National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

Regarding an NPDES Permit to Discharge to Waters of the State of Ohio
for **North Star BlueScope Steel LLC**

Public Notice No.: 192600
Public Notice Date: November 29, 2023
Comment Period Ends: December 29, 2023

Ohio EPA Permit No.: 2ID00015*HD
Application No.: OH0122386

Name and Address of Applicant:
North Star BlueScope Steel
6767 County Road 9
Delta, Ohio 43515

Name and Address of Facility Where Discharge Occurs:
North Star BlueScope Steel
6767 County Road 9
Delta, OH 43515
Fulton County

Receiving Water: Maumee River

Subsequent Stream Network: Lake Erie Basin

INTRODUCTION

Development of a Fact Sheet for NPDES permits is mandated by Title 40 of the Code of Federal Regulations (CFR), 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 (Ohio EPA), 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 (CWA) and Ohio Water Pollution Control Law (Ohio Revised Code [ORC] 6111). Decisions to award variances to Water Quality Standards (WQS) or promulgated effluent guidelines for economic or technological reasons will also be justified in the Fact Sheet where necessary.

Antidegradation provisions in Ohio Administrative Code (OAC) Chapter 3745-1 describe the conditions under which water quality may be lowered in surface waters. No antidegradation review was necessary.

Effluent limits based on available treatment technologies are required by Section 301(b) of the CWA. Many of these have already been established by the United States Environmental Protection Agency (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 (WLAs) 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 WLA for a pollutant to a measure of the effluent quality. The measure of effluent quality is called Projected Effluent Quality (PEQ). This is a statistical measure of the average and maximum effluent values for a pollutant. As with any statistical method, the more data that exists for a given pollutant, the more likely that PEQ will match the actual observed data. If there is a small data set for a given pollutant, the highest measured value is multiplied by a statistical factor to obtain a PEQ; for example, if only one sample exists, the factor is 6.2, for two samples - 3.8, for three samples - 3.0. The factors continue to decline as samples sizes increase. These factors are intended to account for effluent variability, but if the pollutant concentrations are fairly constant, these factors may make PEQ appear larger than it would be shown to be if more sample results existed.

SUMMARY OF PERMIT CONDITIONS

The effluent limits and monitoring requirements proposed for the following parameters are the same as in the previous permit; temperature, dissolved oxygen, ammonia, phosphorus, flow rate, total residual chlorine, nickel, mercury, *Pimephales promelas* acute toxicity, pH, and total filterable residue.

New effluent limits are proposed for lead because the projected effluent quality is expected to exceed the water quality-based effluent limit (WQBEL) and inside mixing zone maximum (IMZM) limit at outfall 001. A compliance schedule is not proposed at this time as the current data suggests the facility to be able to meet the limit immediately.

Lower effluent limits are proposed for zinc because the IMZM water quality criteria for zinc is lower than in the previous permit cycle. A compliance schedule is not proposed at this time as the current data suggests the facility to be able to meet the limit immediately.

Lower effluent limits are proposed for mercury as the average projected effluent quality (PEQ) for the last five years has decreased compared to the current permit's limits.

Monitoring requirements are proposed to be removed for pentachlorophenol and silver because all sample results reported in the previous permit cycle were below the parameter detection limit. Monitoring for the dioxin toxicity equivalent is proposed to be removed because there were no detections of pentachlorophenol and no reasonable potential observed.

The monitoring frequency for copper and iron is proposed to change to once every six months because sampling data indicate that there is no reasonable potential to exceed WQS.

A lower 30-day average loading limit is proposed for oil and grease at internal monitoring station 601 based on calculation using the effluent limitation guidelines (ELGs) found in 40 CFR 420.

The permit proposes the hexane extraction method (HEM) for the sampling and analysis of oil and grease (parameter code 00552) at outfalls 001 and 601. This new method is proposed in accordance with 40 CFR 136.3 and shall replace the monitoring requirement for "total" oil and grease (parameter code 00550).

In accordance with Ohio Administrative Code (OAC) 3745-33-07, it has been determined that the effluent from North Star BlueScope Steel shows acute toxicity to *Ceriodaphnia dubia*. A limit of 1.0 TU_a as well as an increased monitoring frequency are proposed.

In Part II of the permit, special conditions are included that address; whole effluent toxicity (WET) testing; mercury variance; limits below quantification; the Maumee Watershed phosphorus TMDL; and outfall signage.

Updates to Parts IV, V, and VI of the permit reflect the renewed Multi-Sector General NPDES Permit (OHR000007). Changes that affect this permit renewal include a submission of a corrective action plan to the Ohio EPA Northwest District Office if parameter benchmarks are exceeded.

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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 emailed to HClerk@epa.ohio.gov or mailed 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 by email to epa.dswcomments@epa.ohio.gov (preferred method) 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 Processing Unit
P.O. Box 1049
Columbus, Ohio 43216-1049

The Ohio EPA permit number and Public Notice numbers should appear on each page of any submitted comments. All comments received no later than 30 days after the date of the Public Notice will be considered.

