

National Pollutant Discharge Elimination System (NPDES) Permit Program

F A C T S H E E T

Regarding an NPDES Permit To Discharge to Waters of the State of Ohio
For the **FirstEnergy Lake Shore Plant**

Public Notice No.: 09-12-010
Public Notice Date: December 10, 2009
Comment Period Ends: January 10, 2010

OEPA Permit No.: **3IB00004*JD**
Application No.: **OH0001147**

Name and Address of Applicant:

FirstEnergy Lake Shore Plant
6800 South Marginal Drive
Cleveland, Ohio 44103

Name and Address of Facility Where
Discharge Occurs:

FirstEnergy Lake Shore
6800 South Marginal Drive
Cleveland, Ohio 44103
Cuyahoga County

Receiving Water: **Lake Erie**

Subsequent
Stream Network:

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.

FirstEnergy has requested a modification of this NPDES permit to (1) revise the mercury limits based on a variance from Ohio Water Quality Standards; and (2) revise the copper limit based on a dissolved metal translator for the bottom ash pond discharge.

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.

In accordance with the antidegradation rule, OAC 3745-1-05, the Director has determined that a lowering of water quality in Lake Erie is necessary. Provision (D)(1)(g) of the antidegradation rule was applied to this application. This provision excludes the need for the submittal and subsequent review of technical alternatives and social and economic issues related to the degradation. Other rule provisions, however, including public participation and appropriate intergovernmental coordination were required and considered prior to reaching this decision.

Procedures for Participation in the Formulation of Final Determinations

The proposed modification is tentative but shall become final on the effective date unless (1) an adjudication hearing is requested, (2) the Director withdraws and revises the proposed modification after consideration of the record of a public meeting or written comments, or (3) upon disapproval by the Administrator of the U.S. Environmental Protection Agency.

Within forty-five (45) days of publication of this notice, any person may submit written comments, a statement as to why the proposed modification should be changed, a request for a public meeting on the proposed modification and/or a request for notice of further actions concerning the modification. All communications timely received will be considered in the final formulation of the modification. If significant public interest is shown a public meeting will be held prior to finalization of the modification.

Within thirty (30) days of the issuance of the proposed modification any officer of an agency of the state or of a political subdivision, acting in his representative capacity or any person aggrieved or adversely affected by issuance of it may request an adjudication hearing by submitting a written objection in accordance with Ohio Revised Code Section 3745.07. Since all other conditions of the permit remain in effect, a hearing may not be requested on any issues other than the proposed modification. If an adjudication hearing is requested, the existing NPDES permit will remain in effect until the hearing is resolved. Following the finalization of the modification by the Director, any person who was a party to an adjudication hearing may appeal to the Environmental Review Appeals Commission.

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 proposed modification. Comments should be submitted in person or by mail no later than 30 days after the date of this Public Notice. Deliver or mail all comments to:

**Ohio Environmental Protection Agency
Attention: Division of Surface Water
Permits and Compliance Section
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.

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.

Questions about permit conditions should be directed to Sandy Cappotto at (330) 963-1124 (email sandra.cappotto@epa.state.oh.us) or Eric Nygaard at (614) 644-2024 (email eric.nygaard@epa.state.oh.us).

Location of Discharge/Receiving Water Use Classification

FirstEnergy Lake Shore discharges to Lake Erie. The approximate location of the facility is shown in Figure 1.

This area of Lake Erie is described by Ohio EPA River Code: 24-600, USEPA River Reach #: N/A, County: Cuyahoga, Ecoregion: Eastern Corn Belt Plains. Lake Erie is presently designated for the following uses: Exceptional Warmwater Habitat (WWH), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), Public Water Supply (PWS), and Bathing Water (BW). Lake Erie is also classified as a Superior High Quality Water (SHQW) under Ohio's antidegradation rule.

Use designations define the goals and expectations of a waterbody. These goals are set for aquatic life protection, recreation use and water supply use, and are defined in the Ohio WQS (OAC 3745-1-07). The use designations for individual waterbodies are listed in rules -08 through -32 of the Ohio WQS. Once the goals are set, numeric water quality standards are developed to protect these uses. Different uses have different water quality criteria.

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

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

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

Facility Description

The Lake Shore Plant generates electric power by the use of coal-fired boilers and steam turbine generators. The plant is capable of generating 249 megawatts of electricity. The process operations performed at this facility are classified under Standard Industrial Classification (SIC) Code 4911, "Electric Services (Limited to steam electric power plants)". Discharges resulting from process operations are subject to federal treatment technology standards (Federal Effluent Guideline Limitations,

contained in Chapter 40 of the Code of Federal Regulations, Part 423, “Steam Electric Power Generating” Industrial Category.)

Table 1 provides a summary description of the Lake Shore Plant outfalls, the types of wastewater discharged, the treatment systems used and the monitoring stations.

Table 1. FirstEnergy Lake Shore Plant Outfall and Treatment Descriptions

Outfall	Type of Wastewater	Treatment System Used	Discharge Point
001	once-through cooling water	disinfection (as needed)	Lake Erie
002	bottom ash transport, ash storage runoff, internal station 607	settling, filtration	Lake Erie
003	low volume effluent (water plant wastewaters, floor and equipment drains)	settling, filtration	Lake Erie
601	boiler blowdown	none	to intake channel - then primarily to Lake Erie via Outfall 001
607	metal cleaning waste, air heater wash	chemical precipitation, neutralization	Outfall 002
800	intake prior to cooling operation		

The current permit contains monitoring and limits at internal stations 601 and 607. Effluent guideline limits are applied at these stations to ensure that these treatment standards are met prior to combining with other waste streams. If monitoring was not done at these locations, it would not be possible to verify compliance with these standards due to dilution. Federal rules prohibit attaining treatment standards by dilution [40 CFR 125.3(f)].

