

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 **Ashta Chemicals, Inc.**

Public Notice No.:
Public Notice Date:
Comment Period Ends:

OEPA Permit No.: **3IE00016*KD**
Application No.: (OH #) **OH0000752**

Name and Address of Applicant:

Ashta Chemicals, Inc.
P.O. Box 858
Ashtabula, Ohio 44004

Name and Address of Facility Where
Discharge Occurs:

Ashta Chemicals, Inc.
3509 Middle Road
Ashtabula, Ohio 44004
Ashtabula County

Receiving Water: **Fields Brook**

Subsequent
Stream Network: **Lake Erie**

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 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 Permit Conditions

A draft permit was public noticed for this permit renewal in May 2002. Subsequent to that time, the permittee and the State of Ohio signed a Consent Order to resolve an enforcement case against Ashta Chemicals. (See page 8 for further discussion of the Consent Order.) The requirements in the Consent Order have resulted in several necessary changes in the draft permit, and has led to the re-public noticing of the draft permit. As a result of several environmental improvements required in the Consent Order and agreements negotiated for the Order, limits for mercury have been removed from storm water outfalls for mercury, monitoring at Lake Erie has been eliminated, and limits have been removed for parameters at outfall 001 (outfall located at Ashta's property line). Discharges from the storm water outfalls which are less than a threshold design limit must be routed to a collection basin for treatment and/or recycling.

This permit renewal is proposed for a term of **five years**, expiring in **2011**.

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Procedures for Participation in the Formulation of Final Determinations

The draft action shall be issued as a final action unless the Director revises the draft after consideration of the record of a public meeting or written comments, or upon disapproval by the Administrator of the U.S. Environmental Protection Agency.

Within thirty days of the date of the Public Notice, any person may request or petition for a public meeting for presentation of evidence, statements or opinions. The purpose of the public meeting is to obtain additional evidence. Statements concerning the issues raised by the party requesting the meeting are invited. Evidence may be presented by the applicant, the state, and other parties, and following presentation of such evidence other interested persons may present testimony of facts or statements of opinion.

Requests for public meetings shall be in writing and shall state the action of the Director objected to, the questions to be considered, and the reasons the action is contested. Such requests should be addressed to:

**Legal Records Section
Ohio Environmental Protection Agency
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
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.

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

Ashta Chemicals, Inc. (or Ashta Chemicals) discharges to Fields Brook through three outfalls located two to two and one-half miles upstream from the Ashtabula River which flows into Lake Erie. The confluence of Fields Brook and the Ashtabula River is 1.6 miles upstream from Lake Erie in Ashtabula County. Fields Brook has the following designated uses: Limited Warmwater Habitat (LWWH), Industrial Water Supply (IWS), and Primary Contact Recreation (PCR). The lower reach of the Ashtabula River is designated Warmwater Habitat (WWH), Seasonal Salmonid Habitat (SSH), IWS, and PCR. This section of the Ashtabula River and Fields Brook are identified by Ohio EPA River Codes 07-001 and 07-010, respectively, and U.S. EPA River Reach number 04110003-008, and are located in the Erie/Ontario Drift Lake Plain ecoregion.

Outfall 001 is designed to discharge to Lake Erie which has the following designated uses: Exceptional Warmwater Habitat (EWH), State Resource Water (SRW), Public Water Supply (PWS), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), Primary Contact Recreation (PCR), and Bathing Waters (BW). The approximate location of the facility is indicated by the “star” in the center of Figure 1, just north of Middle Road.

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.