Citizens may conduct file reviews regarding specific companies or sites. Appointments are necessary to conduct file reviews because requests to review files have increased dramatically in recent years. The first 250 pages copied are free. For requests to copy more than 250 pages, there is a five-cent charge for each page copied. Payment is required by check or money order, made payable to Treasurer State of Ohio.

For additional information about this fact sheet or the draft permit, contact Sabrina Swayne, (614) 644-2026, Sabrina.Swayne@epa.ohio.gov.

INFORMATION REGARDING CERTAIN WATER QUALITY BASED EFFLUENT LIMITS

This draft permit may contain proposed water-quality-based effluent limits (WQBELs) for parameters that **are not** priority pollutants. (See the following link for a list of the priority pollutants: http://epa.ohio.gov/portals/35/pretreatment/Pretreatment_Program_Priority_Pollutant_Detection_Limits.pdf .) In accordance with ORC 6111.03(J)(3), the Director established these WQBELs after considering, to the extent consistent with the Federal Water Pollution Control Act, evidence relating to the technical feasibility and economic reasonableness of removing the polluting properties from those wastes and to evidence relating to conditions calculated to result from that action and their relation to benefits to the people of the state and to

accomplishment of the purposes of this chapter. This determination was made based on data and information available at the time the permit was drafted, which included the contents of the timely submitted NPDES permit renewal application, along with any and all pertinent information available to the Director.

This public notice allows the permittee to provide to the Director for consideration during this public comment period additional site-specific pertinent and factual information with respect to the technical feasibility and economic reasonableness for achieving compliance with the proposed final effluent limitations for these parameters. The permittee shall email to epa.dswcomments@epa.ohio.gov (preferred method) or deliver or mail this information to:

Ohio Environmental Protection Agency
Attention: Division of Surface Water
Permits Processing Unit
P.O. Box 1049
Columbus, Ohio 43216-1049

Should the applicant need additional time to review, obtain or develop site-specific pertinent and factual information with respect to the technical feasibility and economic reasonableness of achieving compliance with these limitations, a written request for any additional time shall be sent to the above address no later than 30 days after the Public Notice Date on Page 1.

Should the applicant determine that compliance with the proposed WQBELs for parameters other than the priority pollutants is technically and/or economically unattainable, the permittee may submit an application for a variance to the applicable WQS used to develop the proposed effluent limitation in accordance with the terms and conditions set forth in OAC 3745-33-07(D). The permittee shall submit this application to the above address no later than 30 days after the Public Notice Date.

Alternately, the applicant may propose the development of site-specific WQS pursuant to OAC 3745-1-39. The permittee shall submit written notification regarding their intent to develop site specific WQS for parameters that are not priority pollutants to the above address no later than 30 days after the Public Notice Date.

LOCATION OF DISCHARGE/RECEIVING WATER USE CLASSIFICATION

North Star BlueScope Steel discharges to the Maumee River at River Mile 42.51. Figure 1 shows the approximate location of the facility.

This segment of the Maumee River is described by Ohio EPA River Code: 04-001, Hydrologic Unit Code: 04100009-0207 County: Fulton, Ecoregion: Maumee Lake Plains. The Maumee River is designated for the following uses under Ohio's WQS (OAC 3745-1-11): Modified Warmwater Habitat, Agricultural Water Supply, and Industrial Water Supply.

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 WQS 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 CWA. Ohio WQS also include aquatic life use designations for waterbodies which cannot meet the CWA goals because of human-caused conditions that cannot 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 Recreation) and wading only (Secondary Contact which are 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 water supply and industrial water supply.

FACILITY DESCRIPTION

North Star BlueScope Steel melts scrap, alloys, and iron units to produce flat-rolled steel in Delta, Ohio. The industrial processes at the facility include:

- Continuous casting of steel
- Hot rolling of steel strip

The process operations at North Star BlueScope Steel are classified in the Standard Industrial Classification (SIC) category 3312, "Blast Furnaces and Steel Mills." The process wastewaters generated from these operations are regulated under 40 CFR 420, "Iron and Steel Manufacturing." The manufacturing processes are applicable to the following subparts:

- 420.64, "Continuous Casting," Subpart F
- 420.74, "Hot Forming," Subpart G, (c) "Flat mills," (1) "Hot strip and sheet mills, carbon and specialty."

North Star BlueScope Steel obtains water from the City of Toledo – The water is used for contact cooling water in addition to backwash for the clarifier and softener. Attachment 1 lists approved boiler/cooling water system additives for North Star BlueScope Steel.

North Star BlueScope Steel is subject to the following additional conditions: granted a general mercury variance under the provisions of Rule 3745-33-07(D)(10) of the Ohio Administrative Code.

DESCRIPTION OF EXISTING DISCHARGE

North Star BlueScope Steel has four outfalls. Table 1 highlights the primary process outfall (001), and the internal monitoring station (601), as well as wastewater sources, treatment processes, discharge/receiving streams and associated flows for each. Figure 2 provides a flow schematic of the wastewater sources and supplies associated with North Star BlueScope Steel. Primarily, water is used in casting and rolling operations to cool the hot formed steel. Process wastewater enters the wastewater treatment plant to be treated using the following processes:

- Flocculation
- Multimedia Filtration
- Aeration tanks
- Pressure Filtration
- Rapid Sand Filtration
- Settling
- Chemical precipitation
- Neutralization

The outfall from the main treatment system (outfall 601) is used as an in-plant sampling point to monitor compliance with effluent guideline limitations. Monitoring at this step is necessary to examine the federally regulated wastewater before it is diluted with other non-process flows.