Basis of the Modification

FirstEnergy is applying for a variance from their water quality based limit for mercury. They are also requesting that their copper limit be recalculated using dissolved copper water quality standards, rather than total recoverable copper standards.

Mercury Variance

Ohio Water Quality Standards allow variances from water quality standards [OAC 3745-1-01(F)]; the permit rules contain specific requirements for the application and granting of variance-based limits to NPDES permittees [OAC 3745-33-07(D)]. The rules on variance-based limits contain a statewide mercury variance that is applicable to a variety of dischargers. If a permittee can show that its discharge qualifies for the statewide variance, they may apply for a variance without submitting economic and treatability information that the Director has already reviewed.

FirstEnergy Lake Shore 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 Director has determined that FirstEnergy Lake Shore Plant's Outfall 002: (1) has the reasonable potential to contribute to exceedances of mercury WQS, and therefore must have a permit limit; and (2) can not currently meet the 30-day average water quality based effluent limit (WQBEL) of 1.3 nanograms per liter (ng/l). The permittee believes that the plant will be able to achieve an annual average mercury effluent concentration of 12 ng/l. The variance application also demonstrated to the satisfaction of Ohio EPA that there is no readily apparent means of complying with the WQBEL without constructing prohibitively expensive end-of-pipe controls for mercury. Based on these factors, the permittee is eligible for coverage under the general mercury variance.

Ohio EPA has reviewed the mercury variance application and has determined that it meets the requirements of the Ohio Administrative Code. As part of the modification application, the company has submitted the following information required by the variance rule:

- A certification that FirstEnergy intends to be subject to the terms of the mercury variance rule;
- A description of mercury reduction or elimination projects taken to date;
- A plan of study to identify and evaluate potential mercury sources and potential methods for reducing or eliminating mercury from Outfall 002;
- An explanation of why the company can not meet the water quality based limit without constructing end-of-pipe controls; and
- An Antidegradation Addendum showing how the discharge would meet the requirements of the Antidegradation Rule.

The mercury variance rule defines the limit of treatability for mercury (12 ng/l as an annual average). Dischargers that can meet this standard are therefore meeting the Best Available Demonstrated Control Technology (BADCT) requirements for mercury. The Lake Shore Plant Outfall 002 is able to currently meet this requirement.

Based on these items, and supplemental information submitted by the company, Ohio EPA has determined that the application is complete. All of the items above have been addressed; in the Antidegradation Addendum, FirstEnergy has identified the amount of pollutant to be discharged, the preferred alternative, and the reasons why centralized or regional treatment is not a good option. Diversion of this waste stream to the Northeast Ohio Regional Sewer District for regional treatment is not a good option because this wastewater will not be affected by biological treatment, may contribute to combined sewer overflows, and would not likely result in lower mercury concentrations ultimately discharged.

Mercury variance applications are excluded from the alternatives analysis, socio-economic justification and decision-making portions of the Antidegradation Rule because these factors were assessed in writing and reviewing the mercury variance portion of the state NPDES Rules.

As a result, Ohio EPA is proposing a modification to the NPDES permit. Mercury variance provisions are being added as Items M and N in Part II of the NPDES permit. The following requirements have been included in the draft modification:

- A variance-based monthly average effluent limit of 7.1 ng/l, which was developed from sampling data submitted by the permittee; this limit represents an upper bound of monthly average values (PEQaverage value) for the period September 2001 to November 2008. The data used to set this limit are attached;
- 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.

Based on public comment on the application, the PMP requirements in the draft permit have been expanded beyond the items in FirstEnergy's original application. The mercury variance rule assumes that existing treatment system performance is optimally removing mercury. It also assumes that the mercury in the discharge is dissolved; that is why the treatment system reviewed at the time was reverse osmosis. Based on these comments, the draft permit includes the following items in the PMP:

- Review the treatment of mercury through the treatment plants tributary to Outfall 002; determine what can be done to optimize mercury removal;
- Assess the portion of mercury in the discharge that is dissolved versus suspended; a high percentage of suspended mercury may indicate that additional treatment could be effective;
- Look for coal sources with a lower mercury content;
- Minimize migration of fugitive dust from the coal pile to the plant outfalls;
- Look at eliminating mercury switches and thermometers; and
- Replacing fluorescent lighting with mercury-free bulbs.

Revised Copper Requirements/Dissolved Metal Translator (DMT)

The Ohio Water Quality Standards contain two sets of standards for several metals, including copper. Dissolved copper standards apply where there is data to translate a dissolved metal standard to a total recoverable copper limit; where this data does not exist, total recoverable metal standards apply. A translator is needed because permit limits must be written for total metals according to U.S. EPA rules [40 CFR 122.45].

In the federal Great Lakes Initiative (GLI) Rule, U.S. EPA recommended that metal pollutants be regulated as dissolved metals because dissolved metals more closely approximates the toxic fraction of metal in water; however, they allowed states to use total recoverable metal standards or site-specific translators [see the GLI Supplemental Information Document pp. 97-101].

While the GLI rule recommended use of dissolved metal standards, Ohio EPA believes that these should be used only when justified by site-specific data. Ohio EPA collected data on a number of water bodies

in 1997-98 to develop translators for those areas. For other areas, including Lake Erie, Ohio EPA relies on total recoverable standards, or translators developed by permittees.

FirstEnergy collected 23 sets of dissolved and total recoverable copper data to develop the translator. Twenty-one of the data sets were good quality and used in the translator; two sets were thrown out because of data quality problems. These 21 data sets are a statistically significant basis for the DMT.

