. The average and maximum projected effluent quality (PEQ) values are presented in Table 4. For a summary of the screening results, refer to the parameter groupings at the end of this section.

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. Allocations were developed using the procedures specified in OAC Rule 3745-2-05(B). Allocations cannot exceed the Inside Mixing Zone Maximum criteria. The data used in the WLA are listed in Tables 5 and 6. The wasteload allocation results to maintain all applicable criteria are presented in Table 7.

Reasonable Potential

The preliminary effluent limits are the lowest average WLA (average PEL) and the maximum WLA (maximum PEL). To determine the reasonable potential of the discharger to exceed the WLA for each parameter, the facility's effluent quality is compared to the preliminary effluent limits. The average PEQ value (Table 4) is compared to the average PEL, and the maximum PEQ value is compared to the maximum PEL. Based on the calculated percentage of the respective average and maximum comparisons, the parameters are assigned to "groups", as listed in Table 8.

Whole Effluent Toxicity

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.

The allowable effluent toxicity (AET) is a factor considered in evaluating whole effluent toxicity. The AET calculations are similar to those for aquatic life criteria. For CEI Perry, the AET values are 1.0 TUa and 11 TUc.

The chronic toxicity unit (TU_c) is defined as 100 divided by the IC₂₅:

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

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

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

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

$$TU_a = \frac{100}{LC50}$$

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

Effluent Limits/Hazard Management Decisions

The listing in Table 8 reflects the hazard assessment done according to WLA procedures. Tables 9a, 9b and 10 show the draft NPDES limits for CEI Perry Nuclear Power Plant.

The limits proposed for outfall 004 are water quality based. Limits for pH are based directly on Water Quality Standards (OAC 3745-1). The Ohio EPA risk assessment (Table 8) places chlorine in group 5. This placement as well as the data in Tables 1, 2 and 4 indicate that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. The proposed limit for chlorine is 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.

Limits for chlorine also have a factor added to reflect that organisms near the effluent will only be exposed for two hours per day. Available toxicity data shows that when aquatic organisms are exposed for periods up to two hours, they tolerate higher chlorine concentrations than when they are exposed for the standard toxicity test periods of 48-96 hours. This data indicates that 2-hour IMZM concentrations up to 0.2 mg/l total residual chlorine are protective of the no-rapid-lethality narrative WQS. To ensure that organisms are not exposed longer than this the draft permit would continue the 120 minute duration limit on chlorine/bromine discharges.

The limit on residual oxidants reflects the use of bromine, or bromine-releasing compounds, as additives in the cooling tower system. Bromine compounds are reported as residual oxidants because the analytical methods available do not distinguish between chlorine and bromine, and because bromine and chlorine are sometimes used together in the system. When CEI is using chlorine only, the analytical results are reported as residual chlorine; when using bromine or bromine/chlorine combinations, the company reports the results as residual oxidants.

The limit is based on USEPA research that indicates that bromine is approximately four times as toxic as chlorine, and the use of a two-hour IMZM. The 120 minute duration limit applies to bromination as well as chlorination.

When chlorination/bromination are required for more than two hours (120 minutes) outfall 094 needs to be reported. The fictitious outfall 094 is the same outfall as 004 and is to be followed when chlorination/bromination is required for more than two hours.

The Ohio EPA risk assessment (Table 8) places copper and zinc in group 4. This placement as well as the data in Tables 1, 2 and 4 support that this parameter should not pose an environmental hazard and limits are not necessary to protect water quality. Monitoring is required for group 4 parameters by OAC Rule 3745-33-07(A)(2) and therefore copper and zinc need to be monitored monthly.

Additional monitoring requirements proposed at the final effluent and intake stations are included for all facilities in Ohio. 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.

The limits for internal stations 601 and 602 are based on federal effluent guidelines for the relevant wastestreams, and are nearly identical to the current permit. These internal sampling points are necessary to monitor these small-volume discharges before mixing with the larger cooling tower blowdown discharge. Tracking compliance with the effluent guideline limitations would be impossible without these monitoring stations because of the large dilution provided by the cooling water.

All limits are based on New Source Performance Standards for the Steam Electric Power Industry (40 CFR Part 423). This facility is considered a new source because it was constructed after the 1974 effluent guidelines were proposed. Outfall 601 limits are based on the requirements for low-volume wastewaters, and outfall 602 limits are based on requirements for chemical metal cleaning wastewaters. These effluent guidelines are concentration-based, and are directly applied to these monitoring points.