Outfall 600 (influent monitoring) monitors the influent of the wastewater treatment plant so that mercury concentration levels can be monitored both entering and exiting the treatment train.

Outfall 001 is the combination of the effluent from internal monitoring station 601, non-contact cooling water from the oxygen plant, and intermittent non-contact cooling water blowdown from the steel plant cooling water reservoir. The design flow for the facility is 0.287 MGD, which is the 95th percentile of monthly averages for the last five years. Outfall 001 effluent then mixes with effluent from the adjacent Worthington Steel Industries plant in a 10-mile-long storm sewer that discharges to the Maumee River at River Mile 42.51.

The average flow rates for the permit cycle at outfall 001 are shown on Table 2.

Outfalls 002, 003, and 004 are stormwater outfalls that, when discharging, discharge to Bad Creek.

Table 3 presents data compiled from the NPDES permit renewal application Form 2C.

Table 4 presents a summary of unaltered Discharge Monitoring Report (DMR). Data are presented for the period January 2017 to February 2022, and current permit limits are provided for comparison.

Table 5 summarizes the chemical specific data for outfall 001 by presenting the average and maximum PEQ values.

Table 6 summarizes the results of acute and chronic WET tests of the final effluent.

ASSESSMENT OF IMPACT ON RECEIVING WATERS

The Creager Cemetery-Maumee River watershed assessment unit (HUC 041000090207), which includes the Maumee River in the vicinity of North Star BlueScope Steel discharge, is listed as impaired for recreation on Ohio's 303(d) list.

A biological and water quality survey of the Maumee River in 2014 showed full attainment of the use designation both upstream and downstream of North Star BlueScope Steel's discharge. The Maumee River in the study area covered by this report was evaluated by Ohio EPA staff for aquatic life and recreational use potential during the 2012 and 2013 field seasons. This assessment included the collection of water chemistry and biological sampling at numerous sites in the Maumee and Auglaize Rivers. A summary of the results from this assessment for the interactive segment covered in this report can be found in Table 7. More information can be found in the following technical support document:

https://epa.ohio.gov/static/Portals/35/documents/MaumeeTSD_2014.pdf

The attainment status of the Maumee River Watershed is reported in the final Ohio 2022 Integrated Water Quality Monitoring and Assessment Report. The full Integrated Report is available through the Ohio EPA, Division of Surface Water website at:

https://epa.ohio.gov/divisions-and-offices/surface-water/reports-data/ohio-integrated-water-quality-monitoring-and-assessment-report

A Total Maximum Daily Load (TMDL) report for the Maumee River is currently under development.

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 North Star BlueScope Steel were used to determine what parameters should undergo WLA. The parameters discharged are identified by the data available to Ohio EPA DMR data submitted by the permittee, compliance sampling data collected by Ohio EPA, and any other data submitted by the permittee, such as priority pollutant scans required by the NPDES application or by pretreatment, or other special conditions in the NPDES permit. The sources of effluent data used in this evaluation are as follows:

Self-monitoring data (DMR)	January 2017 through February 2022
NPDES application Form 2C data	2020-2021

Statistical Outliers and Other Non-representative Data

The data were examined and no values were removed from the evaluation.

This data is evaluated statistically, and PEQ values are calculated for each pollutant. Average PEQ (PEQ_{avg}) values represent the 95th percentile of monthly average data, and maximum PEQ (PEQ_{max}) values represent the 95th percentile of all data points (see Table 5).

The 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 pollutant does not have the reasonable potential to cause or contribute to exceedances of WQS, and no WLA is done for that parameter. If either PEQ_{avg} or PEQ_{max} is greater than 25 percent of the applicable WQS, a WLA is conducted to determine whether the parameter exhibits reasonable potential and needs to have a limit or if monitoring is required (see Table 8).

Wasteload Allocation

For those parameters that require a WLA, the results are based on the uses assigned to the receiving waterbody in OAC 3745-1. Dischargers are allocated pollutant loadings/concentrations based on the Ohio WQS (OAC 3745-1). Most pollutants are allocated by a mass-balance method because they do not degrade in the receiving water. For free-flowing streams, WLAs 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 allocations are expressed as concentrations. The following dischargers in the Maumee River were considered interactive (see Figure 3):

- North Star BlueScope Steel
- Worthington Industries

The WLA for this segment of the Maumee River divided loads between the North Star and Worthington Steel discharges. Allocations were distributed on a flow-proportional basis, resulting in equal concentration WLAs for each discharge.