The company has applied for a waiver under the Antidegradation Rule for the copper increase [3745-1-05(D)(5)]. This waiver applies to facilities seeking a revised water quality-based limit based on a site-specific study. To qualify for this waiver, the facility must: (1) not be able to meet the current WQ-based limit; (2) show that the revised limit meets WQS; and (3) have a determination from the Ohio EPA director that none of the central treatment options, non-degradation alternatives, minimal degradation alternatives or mitigative techniques are technically feasible or economically reasonable.

The waiver exempts the facility from submitting (1) socio-economic benefits gained or lost; (2) conservation projects affected; and (3) the specific decision-making criteria in the rule.

FirstEnergy has shown that the proposed copper limits based on dissolved copper standards will meet WQS in Lake Erie. They have not submitted specific information regarding central treatment options or alternatives as required by the antidegradation rule. Therefore we are not proposing to approve the alternate limit at this time. If FirstEnergy submits information on these antidegradation rule requirements, Ohio EPA may revise the draft permit and extend the public comment period.

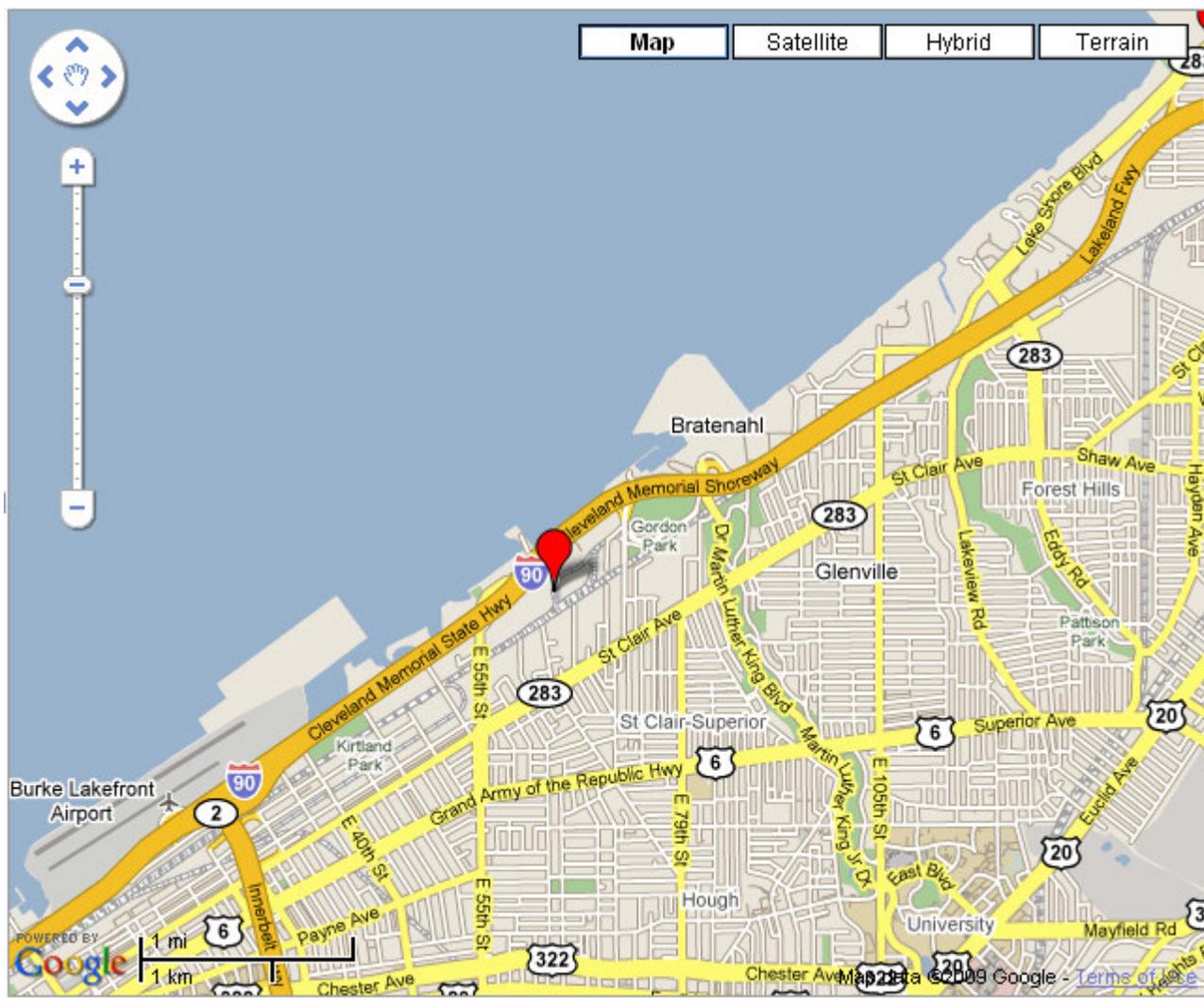


Figure 1. Approximate location of the FirstEnergy Lake Shore.