Whole Effluent Toxicity Reasonable Potential

For the CEI Perry Nuclear Power Plant, the chronic AET is 11 TU_c and acute AET is 1.0 TU_a. There is no recent toxicity test results for this discharge. At present OEPA has no information that would indicate toxic substances are being discharged, other than additives used in the cooling tower system. The biocides used in the system are regulated directly in the permit (chlorine/bromine), and other chemicals are reviewed to ensure that each meets WQS, according to the requirements of Part II, item C of the current and draft permit, and the WQS criteria calculation procedures (OAC 3745-1-36).

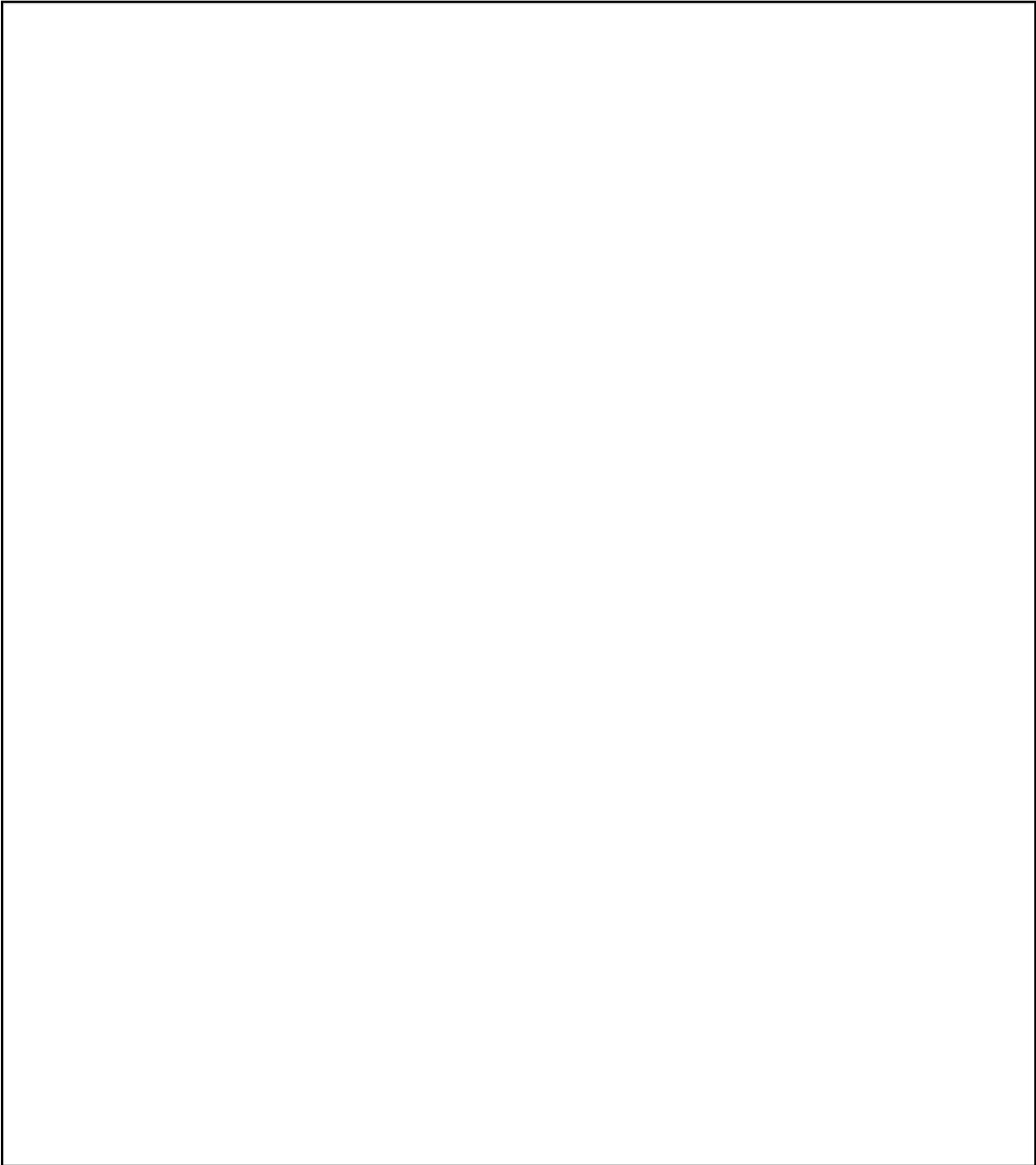


Figure 1. Approximate location of the CEI Perry Nuclear Power Plant.