The available assimilative capacity was distributed among them using the conservative substance wasteload allocation (CONSWLA) water quality model for conservative parameters. CONSWLA is the model Ohio EPA typically uses in multiple discharger situations. CONSWLA model inputs for flow are fixed at their critical low levels and inputs for effluent flow are fixed at their design or 50th percentile levels. Background concentrations are fixed at a representative value (generally a 50th percentile). A mass balancing method is then used to allocate effluent concentrations that maintain WQS under these conditions. This technique is appropriate when data bases are unavailable to generate statistical distributions for inputs and if the parameters modeled are conservative.

The applicable waterbody uses for this facility's discharge and the associated stream design flows are as follows:

Aquatic life (Warmwater Habitat)		
Toxics (metals, organics, etc.)	Average	Annual 7Q10
	Maximum	Annual 1Q10
Ammonia-N	Average	Summer 30Q10
		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 9, and allocations cannot exceed the Inside Mixing Zone Maximum (IMZM) criteria.

The data used in the WLA are listed in Table 8 and Table 9. The WLA results to maintain all applicable criteria are presented in Table 10.

Whole Effluent Toxicity Wasteload Allocation

Whole effluent toxicity (WET) is the total toxic effect of an effluent on aquatic life measured directly with a toxicity test. Acute WET tests measure survival and mortality of the test organism over a short time period (48- or 96-hours). Chronic WET tests measure survival and mortality, as well as effects on growth and reproduction over a longer period of the test organism's life.

WQS 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 (i.e. TUa and TUc) for use in NPDES permits by the associated WQS Implementation Rule (OAC 3745-2-09). The translation results in numeric values of 0.3 TUa and 1.0 TUc. WLAs can then be calculated using these values as if they were water quality criteria.

There are two separate reasonable potential procedures in Ohio - one for the Lake Erie watershed and one for the Ohio River watershed. Dischargers in the Ohio River watershed are assessed using OAC 3745-33-07(B).

Dischargers in the Lake Erie watershed are assessed in accordance with the "Great Lakes Water Quality Initiative Implementation Procedures" contained in 40 CFR Part 132, Appendix F, Procedure 6.

The WLA calculations for WET are similar to those for aquatic life criteria - using the chronic toxicity unit (TUc) and 7Q10 flow for the average and the acute toxicity unit (TUa) and 1Q10 flow for the maximum. WET WLAs are based on meeting the values of 0.3 TUa and 1.0 TUc downstream of the discharge and include any available dilution. These values are the levels of effluent toxicity that should not cause instream toxicity during critical low-flow conditions. WLAs for acute toxicity are capped at 1.0 TUa unless the discharger demonstrates that an Area-of-Initial-Mixing (AIM) exists under OAC 3745-1-06, or that one of the factors in OAC 3745-33-07(B)(5)-(9) allows a higher TUa limit to be granted. For the purposes of establishing WET limitations, the values of 1.0 TUa and 1.0 TUc are the most restrictive limitations that can be applied in NPDES permits [OAC 3745-33-07(B)(10)].

For North Star BlueScope Steel, the WLA values for outfall 001 are 1.0 TU_a and 30.29 TU_c.

The chronic toxicity unit (TUc) is defined as 100 divided by the estimate of the effluent concentration which causes a 25% reduction in growth or reproduction of test organisms (IC25):

$$TUc = 100/IC25$$

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):

TUc = 100/geometric mean of No Observed Effect Concentration and Lowest Observed Effect Concentration

The acute toxicity unit (TUa) is defined as 100 divided by the concentration in water having 50% chance of causing death to aquatic life (LC50) for the most sensitive test species:

$$TUa = 100/LC50$$

This equation applies outside the mixing zone for all designated waters. Based on the above, a value of 1.0 TUa is the lowest value that can be calculated using the equation. TUa values between 0.2 and 1.0 are based on an interpolation of toxic effects where an LC50 cannot be identified.

REASONABLE POTENTIAL/EFFLUENT LIMITS/MANAGEMENT DECISIONS

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the WQS must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a WQS or do not require a WLA based on the initial screening are assigned to either group 1 or 2. For the allocated parameters, the preliminary effluent limits (PEL) based on the most restrictive average and maximum WLAs are selected from Table 10. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 5, and the PEL_{max} is compared to the PEQ_{max}. Based on the calculated percentage of the allocated value [($PEQ_{avg} \div PEL_{avg}$) X 100, or ($PEQ_{max} \div PEL_{max}$) X 100)], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 11.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 12 presents the final effluent limits and monitoring requirements proposed for North Star BlueScope Steel outfall 001 and internal monitoring station 601 and the basis for their recommendation. Unless otherwise indicated, the monitoring frequencies proposed in the permit are continued from the existing permit.

Outfall 001

Dissolved Oxygen, Oil and Grease, and pH
Limits for dissolved oxygen, oil and grease, and pH are based on water quality standards and are proposed to continue.

Phosphorus
The phosphorus limits are proposed to continue based on best technical judgment.

Lead and Zinc
To be protective of the Ohio WQS, inside mixing zone maximum limits are being proposed for zinc and lead. The limits are proposed to ensure the calculated ELG loading limits for these parameters at outfall 601 are protective of the water quality standards. Only a maximum limit is being proposed for zinc at 001 because the calculated outside mixing zone average limits are greater than the inside mixing zone maximum. See Attachment 4 for a comparison of outfall 001 water quality based effluent limits to internal station 601 calculated ELGs.