Table 1. Effluent Limits and Discharge Monitoring Report Data for FirstEnergy Lake Shore Plant Outfalls 002 and 607

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50 th	95 th	

Outfall 002

pH	Annual	S.U.	6.0 to 9.0		1854	8.04	8.6	6.08-8.88
Total Suspended Solids	Annual	mg/l	30	100	454	6	28	0-85
Total Suspended Solids	Annual	kg/day	--	--	454	21.3	155	0-457
Oil and Grease, Total	Annual	mg/l	--	--	299	0	0	0-0
Oil and Grease, Total	Annual	kg/day	--	--	299	0	0	0-0
Oil and Grease, Hexane Extr.	Annual	mg/l	15	20	87	0	0	0-5
Oil and Grease, Hexane Extr.	Annual	kg/day	--	--	87	0	0	0-12.6
Zinc, Total Recoverable	Annual	ug/l	--	--	25	0	12.8	0-21.2
Zinc, Total Recoverable	Annual	kg/day	--	--	25	0	0.0693	0-0.148
Copper, Total Recoverable	Annual	ug/l	--	38	252	6	22.7	0-59.1
Copper, Total Recoverable	Annual	kg/day	--	0.55	252	0.0236	0.108	0-0.272
Flow Rate	Annual	MGD	Monitor		1870	1.19	3.14	0.001-5.13
Mercury, Total (Low Level)	Annual	ng/l	1.3 ^A	1700 ^A	46	1.62	6.77	0-13.8
Mercury, Total (Low Level)	Annual	kg/day	.000014 ^A	.024 ^A	46	7.08E-06	3.47E-05	0-0.0000725

Outfall 607

pH	Annual	S.U.	Monitor		85	7.63	8.4	6.5-8.6
Total Suspended Solids	Annual	mg/l	30	100	85	7	34.4	0-64
Total Suspended Solids	Annual	kg/day	--	--	85	0.583	2.86	0-5.33
Oil and Grease, Total	Annual	mg/l	--	--	66	0	0	0-0
Oil and Grease, Total	Annual	kg/day	--	--	66	0	0	0-0
Oil and Grease, Hexane Extr.	Annual	mg/l	15	20	19	0	0	0-0

Oil and Grease, Hexane Extr.	Annual	kg/day	--	--	19	0	0	0-0
Copper, Total (Cu)	Annual	ug/l	1000	1000	66	12.6	50.8	0-158
Copper, Total (Cu)	Annual	kg/day	--	--	66	0.00105	0.00423	0-0.0132
Iron, Total (Fe)	Annual	ug/l	1000	1000	85	114	700	0-800
Iron, Total (Fe)	Annual	kg/day	--	--	85	0.00949	0.0583	0-0.0666
Copper, Total Recoverable	Annual	ug/l	1000	1000	19	5.7	174	2.1-178
Copper, Total Recoverable	Annual	kg/day	--	--	19	0.000475	0.0145	0.000175-0.0148
Flow Rate	Annual	MGD		Monitor	85	0.022	0.022	0.022-0.022

Effluent data is for 7/1/04-8/31/09.

A = mercury limit is not yet in effect.

Table 2. Final effluent limits and monitoring requirements for FirstEnergy Lake Shore outfalls 31B00004600 and 31B00004002 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>Influent station 600</i>						
Mercury, T.	ng/l	----- Monitor -----				M ^c
<i>Outfall 002</i>						
Flow	MGD	----- Monitor -----				M ^c
Suspended Solids	mg/l	30	100	--	--	BPT
Oil and Grease	mg/l	15	20	--	--	BPT
pH	S.U.	----- 6.0 to 9.0 -----				BPT
Copper, T. R.	µg/l	--	38	--	0.55	EP/WLA/IMZM
Mercury, T.	ng/l	7.1	1700	0.00008	0.024	VAR, WQS

^a Average effluent loadings based on average discharge flow of 2.82 MGD; maximum effluent loadings based on a flow of 3.79 MGD.

^b Definitions: BPJ = Best Professional Judgment; BPT = Best Practicable Waste Treatment Technology, 40 CFR Part 423, Steam Electric Power Generating Industrial Category; EP = Existing Permit; M = Monitoring; RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in NPDES permits (3745-33-07(A)); 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.

Attachment A – Outfall 002 Effluent Data for Copper and Mercury

Parameter name: Copper, Total Recoverable

Reporting code: 01119 (1/15/2002-8/23/2009)

Units of measure: ug/l

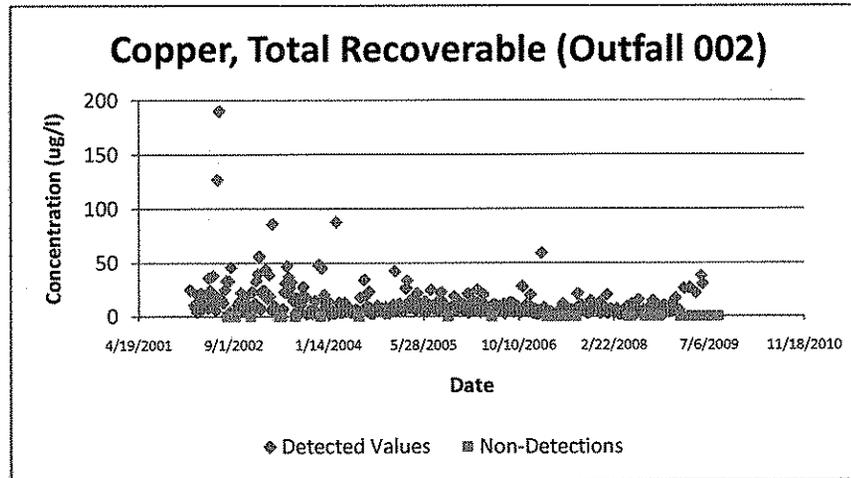
# of Obs.	# of Obs. > MDL	# of Obs. excluded	Min. Value	Max. Value	MaxChk Value	PEQ Method	R ² Value	PEQ average	PEQ max.
374	326	0	2	190	147.78	B	0.99427	25.976	38.225