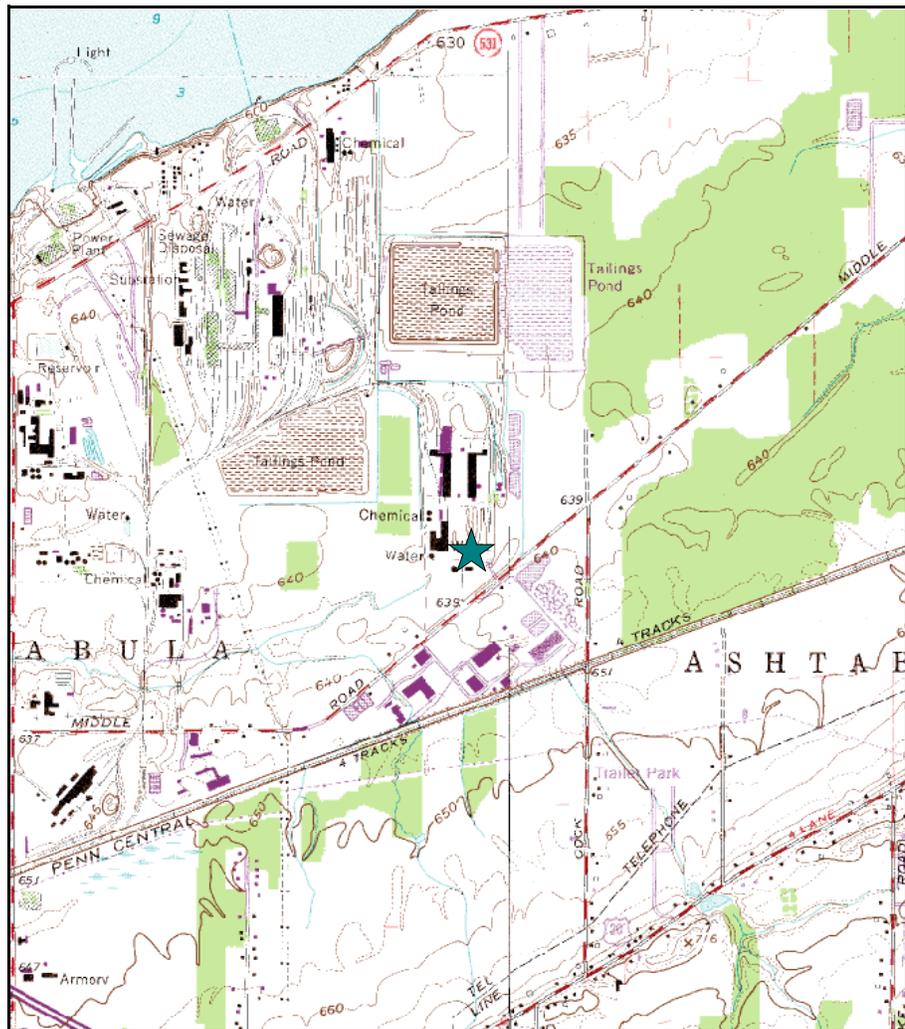


Figure 1. Approximate Location of Ashta Chemicals

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

Ashta Chemicals produces chlorine, potassium hydroxide, potassium carbonate, chloropicrin, and potassium hypochlorite using a mercury cell, chlor-alkali process. This plant is classified under the Standard Industrial Classification Code (SIC) 2812 which is identified as “Inorganic Chemicals”.

Discharges from Ashta Chemicals

Until September 1996, Ashta Chemicals routinely discharged process and stormwater wastewaters from Outfall 001. In 1995, discharges averaged 0.066 MGD and totalled 23.6 million gallons (MG). The average flow rate in 1996 was 0.069 MGD, but the total amount discharged decreased to 14.2 MG. In 1997, discharges decreased substantially as shown in Table 1. Since September 1996, there have been no regularly-

Table 1. Flows Discharged from Outfall 001

Flow Discharged	Year						
	1995	1996	1997	1998	1999	2002	2004
Average (MGD)	0.066	0.069	0.032	0.058	0.0007	0.00017	0.000015
Total (MG)	23.588	14.215	0.442	0.115	0.0007	0.00017	0.00003

scheduled process wastewater discharges from this outfall, as the company has recycled process wastewater for use in the production operations. However, bypass stormwater wastewater discharges have occurred periodically from outfall 001 through July 1999. In the existing permit, monitoring for outfall 001 is designated at a sampling station at Ashta’s property line. Wastewater and/or stormwater flow from the facility via a dedicated pipeline/channel to Lake Erie (approximately one mile from the sampling station.). On occasion, flow has been observed in the sewer at Lake Erie at the same time that the discharge at the sampling

station has been zero, suggesting that stormwater water flow or ground water is infiltrating the pipeline/channel. Discharges also continue from the facility site into Fields Brook through storm water outfalls 002, 003, and 004. (See Figure 2 for approximate locations of these discharges in relation to Fields Brook and the Ashtabula River.)