Total Residual Chlorine
The proposed limit for total residual chlorine is based on WLA as limited by the IMZM. The IMZM is a value calculated to avoid rapidly lethal conditions in the effluent mixing zone. The effluent limit for chlorine at outfall 001, 0.038 mg/L, is less than the quantification level of 0.050 mg/L – however a pollutant minimization program is not required as the water quality based effluent limit has continuously been demonstrated it can be met. More information on the pollutant quantification levels can be found in the Part II, Item K of the permit.

Total Filterable Residue, Ammonia, Iron, Nickel, and Copper,
The Ohio EPA risk assessment (Table 11) places these parameters in groups 2 and 3. This placement, as well as the data in Table 4 and Table 5, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring for total filterable residue, nickel, and ammonia are proposed to continue. Monitoring for iron and copper is proposed to change to once every six months.

Pentachlorophenol, Dioxin Toxicity Equivalent Units, and Silver
The Ohio EPA risk assessment (Table 11) places pentachlorophenol and silver in group 2. This placement, as well as the data in Table 4 and Table 5, support that these parameters does not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring is proposed to

be removed. Monitoring for the dioxin toxicity equivalent is proposed to be removed as it is only required when monitoring for pentachlorophenol.

Water Temperature and Flow Rate
Monitoring for these parameters is proposed to continue in order to evaluate the performance of the treatment plant.

Internal Monitoring Station 601

The internal station monitors the effluent from the facility's WWTP. Technology-based limits from the federal effluent guideline limitations (ELGs) found in 40 CFR 420 are applied at this internal station. The current permit includes monitoring and limits at internal station 601. ELGs are applied at this outfall to ensure that these treatment standards are met prior to combining with other waste streams. If monitoring was not done at this location, it would not be possible to verify compliance with these standards due to dilution as federal rules prohibit attaining these standards by dilution.

pH
Monitoring and limits will remain the same as in the previous permit.

Lead, Oil and Grease, Total Suspended Solids, and Zinc
These limits are determined using the guideline numbers expressed in kilograms of pollutant per 1000 kilograms of production. The currently daily production estimates are as follows:

Continuous casting- 9300 US tons
Hot forming – 9300 US tons

An example of the 30-day average limit calculation for total suspended solids for continuous casting is shown below:

$L = [(P * C) / 1000] * ELG$

Where:
L = the allowable load limit
P = production (in tons)
C = conversion factor from tons to kilograms
ELG = federal effluent guideline limitation

Therefore:
L = [(9300 tons/day* 907.184 kg/ton)/ 1000 kg/kg]* 0.00261 = 22.02 kg TSS/day

Attachment 2 has a listing of all applicable ELGs and the resulting calculations. Attachment 4 lists these calculations and compares them to the current permit limits at outfall 601. The ELGs and WLAs for lead, TSS, and zinc are less stringent than the current permit limits, thus the current limits will remain in effect – more information is found below. Based on the ELG calculations a lower 30-day average oil and grease limit is proposed.

Other Considerations

Anti-backsliding
Although the current WLA and ELGs would allow slightly higher limits for lead, total suspended solids, zinc and daily maximum oil and grease limits at outfall 601, anti-backsliding provisions in the OAC prevent the

imposition of less stringent limits than those in the existing permit unless specific conditions have been satisfied. In the case of North Star BlueScope Steel, none of those conditions have been satisfied, so the existing limits are proposed to continue. The anti-backsliding provisions of OAC 3745-33-05 require that an anti-degradation review must be completed before an existing permit limit can be made less stringent. The rule requires other conditions to be satisfied as well.

Mercury Variance

The North Star BlueScope Steel permit was renewed on December 12, 2011 to include a mercury variance, and variance-based limits for mercury. Based on the monitoring results from January 2017 to February 2022, and the new application information, North Star BlueScope Steel has determined that the facility will not meet the 30-day average permit limit of 1.3 ng/L. However, the effluent data shows that the permittee can meet the mercury annual average value of 12 ng/L. The permittee's application has also demonstrated to the satisfaction of Ohio EPA that there is no readily apparent means of complying with the WQBEL without constructing prohibitively expensive end-of-pipe controls for mercury. Based upon these demonstrations, North Star BlueScope Steel is eligible for the mercury variance under OAC 3745-1-38(J)).

North Star BlueScope Steel submitted information supporting the renewal of the variance. The permittee uses NALMET, a polymer used to enhance metal precipitation in the treatment system, in addition to only purchasing automotive related scrap from a vendor who removes mercury-containing switches, to reduce the amount of mercury coming in and being discharged. The calculation of the PEQ_{avg} value from 2017 to 2022 compared to the PEQ_{avg} calculated at the time the original variance was issued (2011) shows a reduction from 10.4 ng/L to 2.42 ng/L. The Pollutant Minimization Program (PMP) schedule developed from the original variance continues to be implemented, and further reductions in mercury may be possible.