Permit number: 3ib00004

Outfall number: 002

Date	Reported Value	A Code	MDL	Enter "x" to exclude as outlier
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1/15/2002	25			
2/6/2002	11			
2/10/2002	8			
2/19/2002	4			
2/26/2002	20			
3/5/2002	5			
3/11/2002	22			
3/17/2002	12			
3/27/2002	20			
4/3/2002	19			
4/9/2002	18			
4/16/2002	8			
4/24/2002	36			
4/28/2002	24			
5/5/2002	14			
5/14/2002	38			
5/19/2002	20			
5/28/2002	6			
6/2/2002	13			
6/9/2002	127			
6/17/2002	190			
6/25/2002	16			
7/8/2002	13			
7/15/2002	25			
7/24/2002	33			
7/28/2002	AA		2 UG/L	
8/6/2002	33			
8/11/2002	4			
8/18/2002	46			
8/27/2002	3			
9/4/2002	5			
9/8/2002	AA		2.0 UG/L	
9/19/2002	11		2.0 UG/L	
9/22/2002	3		2.0 UG/L	



10/2/2002	14	
10/9/2002	22	
10/14/2002	5	
10/23/2002	14	
10/28/2002	18	
11/4/2002	5	
11/13/2002	8	
11/19/2002	9	
11/24/2002	6	
12/1/2002	AA	2 UG/L
12/7/2002	23	2 UG/L
12/19/2002	7	2 UG/L
12/22/2002	12	2 UG/L
12/29/2002	33	2 UG/L
1/7/2003	40	
1/13/2003	56	
1/21/2003	7	
1/30/2003	22	
2/2/2003	24	
2/11/2003	24	
2/18/2003	44	
2/23/2003	17	
3/4/2003	39	
3/10/2003	19	
3/17/2003	6	
3/24/2003	86	
4/1/2003	10	
4/8/2003	4	
4/15/2003	4	
4/20/2003	6	
4/27/2003	AA	2 UG/L
5/5/2003	2	
5/11/2003	AA	2.0 UG/L
5/18/2003	7	2.0 UG/L
5/26/2003	23	2.0 UG/L
6/1/2003	31	
6/8/2003	47	
6/16/2003	37	
6/23/2003	27	
7/1/2003	32	
7/8/2003	18	
7/13/2003	15	
7/22/2003	AA	2.0 UG/L
7/28/2003	17	2.0 UG/L
8/4/2003	6	
8/10/2003	2	
8/21/2003	11	

8/24/2003	18	
9/1/2003	27.6	
9/8/2003	18.8	
9/14/2003	18	
9/23/2003	2.2	
9/28/2003	3.8	
10/5/2003	5.7	
10/12/2003	5.6	
10/20/2003	2.7	
11/2/2003	14.4	
11/9/2003	4.2	
11/16/2003	2.5	
11/23/2003	48.1	
12/1/2003	AA	2.0 UG/L
12/7/2003	45.3	2.0 UG/L
12/14/2003	15.8	2.0 UG/L
12/21/2003	20.4	2.0 UG/L
12/28/2003	8.4	2.0 UG/L
1/6/2004	7.4	
1/11/2004	14	
1/18/2004	2.5	
1/25/2004	3.6	
2/1/2004	5.1	
2/8/2004	3	
2/16/2004	2.8	
2/23/2004	87.8	
2/29/2004	5.6	
3/1/2004	5.6	
3/8/2004	12.9	
3/14/2004	3.5	
3/21/2004	5.2	
3/28/2004	3.8	
4/5/2004	12.6	
4/12/2004	8.9	
4/18/2004	9.8	
4/27/2004	8.1	
5/3/2004	6	
5/9/2004	3.9	
5/16/2004	5.4	
5/24/2004	4.1	
6/1/2004	4.3	
6/6/2004	6.3	
6/15/2004	4.9	
6/22/2004	AA	2.0 UG/L
6/28/2004	17.6	2.0 UG/L
7/5/2004	5.1	
7/14/2004	5.2	

7/19/2004	34.2
7/27/2004	19.8
8/2/2004	9.8
8/12/2004	23
8/15/2004	7.9
8/23/2004	2.7
8/29/2004	4.2
9/6/2004	2.4
9/12/2004	4
9/19/2004	6.1
9/27/2004	9.8
10/5/2004	5.5
10/14/2004	6.2
10/20/2004	7.6
10/27/2004	5.6
11/4/2004	3.1
11/9/2004	8.7
11/16/2004	3.2
11/21/2004	6.1
11/28/2004	3.1
12/7/2004	7.1
12/12/2004	5.5
12/19/2004	10.8
12/26/2004	42.3
1/7/2005	5
1/13/2005	10.2
1/18/2005	11.8
2/4/2005	8.5
2/10/2005	5.4
2/24/2005	26.4
3/2/2005	33.7
3/12/2005	14.5
3/15/2005	8.5
3/26/2005	15.3
4/10/2005	7.3
4/17/2005	5.6
4/24/2005	22
5/2/2005	13.6
5/8/2005	10.9
5/16/2005	6.2
5/22/2005	9.3
6/1/2005	13.8
6/8/2005	4.4
6/15/2005	7.1
6/23/2005	11
7/4/2005	24.8
7/10/2005	9.9

7/17/2005	7.2	
7/24/2005	10	
8/1/2005	13	
8/11/2005	4.7	
8/15/2005	7.6	
8/27/2005	22.4	
9/4/2005	13.3	
9/11/2005	11.6	
9/21/2005	3.1	
9/27/2005	3.6	
10/2/2005	AA	2.0 UG/L
10/14/2005	3.9	2.0 UG/L
10/21/2005	9	2.0 UG/L
10/26/2005	5.9	2.0 UG/L
11/4/2005	18.6	
11/10/2005	4.6	
11/16/2005	5.7	
11/24/2005	14.2	
12/4/2005	8.7	
12/14/2005	8.4	
12/20/2005	11.3	
12/27/2005	5.5	
1/6/2006	5.9	
1/14/2006	21.4	
1/18/2006	3.2	
1/23/2006	10.7	
2/5/2006	10.4	
2/12/2006	14.8	
2/15/2006	6.3	
2/22/2006	6.5	
3/4/2006	25	
3/10/2006	12.7	
3/21/2006	3.8	
3/26/2006	10	
4/7/2006	20.4	
4/14/2006	10.2	
4/21/2006	8.9	
4/28/2006	4.5	
5/1/2006	6.1	
5/14/2006	8.7	
5/21/2006	AA	2 UG/L
5/28/2006	11.4	2 UG/L
6/7/2006	10.6	
6/13/2006	4.7	
6/21/2006	7.1	
6/27/2006	9.5	
7/5/2006	8.9	