Sampling conducted at these storm water outfalls has shown a high level of mercury contamination. (See Table 2.) Table 3 shows sampling data and PEQ values for discharges from outfall 001 which have occurred from September 1996 to 2000.

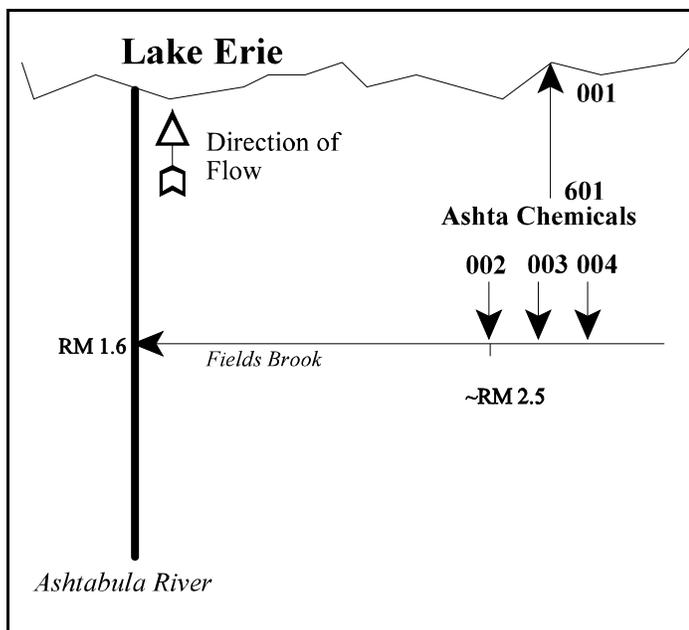


Figure 2. Fields Brook Study Area

Assessment of Impact on Receiving Waters

Recent biological data for Fields Brook is not available. However, the survey completed in 1995 indicates that "...Fields Brook contributes contaminated sediments to the harbor area..." of the Ashtabula River. An earlier survey found that metals were the primary cause of impairment for Fields Brook, and the sources of the impairment were primarily industrial point sources and contaminated sediments.

Waste Load Allocation

The water quality criteria for the study area are shown in Table 4 and the background water quality for those parameters requiring a waste load allocation is shown in Table 5. The background water quality for copper, lead, and zinc is based upon data from Lake Erie. The waste load allocations for average criteria for these parameters at outfall 001 have been calculated using a dilution factor of eleven for Lake Erie waters minus ten times the background concentration of the pollutant. Maximum criteria for direct Lake Erie dischargers is set equal to the inside mixing zone maximum criteria.

Consent Order for Alleged Permit Violations

In 2004, the State of Ohio and Ashta Chemicals entered into a Consent Order to resolve an enforcement case against the permittee for alleged permit violations. The Consent Order requires Ashta to make several environmental improvements at the facility, including the following:

- submit and implement an acceptable plan for capturing fugitive mercury air emissions from the mercury cell area of the facility;
- achieve early compliance with federal standards for mercury emissions from mercury cell chlor-alkali plants;

- calculate a mercury mass balance for the facility each year; and
- install a system to recover and treat additional storm water from the permittee property.

The storm water improvements will capture all flows from a storm event less than the 25-year, 24 hour storm event, or the intensity of a 10-year, 20 minute storm event. The captured storm water flows will be treated and/or recycled and this requirement has been incorporated into the draft permit.