Ohio EPA has reviewed the mercury variance application and has determined that it meets the requirements of the OAC. A condition in Part II of the NPDES permit lists the proposed provisions of the mercury variance, and includes the following requirements:

- Monthly monitoring at influent monitoring station 600;
- A variance-based monthly average effluent limit of 2.42 ng/L, which was developed from sampling data submitted by the permittee;
- A requirement that the permittee make reasonable progress to meet the WQBEL for mercury by implementing the plan of study, which has been developed as part of the 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, and whether compliance with the monthly average WQBEL for mercury has been achieved.

Whole Effluent Toxicity Reasonable Potential

Evaluating the acute toxicity results in Table 6 and Attachment 3, under the provisions of 40 CFR Part 132, Appendix F, Procedure 6, gives an acute *Ceriodaphnia dubia* PEQ value of 2.6 TU_a. Reasonable potential for toxicity is demonstrated since the acute toxicity PEQ exceeds the WLA value of 1.0 TU_a. Consistent with Procedure 6 and OAC 3745-33-07(B), a daily maximum limit of 1.0 TU_a is proposed for *Ceriodaphnia dubia*. Monitoring is proposed to increase to quarterly monitoring. Neither a compliance schedule nor a TRE/PPE is suggested at this time as it is believed North Star BlueScope Steel can meet limits immediately when the permit becomes effective. Monitoring for *Pimephales promelas* is proposed to remain the same.

OTHER REQUIREMENTS

Outfall Signage
Part II of the permit includes requirements for the permittee to place and maintain a sign at each outfall to the Maumee River providing information about the discharge. Signage at outfalls is required pursuant to OAC 3745-33-08(A).

Part III
Part III of the permit details standard conditions that include monitoring, reporting requirements, compliance responsibilities, and general requirements.

Stormwater Compliance
Parts IV, V, and VI have been included with the draft permit to ensure that any stormwater flows from the facility site are properly regulated and managed. As an alternative to complying with Parts IV, V, and VI, North Star BlueScope Steel may seek permit coverage under the general permit for industrial stormwater (permit # OHR000007) or submit a "No Exposure Certification." Parts IV, V, and VI will be removed from the final permit if:

- North Star BlueScope Steel submits a Notice of Intent (NOI) for coverage under the general permit for industrial stormwater or submits a No Exposure Certification; and

- Ohio EPA determines that the facility is eligible for coverage under the general permit or meets the requirements for a No Exposure Certification, and 3) the determination by Ohio EPA can be made prior to the issuance of the final permit.

Benchmark monitoring for zinc and aluminum for outfalls 002, 003, and 004 is proposed in accordance with the stormwater language. See Part V of the permit for more details.

Maumee Watershed Phosphorus TMDL
In September 2023, the Maumee Watershed Nutrient Total Maximum Daily Load (TMDL) Report was approved by US EPA. The TMDL was developed to restore full attainment of the designated uses in the Western Basin of Lake Erie. The TMDL assigned an individual wasteload allocation to North Star BlueScope Steel of 65 kg of total phosphorus for the critical season (March through July). For many major sources of phosphorus in the watershed, compliance with this individual wasteload allocation will be regulated through the Maumee Watershed Total Phosphorus NPDES General Permit. However, due to the relatively small contribution of phosphorus load, North Star BlueScope Steel has not been included in the general permit.

Facilities not proposed to join the group general permit together contribute less than 15 percent of the load from permitted facilities. These facilities may not have phosphorus-specific controls and the wasteload allocation in the TMDL is consistent with the existing loads. Therefore, phosphorus reductions are not proposed for these facilities. Existing efforts to promote optimization, regionalization, and onsite discharge will continue, but have not been accounted for as reductions needed to meet the wasteload allocation. Ohio EPA will continue to evaluate phosphorus contributions from these permittees to ensure they remain at low levels. If Ohio EPA determines that the assumptions of the TMDL are no longer representative of the watershed, the TMDL may be modified to include a revised implementation approach. If this were to occur, the application of total phosphorus effluent limits for this permittee may be re-evaluated.