7/14/2006	8.4	
7/20/2006	11.5	
7/26/2006	2.4	
8/2/2006	5	
8/6/2006	10	
8/14/2006	9	
8/21/2006	13	
8/28/2006	13	
9/7/2006	12.3	
9/14/2006	4	
9/17/2006	6	
9/27/2006	10.1	
10/3/2006	4.6	
10/10/2006	7.8	
10/19/2006	3.3	
10/28/2006	27.9	
11/7/2006	5.1	
11/8/2006	5.7	
11/19/2006	11.5	
11/28/2006	4.1	
12/7/2006	9.9	
12/10/2006	20.1	
12/19/2006	8.1	
12/25/2006	3	
1/7/2007	6.3	
1/8/2007	2.3	
1/21/2007	5.5	
1/22/2007	2.6	
2/6/2007	59.1	
2/11/2007	4.8	
2/18/2007	7.9	
2/22/2007	8	
3/7/2007	AA	2.0 UG/L
3/11/2007	4.5	2.0 UG/L
3/21/2007	2.3	2.0 UG/L
3/25/2007	4.3	2.0 UG/L
4/4/2007	AA	5.0
4/11/2007	AA	5.
4/19/2007	AA	5.
4/26/2007	AA	5.
5/6/2007	AA	2.0
5/14/2007	6.6	
5/15/2007	2.5	
5/28/2007	11.8	
6/5/2007	4	
6/12/2007	6.5	
6/20/2007	4.4	

6/27/2007	AA	2.0
7/7/2007	6.3	
7/14/2007	2.3	
7/18/2007	5.5	
7/24/2007	AA	2.0
8/6/2007	AA	2.
8/14/2007	21.2	
8/21/2007	4	
8/28/2007	11.2	
9/5/2007	5.9	
9/14/2007	7.1	
9/19/2007	5.6	
9/27/2007	4.3	
10/3/2007	3.3	
10/10/2007	2.7	
10/21/2007	14.7	
10/28/2007	7.3	
11/5/2007	8	
11/11/2007	7.04	
11/21/2007	8.24	
11/25/2007	8.41	
12/6/2007	13	
12/12/2007	3	
12/21/2007	8	
12/25/2007	5	
1/3/2008	8	
1/14/2008	20	
1/20/2008	3	
1/27/2008	6	
2/4/2008	7.02	
2/14/2008	5	
2/21/2008	4	
2/27/2008	5	
3/7/2008	7	
3/9/2008	5	
3/20/2008	2	
3/26/2008	2	
4/6/2008	4	
4/10/2008	5	
4/20/2008	3	
4/28/2008	9	
5/4/2008	AA	2.
5/11/2008	3	
5/19/2008	AA	2.
5/28/2008	12	
6/4/2008	10	
6/12/2008	3.82	

6/17/2008	3	
6/28/2008	16	
7/7/2008	4	
7/13/2008	3	
7/20/2008	5	
7/27/2008	6	
8/3/2008	AA	2
8/10/2008	4	
8/17/2008	7	
8/27/2008	AA	2
9/2/2008	3	
9/10/2008	15	
9/17/2008	6	
9/24/2008	AA	2
10/5/2008	11	
10/14/2008	6	
10/19/2008	AA	2
10/27/2008	7	
11/4/2008	4	
11/9/2008	10	
11/17/2008	3	
11/24/2008	6	
12/3/2008	4	
12/10/2008	9	
12/19/2008	4	
12/22/2008	12	
1/4/2009	6	
1/11/2009	17	
1/20/2009	5	
1/27/2009	6	
2/3/2009	AA	20
2/10/2009	AA	20
2/18/2009	AA	20
2/24/2009	26	
3/4/2009	AA	20
3/9/2009	AA	20
3/17/2009	AA	20
3/26/2009	26.5	
4/1/2009	AA	20
4/14/2009	AA	20
4/19/2009	AA	20
4/26/2009	21.5	
5/3/2009	AA	20
5/10/2009	AA	20
5/17/2009	AA	20
5/25/2009	37.9	
6/1/2009	30.3	

6/8/2009	AA	20
6/15/2009	AA	20
6/23/2009	AA	20
7/1/2009	AA	10.0
7/8/2009	AA	10.0
7/15/2009	AA	10.0
7/22/2009	AA	10.0
8/2/2009	AA	10.0
8/9/2009	AA	10.0
8/16/2009	AA	10.0
8/23/2009	AA	10.0

Parameter name: Mercury, Total (Low Level)

Reporting code: 50092 (6/4/2001-11/12/2008)