Table 4. Effluent Data for the Perry Nuclear outfall 004

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Aluminum	ug/l	1	1	2511.93	3441
Arsenic - TR	ug/l	1	1	108.624	148.8
Barium	ug/l	1	1	122.202	167.4
Chlorine (wwh,ewh, mwh,cwh) - TRes	mg/l	906	104	0.024694	0.057441
Cobalt	ug/l	1	1	22.63	31
Copper - TR	ug/l	54	53	19.013	29.225
Fluoride	mg/l	1	1	0.95046	1.302
Iron - TR	ug/l	1	1	2281.25	3125
Magnesium	mg/l	1	1	71.5108	97.96
Nitrate-N + Nitrite-N	mg/l	1	1	9.59512	13.144
Phosphorus	mg/l	1	1	0.6789	0.93
Sulfates	mg/l	1	1	205.4804	281.48
Titanium	ug/l	1	1	49.786	68.2
Zinc - TR	ug/l	1	1	194.618	266.6

Table 5.

Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria				Inside	
		Wildlife	Average			Maximum Aquatic Life	Mixing Zone Maximum
			Human Health	Agri-culture	Aquatic Life		
Aluminum	ug/l	--	4500	--	--	--	--
Arsenic - TR	ug/l	--	580	100	150	340	680
Barium	ug/l	--	160000	--	220	2000	4000
Chlorine (wwh,ewh, mwh,cwh) - TRes	mg/l	--	--	--	0.011	0.019	0.038
Cobalt	ug/l	--	--	--	24	220	440
Copper - TR	ug/l	--	64000	500	12	19	38
Fluoride	mg/l	--	--	2	--	--	--
Iron - TR	ug/l	--	--	5000	--	--	--
Magnesium	mg/l	--	--	--	--	--	--
Nitrate-N + Nitrite-N	mg/l	--	--	100	--	--	--
Phosphorus	mg/l	--	--	--	--	--	--
Sulfates	mg/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Zinc - TR	ug/l	--	35000	25000	160	160	320

Table 6.

Instream Conditions and Discharger Flow

<u>Parameter</u>	<u>Units</u>	<u>Season</u>	<u>Value</u>	<u>Basis</u>
<i>Stream Flows</i>				
1Q10	cfs	annual	0	
7Q10	cfs	annual	0	
		summer	0	
		winter	0	
30Q10	cfs	summer	0	
		winter	0	
Harmonic Mean	cfs	annual	0	
Mixing Assumption	%	average	25	
	%	maximum	100	
<i>Hardness</i>	mg/l	annual	140	
<i>pH</i>	S.U.	summer	0	
		winter	0	
<i>Temperature</i>	C	summer	0	
		winter	0	
<i>Perry Nuclear flow</i>	cfs	annual	136.4	
<i>Background Water Quality</i>				
Aluminum	ug/l		0	No representative data available.
Arsenic - TR	ug/l		0	No representative data available.
Barium	ug/l		0	No representative data available.
Chlorine (wwh,ewh, mwh,cwh) - TRes	mg/l		0	No representative data available.
Cobalt	ug/l		0	No representative data available.
Copper - TR	ug/l		5	BWQR; 50th percentile value
Fluoride	mg/l		0	No representative data available.
Iron - TR	ug/l		650	BWQR; 50th percentile value
Magnesium	mg/l		0	No representative data available.
Nitrate-N + Nitrite-N	mg/l		0.73	BWQR; ; 50th percentile value
Phosphorus	mg/l		0.06	BWQR; 50th percentile value
Sulfates	mg/l		0	No representative data available.
Titanium	ug/l		0	No representative data available.
Zinc - TR	ug/l		15	BWQR; 50th percentile value

Table 7.