Figure 1. Location of North Star BlueScope Steel



Figure 2. Water Balance Diagram

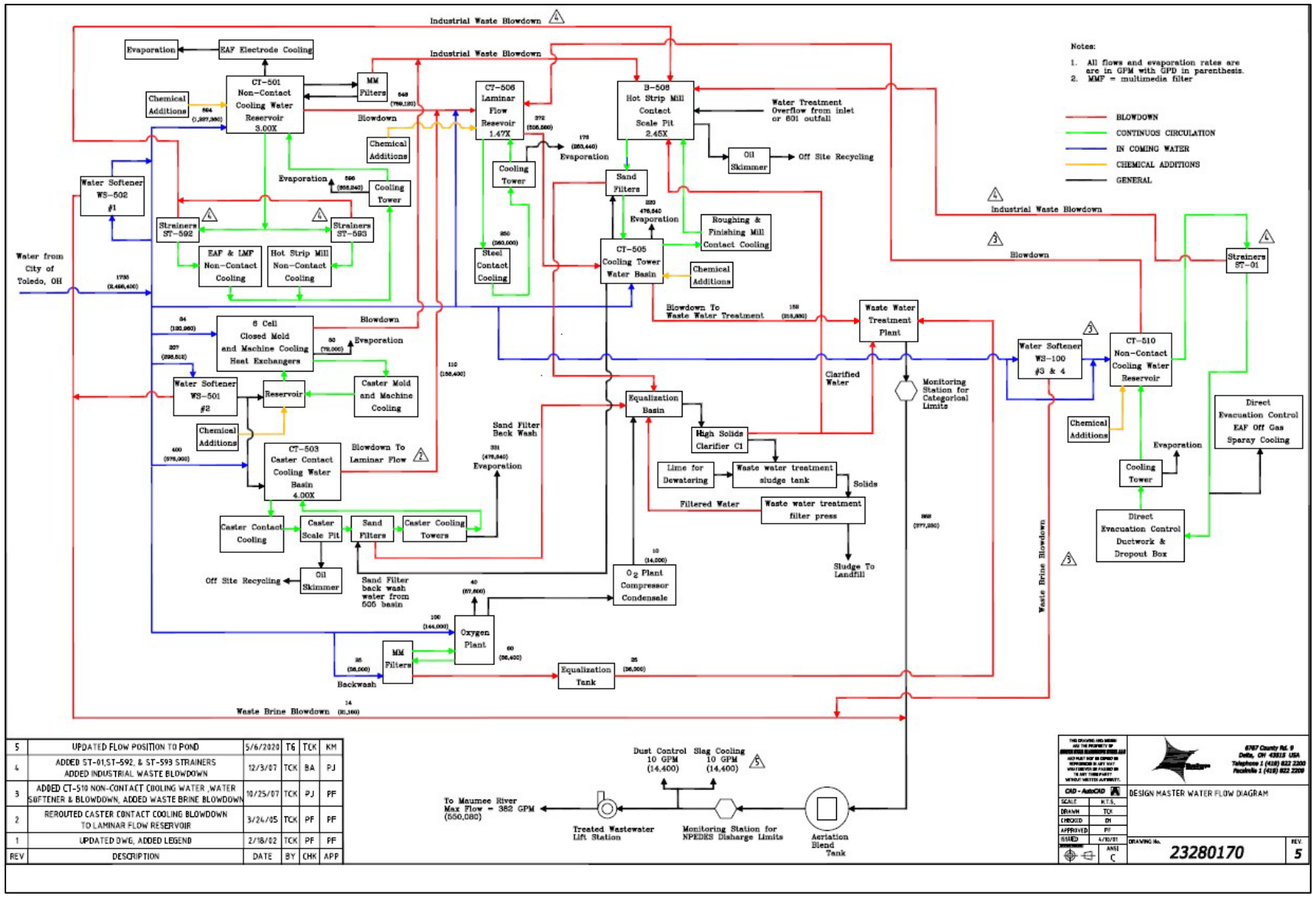
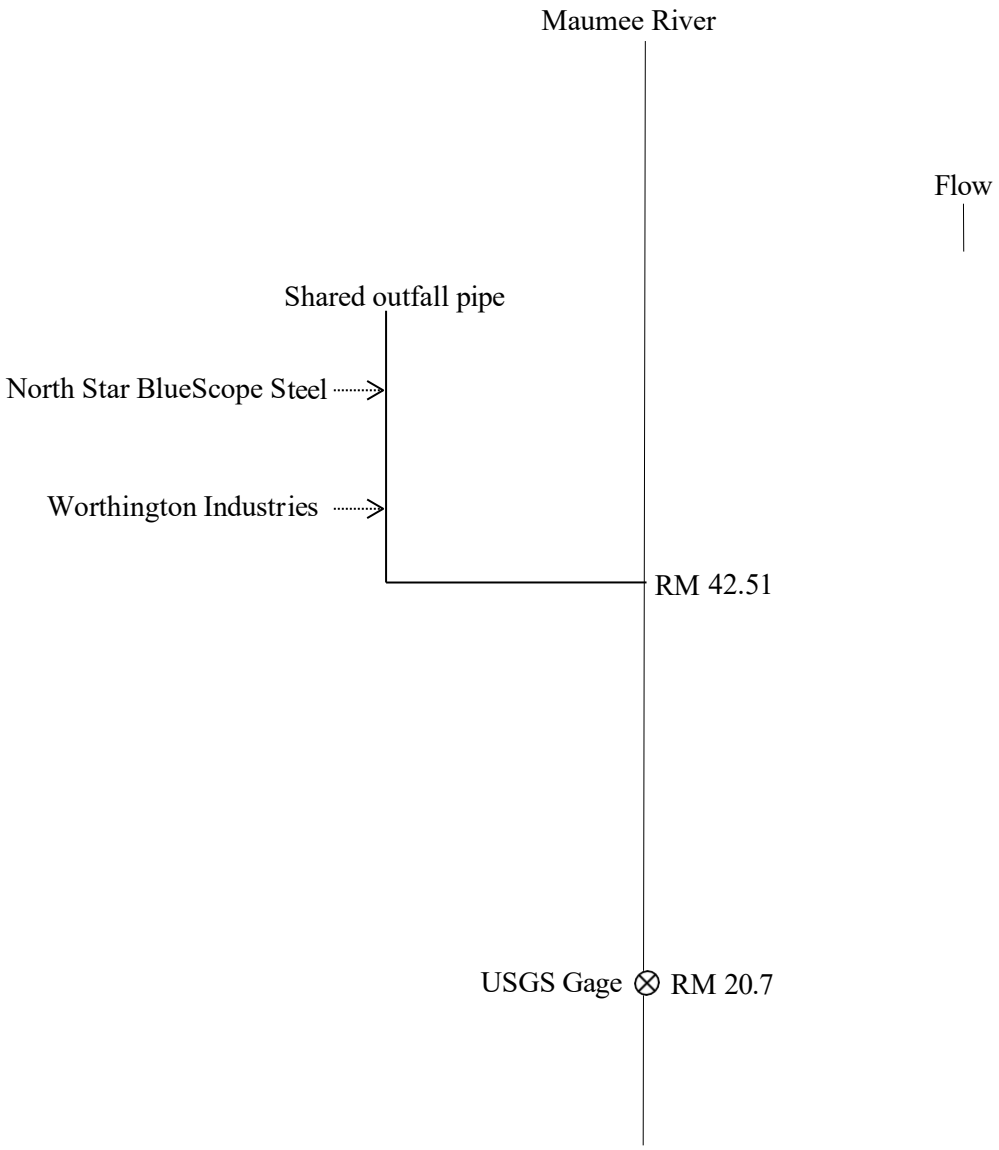