Units of measure: ng/l

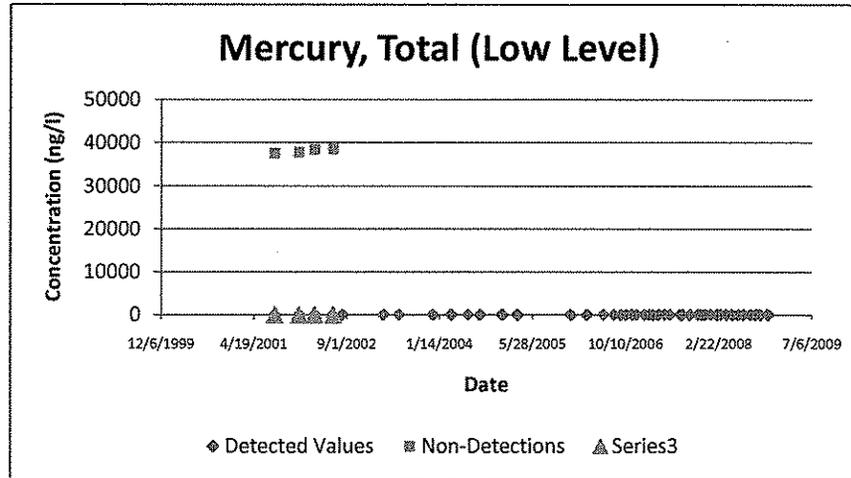
# of Obs.	# of Obs. > MDL	# of Obs. excluded	Min. Value	Max. Value	MaxChk Value	PEQ Method	R ² Value	PEQ average	PEQ max.
48	44	4	0.591	13.8	16.867	B	0.9933	7.1316	11.505

Permit number: 3ib00004

Outfall number: 002

Date	Reported Value	A Code	MDL	Enter "x" to exclude as outlier
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6/4/2001		AA	0.2 UG/L	x
6/10/2001		AA	0.2 UG/L	x
6/18/2001		AA	0.2 UG/L	x
6/28/2001		AA	0.2 UG/L	x
8/9/2001	5.57			
12/17/2001	5.5			
3/12/2002	1.33			
6/20/2002	2.01			
8/7/2002	2.03			
12/10/2002		AA	0.5 NG/L	
3/17/2003	0.705			
6/9/2003	3.25			
8/12/2003		AA	.5 NG/L	
12/8/2003	0.84			
3/15/2004	1.31			
6/15/2004	7.71			
8/17/2004	5.36			
12/16/2004	0.962			
3/8/2005	1.07			
6/30/2005		AA	0.5 NG/L	
8/16/2005		AA	0.2 NG/L	
12/19/2005	6.78			
3/16/2006	3.08			
6/12/2006	2.12			
8/8/2006	11.2			
9/14/2006	1.24			
10/11/2006	3.24			
11/13/2006	2.81			
12/6/2006	1.96			
1/18/2007	2.59			
2/12/2007	0.591			
3/6/2007	2.66			
4/4/2007	1.27			
5/7/2007	1.42			



6/4/2007	0.614
7/31/2007	0.744
8/9/2007	6.74
9/19/2007	3.65
11/2/2007	1.59
11/20/2007	3.1
12/10/2007	13.8
1/10/2008	3.72
2/13/2008	5.77
3/4/2008	3.18
4/3/2008	2.35
5/5/2008	1.08
6/4/2008	0.711
7/2/2008	1.1
8/11/2008	3
9/8/2008	1.74
10/2/2008	1.64
11/12/2008	1.1

Attachment B – Dissolved Metal Translator Data Submitted by FirstEnergy

Lake Shore Plant
Dissolved Metals Translator Study

		1	2	3	4	5	6	7	8	9	10
Date		2/19/2007	2/28/2007	3/6/2007	3/14/2007	3/21/2007	4/4/2007	4/11/2007	4/20/2007	4/26/2007	4/30/2007
Intake 800	Total Cu (ppb)	<2	4	3	3	3	7	3	<2	6	<2
	Dissolved Cu (ppb)	<2	2	2	2	<2	2	3	<2	<2	<2
	pH	7.6	8.1	8.2	8.1	8.1	8	7.9	7.6	7.8	7.2
	Temp. (C)	1	5	3.1	7.8	4.9	12.2	8.7	10.4	11.1	14.5
	TSS (mg/l)	<4	<4	11	<4	4	<4	7	<4	6	6
	Total Hardness (ppm)	120	99	123	115	123	143	94	124	147	215
Outfall 002	Total Cu (ppb)	7	5	9	7	3	6	5	6	8	6
	Dissolved Cu (ppb)	<2	2	5	3	5	3	<2	2	<2	6
	pH	8.9	8.5	9	9.3	8.7	8.8	8.7	8.6	8.7	8.6
	Temp. (C)	4.9	11.4	4.7	13.1	10.9	14.4	12.6	13.6	14.9	17.8
	TSS (mg/l)	36	6	25	41	8	35	34	39	12	44
	Total Hardness (ppm)	139	109	140	142	133	152	105	159	176	186
800 + 002 Mixed	Total Cu (ppb)	9	5	6	4	4	<2	4	4	8	3
	Dissolved Cu (ppb)	4	3	6	2	<2	3	4	2	4	2
	pH	8	8.2	8	8.6	8.5	8	8	8	7.9	7.9
	Temp. (C)	3.2	9.5	3.5	10.4	8.1	12.7	11.6	12.6	12.3	15.6
	TSS (mg/l)	6	<4	13	11	9	9	6	10	<4	12
	Total Hardness (ppm)	120	101	117	113	125	147	89	131	153	152
Field Blank	Total Cu (ppb)	4	3	<2	<2	3	<2	4	<2	<2	<2
	Dissolved Cu (ppb)	<2	3	<2	<2	<2	<2	7	<2	3	<2
	Temp. (C)	12.7	19.8	8.4	17.3	--	17.2	21.4	--	21.7	20.6
Duplicate	Sample/Outfall:	blank	800	800	mixed	blank	intake	800	002	mixed	002
	Filtered - Yes or No	yes/dis	yes/dis	yes/dis	yes/dis	yes/dis	yes/dis	yes/dis	yes/dis	yes/dis	yes/dis
	Total Cu (ppb)	<2	3	4	3	<2	6	3	8	3	7
	Dissolved Cu (ppb)	<2	3	4	2	<2	<2	2	<2	<2	2
	pH	7.7	8.1	8.2	8.6	7.5	7.9	7.8	8.6	7.9	8.6
	Temp. (C)	12.7	6.7	3.1	10.4	17.5	13.2	8.4	13.7	12.4	18.1
	TSS (mg/l)	<4	<4	6	6	<4	6	5	43	8	53
	Total Hardness (ppm)	<4	94	122	116	<2	142	88	158	151	189