Summary of Effluent Limits to Maintain Applicable WQ Criteria

Parameter	Units	Outside Mixing Zone Criteria					Inside Mixing Zone Maximum
		Wildlife	Average			Maximum	
			Human Health	Agri- culture	Aquatic Life	Aquatic Life	
Aluminum	ug/l	--	49500	--	--	--	--
Arsenic - TR	ug/l	--	6380	1100	1650	--	680
Barium	ug/l	--	1760000	--	2420	--	4000
Chlorine (wwh,ewh, mwh,cwh) - TRes	mg/l	--	--	--	0.12	--	0.038
Cobalt	ug/l	--	--	--	264	--	440
Copper - TR	ug/l	--	703950	5450	82	--	38
Fluoride	mg/l	--	--	22	--	--	--
Iron - TR	ug/l	--	--	48500	--	--	--
Magnesium	mg/l	--	--	--	--	--	--
Nitrate-N + Nitrite-N	mg/l	--	--	1093	--	--	--
Phosphorus	mg/l	--	--	--	--	--	--
Sulfates	mg/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Zinc - TR	ug/l	--	384850	274850	1610	--	320

Table 8.

Parameter Assessment

<i>Group 1:</i>	Due to a lack of criteria, the following parameters could not be evaluated at this time.		
	Magnesium Titanium	Phosphorus	Sulfates
<i>Group 2:</i>	PEQ < 25 percent of WQS or all data below minimum detection limit. WLA not required. No limit recommended; monitoring optional.		
	Nitrate-N + Nitrite-N		
<i>Group 3:</i>	PEQ _{max} < 50 percent of maximum PEL and PEQ _{avg} < 50 percent of average PEL. No limit recommended; monitoring optional.		
	Aluminum Cobalt	Arsenic - TR Fluoride	Barium Iron - TR
<i>Group 4:</i>	PEQ _{max} >= 50 percent, but < 100 percent of the maximum PEL or PEQ _{avg} >= 50 percent, but < 100 percent of the average PEL. Monitoring is appropriate.		
	Copper - TR		Zinc - TR
<i>Group 5:</i>	Maximum PEQ >= 100 percent of the maximum PEL or average PEQ >= 100 percent of the average PEL, or either the average or maximum PEQ is between 75 and 100 percent of the PEL and certain conditions that increase the risk to the environment are present. Limit recommended.		

Limits to Protect Numeric Water Quality Criteria

<u>Parameter</u>	<u>Units</u>	<u>Recommended Effluent Limits</u>		<u>Maximum</u>
		<u>Period</u>	<u>Average</u>	
Chlorine (wwh,ewh, mwh,cwh) - TRes	mg/l		--	0.038

Table 9a.

Final effluent limits and monitoring requirements for CEI Perry outfall 3IB00016004, intake 3IB00016800 and the basis for their recommendation.

Parameter	Units	Effluent Limits				Basis ^b
		Concentration		Loading (kg/day) ^a		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
<i>Outfall 3IB00016004</i>						
Flow	MGD	-----	Monitor	-----		M ^c
Temperature	°C	-----	Monitor	-----		M ^c
pH	S.U.	-----	6.5 to 9.0	-----		WQS
Chlorine Residual	mg/l	—	0.2	—	—	BPJ/WLA/IMZM
Oxidants Residual	mg/l	—	0.05	—	—	BPJ/WLA/IMZM
Chlorination/Bromination Duration	min.	—	120	—	—	BPJ/WLA/IMZM
Copper, T. R.	µg/l	-----	Monitor	-----		M/RP ^c
Zinc, T. R.	ug/l	-----	Monitor	-----		M/RP ^c
<i>Intake 3IB00016800</i>						
Temperature	°C	-----	Monitor	-----		M ^c
Copper, T. R.	µg/l	-----	Monitor	-----		M ^c
Zinc, T.R.	ug/l	-----	Monitor	-----		M ^c

^a Effluent loadings based on average design discharge flow of N/A MGD.

^b Definitions: BPJ = Best Professional Judgment; EP = Existing Permit; IJC = 1988 revision of the 1972 Great Lakes Water Quality Agreement of the International Joint Commission; M = Monitoring; NSPS = New Source Performance Standards, 40 CFR Part 423, Steam Electric Generating Point Source Category; 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.

Table 9b. Final effluent limits and monitoring requirements for CEI Perry outfall 3IB00016094 (when chlorination/bromination is needed for more than two hours) and the basis for their recommendation.

Parameter	Units	Effluent Limits				Basis ^b
		Concentration		Loading (kg/day) ^a		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
<i>Outfall 3IB00016094</i>						
Flow	MGD	----- Monitor -----		-----		M ^c
Temperature	°C	----- Monitor -----		-----		M ^c
pH	S.U.	----- 6.5 to 9.0 -----		-----		WQS
Chlorine Residual	mg/l	—	0.038	—	—	BPJ/WLA/IMZM
Oxidants Residual	mg/l	—	0.01	—	—	BPJ/WLA/IMZM
Chlorination/Bromination Duration	min.	—	—	—	—	BPJ/WLA/IMZM
Copper, T. R.	µg/l	----- Monitor -----		-----		M/RP ^c
Zinc, T. R.	ug/l	----- Monitor -----		-----		M/RP ^c

^a Effluent loadings based on average design discharge flow of N/A MGD.