The Consent Order also requires Ashta to calculate a mass balance for the use of mercury at the facility, including mercury used in cells, mercury sent off-site for recovery, and mercury captured by air treatment units which will be installed as part of the fugitive emissions controls. The mercury mass balance reporting requirement has been included in Part II of the draft permit.

Effluent Limits/Hazard Management Decisions

The limits and monitoring requirements for each outfall are discussed on the following page and the corresponding “Final Effluent Limits” table is referenced.

Outfalls 002, 003, and 004: Table 5

Sampling performed at outfalls 002, 003, and 004 have shown extremely high concentrations of mercury. (See Table 2.) Flows from these outfalls up to a storm event less than the 25-year, 24 hour storm event, will be sent to a storm water basin for treatment and/or recovery. Discharges from these outfalls resulting from a lesser storm event than indicated above are unauthorized. Monitoring is proposed for mercury, pH, total suspended solids (TSS), overflow occurrence, and overflow volume in order to provide information regarding the potential impacts to the stream, and the pollutant loadings resulting from any storm water discharges from these outfalls.

Outfall 001

Permit-to-install no. 02-7771, issued to Ashta in 1993, and permit-to-install no. 02-20621 provide that the facility collect, treat, and recycle all storm water flows up to a 25-year, 24-hour storm event or the intensity of a 10-year, 20-minute storm event. This language has been incorporated into the draft permit, and states that any discharge from outfall 001 resulting from a storm event of less than the design values constitutes an unauthorized discharge. Under these circumstances, the permittee would be required to comply with Part II, Item H and Part III, Item 11 of the draft permit regarding certain notification and reporting requirements. Whenever discharges occur which result from a storm event of greater intensity, Ashta must monitor the effluent for pH, TSS, overflow occurrence, and overflow volume.

The Ohio EPA risk assessment for this outfall (Table 7) places chlorine, copper, mercury, and zinc in Group 5. This placement indicates that an environmental hazard exists with regard to chlorine, copper, mercury, and zinc, and limits are necessary to protect water quality. However, this assessment is based upon limited datasets for each parameter, and Table 1 show that very few discharges have occurred in recent years. Since the samples reflected in Table 7 results may not be representative of current effluent concentration potential, the permit includes only monitoring for each of these parameters. Monitoring for trichloronitromethane (or chloropicrin) has been included since Ashta manufactures this product.

Table 2. Mercury Effluent Data for Ashta Chemicals: Outfalls 002, 003, and 004

Outfall #	----- Mercury Concentrations (in ng/l) -----			PEQ average	PEQ max.
	09/11/2000	10/05/2000	12/05/2000		
002	2370	890	830	5190	7110
003	8340	910	1690	18265	25020
004	3790	1120	–	10513	14402

Table 3. Effluent Data for Ashta Chemicals: Outfall 001

Parameter	Units	# of Samples	# > MDL	Average PEQ	Maximum PEQ
<u>Self-Monitoring (LEAPS) Data</u>					
Total suspended solids	mg/l	12	12	263.5	506.29
Lead, T. R.	µg/l	6	1	19.929	27.3
Copper, T. R.	µg/l	6	5	59.787	81.9
Zinc, T. R.	µg/l	6	5	1293.9	1772.4
Antimony, T. R.	µg/l	6	0	--	--
Phenolic 4AAP, Total	µg/l	19	3	14.308	19.6
Bis(2-ethylhexyl) Phthalate	µg/l	1	0	--	--
DDT	µg/l	5	0	--	--
Chlorine, total residual	mg/l	2	1	2.774	3.8
Mercury, T. R.	µg/l	38	37	146.46	259.63

Table 4. Water Quality Criteria in the Study Area

Parameter	Units	Wildlife	Outside Mixing Zone Criteria			Maximum Aquatic Life	Inside Mixing Zone Maximum
			Average				
			Human Health	Agri-culture	Aquatic Life		
Antimony, T. R.	µg/l	--	780.	--	190.	900.	1800.
Bis(2-ethylhexyl) Phthalate	µg/l	--	32.	--	8.4	1100.	2100.
Chlorine, T. Res.	mg/l	--	--	--	0.011	0.019	0.038
Copper, T. R.	µg/l	--	64000.	500.	12.	19.	38.
DDT	ng/l	0.011 ^a	0.15	--	--	--	--
Lead, T. R.	µg/l	--	190.	100.	9.9	190.	380.
Mercury	ng/l	1.3	3.1	10000.	910.	1700.	3400.
Zinc, T. R.	µg/l	--	35000.	25000.	160.	160.	320.