BDL = Below Detectable Limit

Lake Shore Plant
Dissolved Metals Translator Study

		11	12	13	14	15	16	17	18	19	20
Date		5/7/2007	5/17/2007	5/22/2007	6/1/2007	6/5/2007	6/11/2007	6/22/2007	6/26/2007	7/3/2007	7/11/2007
Intake 800	Total Cu (ppb)	<2	3	5	25	10	4	3	4	4	<2
	Dissolved Cu (ppb)	<2	3	2	7	<2	<2	<2	3	<2	<2
	pH	8.1	7.8	7.8	8.1	7.8	7.6	7.5	7.8	7.8	7.7
	Temp. (C)	14.1	16.1	16	20.4	20.1	19.6	22.4	<4	22.6	25.7
	TSS (mg/l)	<4	6	4	5	34	<4	4	23.9	5	<4
	Total Hardness (ppm)	127	134	156	149	159	116	214	143	180	123
Outfall 002	Total Cu (ppb)	3	11	6	12	2	3	4	4	4	15
	Dissolved Cu (ppb)	<2	2	<2	4	<2	<2	<2	<2	<2	<2
	pH	8.9	8.8	8.6	8.8	8.8	8.7	8.8	8.9	8.7	8.9
	Temp. (C)	16.4	18.3	19.8	23.8	21.8	23.8	24.5	26.6	24.6	27.3
	TSS (mg/l)	10	46	8	17	13	11	15	13	<4	78
	Total Hardness (ppm)	150	147	156	166	152	152	85	89	148	167
800 + 002 Mixed	Total Cu (ppb)	3	4	7	5	5	18	3	6	4	<2
	Dissolved Cu (ppb)	<2	2	2	3	<2	<2	2	3	2	<2
	pH	8.3	8.2	8.1	8.7	8.3	8.2	7.8	8.1	8	8
	Temp. (C)	14.8	17.3	17	21.7	20.9	20.5	22.6	24.9	22.8	25.8
	TSS (mg/l)	4	7	6	<4	31	<4	<4	<4	6	7
	Total Hardness (ppm)	127	123	144	139	136	114	139	129	149	129
Field Blank	Total Cu (ppb)	<2	<2	<2	<2	<2	<2	<2	52	<2	<2
	Dissolved Cu (ppb)	<2	4	<2	<2	<2	<2	<2	15	<2	<2
	Temp. (C)	21.2	22.3	24.7	23	20.1	24.4	21.8	24.1	22.1	25.9
Duplicate	Sample/Outfall:	blank	002	mixed	800	002	mixed	800	002	mixed	800
	Filtered - Yes or No	yes/dis	yes/dis	yes/dis	yes/dis	yes/dis	yes/dis	yes/dis	yes/dis	yes/dis	yes/dis
	Total Cu (ppb)	<2	16	11	3	2	7	4	5	3	--
	Dissolved Cu (ppb)	<2	12	5	<2	2	<2	3	5	<2	--
	pH	6.4	8.8	8.1	8.2	8.9	8.2	7.5	8.9	8	7.7
	Temp. (C)	21.2	18.5	17.1	20.1	22.3	20.4	22.5	26.8	22.8	25.6
	TSS (mg/l)	<4	46	7	<4	15	<4	4	14	7	4
	Total Hardness (ppm)	<2	147	130	128	123	128	165	86	146	119

BDL = Below Detectable Limit

Lake Shore Plant
Dissolved Metals Translator Study

		21	22	23	24	25	26	27	28	29	30
Date		7/16/2007	7/26/2007	7/31/2007							
Intake 800	Total Cu (ppb)	3	7	7							
	Dissolved Cu (ppb)	<2	7	4							
	pH	7.9	7.6	7.8							
	Temp. (C)	24.2	23.1	24.7							
	TSS (mg/l)	6	5	4							
	Total Hardness (ppm)	136	169	164							
Outfall 002	Total Cu (ppb)	50	6	6							
	Dissolved Cu (ppb)	<2	5	4							
	pH	8.8	8.6	8.7							
	Temp. (C)	24.3	25.5	27.5							
	TSS (mg/l)	50	<4	9							
	Total Hardness (ppm)	275	114	88							
800 + 002 Mixed	Total Cu (ppb)	6	9	7							
	Dissolved Cu (ppb)	<2	8	4							
	pH	8.1	8.1	7.9							
	Temp. (C)	24.3	23.7	25.5							
	TSS (mg/l)	41	<4	7							
	Total Hardness (ppm)	145	200	138							
Field Blank	Total Cu (ppb)	<2	44	4							
	Dissolved Cu (ppb)	<2	6	4							
	Temp. (C)	24.4	22.2	23.4							
Duplicate	Sample/Outfall:	002	002	mixed							
	Filtered - Yes or No	yes/dis	yes/dis	yes/dis							
	Total Cu (ppb)	46	18	6							
	Dissolved Cu (ppb)	<2	5	5							
	pH	8.8	8.6	7.9							
	Temp. (C)	24.2	25.8	25.5							
	Total Hardness (ppm)	47	<4	<4							

BDL = Below Detectable Limit