^b Definitions: BPJ = Best Professional Judgment; EP = Existing Permit; IJC = 1988 revision of the 1972 Great Lakes Water Quality Agreement of the International Joint Commission; M = Monitoring; NSPS = New Source Performance Standards, 40 CFR Part 423, Steam Electric Generating Point Source Category; 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.

Table 10. Final effluent limits and monitoring requirements for CEI Perry internal stations 3IB00016601 and 3IB00016602 and the basis for their recommendation.

Parameter	Units	Effluent Limits				Basis ^b
		Concentration		Loading (kg/day) ^a		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
<i>Outfall 3IB00016601</i>						
Flow	MGD	----- Monitor -----				M ^c
Suspended Solids	mg/l	30	100	-	-	NSPS
Oil&Grease	mg/l	15	20	-	-	NSPS
pH	S.U.	----- Monitor -----				M ^c
<i>Outfall 3IB00016602</i>						
Flow	MGD	----- Monitor -----				M ^c
Suspended Solids	mg/l	30	45	-	-	ABS/EP/PD
Oil&Grease	mg/l	15	20	-	-	NSPS
pH	S.U.	----- 6.0 to 9.0 -----				NSPS
Copper, T. R.	µg/l	1000	1000	-	-	NSPS
Iron, T. R.	µg/l	1000	1000	-	-	NSPS

^a Effluent loadings based on average design discharge flow of N/A MGD.

^b Definitions: BPJ = Best Professional Judgment; EP = Existing Permit; IJC = 1988 revision of the 1972 Great Lakes Water Quality Agreement of the International Joint Commission; M = Monitoring; NSPS = New Source Performance Standards, 40 CFR Part 423, Steam Electric Generating Point Source Category; 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.

**Inventory for
the:**

**FirstEnergy Perry Nuclear Power
Plt** **Table 1**

3IB00016 (permit#)

Permit No	Station Code	Reporting Code	Parameter Name	Units	Begin Date	End Date	# of Obs.	# of values	# < MDL	Min	Avg	Max
3IB00016	4	00011	Water Temperature	F	7/1/2002	12/31/2006	1645	1645	0	35	64.568389	89
3IB00016	4	00400	pH	S.U.	7/2/2002	12/29/2006	471	471	0	6.53	8.4722293	8.94
3IB00016	4	01119	Copper, Total Recoverable	ug/l	7/26/2002	12/6/2006	54	53	1	0	10.383333	44
3IB00016	4	50050	Flow Rate	MGD	7/1/2002	12/31/2006	1645	1645	0	28	83.92383	137.3
3IB00016	4	50060	Chlorine, Total Residual	mg/l	7/1/2004	12/31/2006	906	107	799	0	0.0069868	0.18
3IB00016	4	50064	Chlorine, Free Available	mg/l	7/1/2002	6/30/2004	694	490	204	0	0.024683	0.34
3IB00016	4	78739	Chlorination/Bromination Duration	Minute s	7/1/2002	12/31/2006	1629	1629	0	0	67.440147	120