^a This criterion applies to the sum of DDT and metabolites.

Table 5. Background Water Quality

Parameter	Units		Value	Basis
<i>Background Water Quality</i>				
Chlorine	mg/l	annual	0.	No representative data available.
Copper	µg/l	annual	5.0	BWQR*; Statewide 50 th percentile value
Lead	µg/l	annual	2.	BWQR*; Statewide 50 th percentile value
Mercury	µg/l	annual	0.	No representative data available.
Zinc	µg/l	annual	15.	BWQR*; Statewide 50 th percentile value

* “BWQR” means Background Water Quality Report.

Table 6. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria For Outfall 001

Parameter	Units	Wildlife	Outside Mixing Zone Criteria			Maximum Aquatic Life	Inside Mixing Zone Maximum
			Human Health	Agri-culture	Aquatic Life		
Chlorine, T. Res.	mg/l	--	--	--	0.121 ^A	--	0.038
Copper, T. R.	µg/l	--	703950. ^A	5450. ^A	82. ^A	--	38.
Lead, T. R.	µg/l	--	2070. ^A	1080. ^A	89	--	380.
Mercury	ng/l	14.	34.	110000. ^A	10010. ^A	--	3400.
Zinc, T. R.	µg/l	--	384850. ^A	274850. ^A	1610. ^A	--	320.

^A Allocation must not exceed the Inside Mixing Zone Maximum.

Table 7. Parameter Assessment for Outfall 001

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

Total Suspended Solids

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

Antimony

Bis(2-ethylhexyl) Phthalate

DDT

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

Lead

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

No parameters fit the criteria of this group

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	mg/l	annual	–	0.038
Copper	ug/l	annual	--	38.
Mercury	ng/l	annual	14.	3400.
Zinc	ug/l	annual	--	320.

Table 8. Final Effluent Limits and Monitoring Requirements for Outfalls 002, 003, and 004

Parameter	Units	Effluent Limits				Basis ^b
		Concentration		Loading (kg/day) ^a		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
pH	S.U.	-----	Monitor	-----		BPJ
Total suspended solids	mg/l	-----	Monitor	-----		BPJ
Mercury	ng/l	-----	Monitor	-----		BPJ
Overflow occurrence	#/month	-----	Monitor	-----		BPJ
Overflow volume	million gal.	-----	Monitor	-----		BPJ

Table 9. Final Effluent Limits and Monitoring Requirements for Outfall 001

Parameter	Units	Effluent Limits				Basis ^b
		Concentration		Loading (kg/day) ^a		
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
pH	S.U.	-----	6.5 to 9.0	-----		BPJ
Total suspended solids	mg/l	-----	Monitor	-----		EP/BPJ
Zinc	ug/l	-----	Monitor	-----		BPJ/WLA
Copper	ug/l	-----	Monitor	-----		WLA
Chlorine	mg/l	-----	Monitor	-----		WLA
Mercury	ng/l	-----	Monitor	-----		WLA
Trichloronitromethane	ug/l	-----	Monitor	-----		BPJ
Overflow occurrence	#/month	-----	Monitor	-----		BPJ
Overflow volume	million gal.	-----	Monitor	-----		BPJ

^b Definitions: **BPJ** = Best Professional Judgment;
M = Division of Surface Water Guidance #2, “National Pollutant Discharge Elimination System: Determination of Sampling Frequency Formula for Industrial Waste Discharges” recommends monitoring for this parameter;
WLA = Waste Load Allocation;
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.