Table 2

Reporting Code	Parameter Name	Units	Start Date	Ending Date	# of Obs.	# of Obs. > MDL	# of Obs. excluded	Min. Value	Max. Value	MaxChk Value	PEQ Method	R ² Value	PEQ average	PEQ max.
004	Outfall													
01119	Copper, Total Recoverable	ug/l	7/26/2002	12/6/2006	54	53	0	2.6	44	48.889	B	0.97816	19.013	29.225
50060	Chlorine, Total Residual	mg/l	7/1/2004	12/31/2006	906	104	0	0	0.18	0.12	B	0.97059	0.02469	0.057441
50064	Chlorine, Free Available	mg/l	7/1/2002	6/30/2004	694	385	0	0	0.34	0.22667	B	0.94761	0.04648	0.11331
01094	Zinc, Total Recoverable	mg/l	8/2/2006	8/2/2006	1	1	0	0.043	0.043		A		0.1946	0.2666
00978	Arsenic, Total Recoverable	mg/l	8/2/2006	8/2/2006	1	1	0	0.024	0.024		A		0.1086	0.1488
00984	Titanium, Total Recoverable	mg/l	8/2/2006	8/2/2006	1	1	0	0.011	0.011		A		0.04979	0.0682
00927	Magnesium, Total (Mg)	mg/l	8/2/2006	8/2/2006	1	1	0	15.8	15.8		A		71.51	97.96
00980	Iron, Total Recoverable	mg/l	8/2/2006	8/2/2006	1	1	0	0.504	0.504		A		2.281	3.125
00979	Cobalt, Total Recoverable	mg/l	8/2/2006	8/2/2006	1	1	0	0.005	0.005		A		0.02263	0.031
01009	Barium, Total Recoverable	mg/l	8/2/2006	8/2/2006	1	1	0	0.027	0.027		A		0.1222	0.1674
01104	Aluminum, Total Recoverable	mg/l	8/2/2006	8/2/2006	1	1	0	0.555	0.555		A		2.512	3.441
00945	Sulfate, (SO4)	mg/l	8/2/2006	8/2/2006	1	1	0	45.4	45.4		A		205.5	281.5
00665	Phosphorus, Total (P)	mg/l	8/2/2006	8/2/2006	1	1	0	0.15	0.15		A		0.6789	0.93
00630	Nitrite Plus Nitrate, Total	mg/l	8/2/2006	8/2/2006	1	1	0	2.12	2.12		A		9.595	13.14
00951	Fluoride, Total (F)	mg/l	8/2/2006	8/2/2006	1	1	0	0.21	0.21		A		0.9505	1.302

Monthly Operating Report (MOR) Statistics

Table 3

FirstEnergy Perry Nuclear Power Plt; 31B00016 (permit #)

Season	Year	# of Obs.	# Below Detection	Minimum	----- Percentiles -----						Maximum	Mean
					5th	25th	50th	75th	95th	99th		
Monitoring Station	004;	Reporting Code:	01119;									
								Parameter Name:	Copper, Total Recoverable (ug/l)			
Annual	2002	6	0	4	5.5	10.5	14	17.5	22.5	23.7	24	14
Annual	2003	12	0	4	5.1	6.55	10.4	22	42.35	43.67	44	16.342
Annual	2004	12	0	3.3	3.465	5.4	6.4	9.875	14.86	17.852	18.6	7.9333
Annual	2005	12	1	0	1.43	4.1	8.4	9.625	14.43	16.806	17.4	7.6
Annual	2006	12	0	4	4.66	5.675	7	9.425	12.81	13.602	13.8	7.85
Annual Overall	2002-2006	54	1	0	3.43	5.8	8.2	12	24.35	42.41	44	10.383
Monitoring Station	004;	Reporting Code:	50060;									
								Parameter Name:	Chlorine, Total Residual (mg/l)			
Summer	2004	92	60	0	0	0	0	0.04	0.0745	0.14	0.14	0.018043
Summer	2005	121	99	0	0	0	0	0	0.06	0.07	0.08	0.009008
Summer	2006	122	107	0	0	0	0	0	0.07	0.1279	0.18	0.01041
Summer Overall	2004-2006	335	266	0	0	0	0	0	0.07	0.1266	0.18	0.012
Winter	2005	89	77	0	0	0	0	0	0.07	0.1224	0.14	0.009888
Winter	2006	89	81	0	0	0	0	0	0.056	0.0936	0.12	0.006629
Winter Overall	2004-2006	178	158	0	0	0	0	0	0.07	0.12	0.14	0.008258
Annual	2004	183	144	0	0	0	0	0	0.06	0.1072	0.14	0.011148
Annual	2005	359	316	0	0	0	0	0	0.05	0.0742	0.14	0.006407
Annual	2006	364	339	0	0	0	0	0	0.05	0.1137	0.18	0.005467
Annual Overall	2004-2006	906	799	0	0	0	0	0	0.05	0.1095	0.18	0.006987
Monitoring Station	004;	Reporting Code:	50064;									
								Parameter Name:	Chlorine, Free Available (mg/l)			
Annual	2002	183	0	0	0	0	0.02	0.04	0.09	0.159	0.2	0.02929
Annual	2003	331	60	0	0	0	0.02	0.04	0.115	0.23	0.34	0.02861
Annual	2004	180	144	0	0	0	0	0	0.07	0.1321	0.21	0.012778
Annual Overall	2002-2004	694	204	0	0	0	0.01	0.04	0.0935	0.2	0.34	0.024683