Figure 3. Maumee River Study Area



RM = River Mile
USGS = United States Geological Survey

Table 1. Monitoring Stations, Wastewater Sources, Treatment Processes, Discharge Points, and Flow Rates

Station #	Wastewater Source	Treatment Utilized	Discharge/ Receiving Stream	Average Flow Rate (MGD)
001	Steel casting and rolling operations and hot strip mill. All other nonregulated plant water.	Oil skimming, pH adjustment, chemical precipitation, flocculation, sedimentation, and sand filtration for process wastewater	Maumee River	0.29
601	Wastewater treatment system effluent. Internal monitoring station with applicable federal categorical standards.	Oil skimming, pH adjustment, chemical precipitation, flocculation, sedimentation, and sand filtration for process wastewater	Internal Monitoring Station	0.29

MGD = Millions of gallons per day

Table 2. Average Annual Effluent Flow Rates

Year	Annual Flow in MGD		
	50th Percentile	95th Percentile	Maximum
2017	0.2276	0.3328	0.3811
2018	0.2547	0.3315	0.9750
2019	0.2584	0.3347	0.5447
2020	0.2483	0.3213	0.3397
2021	0.2384	0.3339	0.3989
2022	0.2039	0.2922	0.3205

MGD = Millions of gallons per day
Data collected from January 2017 to February 2022

Table 3. Effluent Characterization Based on Form 2C Data

	Units		Max daily		No. of
Parameter	Conc	Mass	Conc	Mass	Analyses
Biological Oxygen Demand	mg/L	kg/day	<4	<4	1
Chemical Oxygen Demand	mg/L	kg/day	54	79.67	1
Total Organic Carbon	mg/L	kg/day	14.7	21.69	1
Total Suspended Solids	mg/L	kg/day	<5	<5	1
Ammonia (as N)	mg/L	kg/day	0.14	0.21	1
Flow Rate	MGD	--	0.398	--	365
Temperature (Winter)	°C	--	29.7	--	365
Temperature (Summer)	°C	--	31.3	--	365
pH	SU	--	7.7(min)	8.6(max)	48
Aluminum	µg/L	kg/day	202	0.29	1
Antimony	µg/L	kg/day	50	0.07	1
Arsenic	µg/L	kg/day	22	0.03	1
Barium	µg/L	kg/day	18	0.03	1
Beryllium	µg/L	kg/day	<1	<1	1
Boron	µg/L	kg/day	1220	1.80	1
Bromide	mg/L	kg/day	8.1	11.9	1
Bromoform	µg/L	kg/day	60	0.09	1
Cadmium	µg/L	kg/day	<1	<1	1
Chlorodibromomethane	µg/L	kg/day	1.1	0.001622	1
Chromium	µg/L	kg/day	<4	<4	1
Copper	µg/L	kg/day	15	0.02	1
Cyanide	µg/L	kg/day	0.013	0.000019	1
Dichlorobromomethane	µg/L	kg/day	5.4	0.01	1
Fluoride	mg/L	kg/day	70	103.27	1
Lead	µg/L	kg/day	<5	<5	48
Mercury	ng/L	kg/day	1.11	0.0000016	1
Molybdenum	µg/L	kg/day	4120	6.08	1
Nickel	µg/L	kg/day	26	0.04	1
Phenols	µg/L	kg/day	0.010	0.000014	1
Selenium	µg/L	kg/day	<8	<8	1
Silver	µg/L	kg/day	<4	<4	1
Sulfates	mg/L	kg/day	186	274.4	1
Thallium	µg/L	kg/day	<10	<10	1
Zinc	µg/L	kg/day	20	0.03	48

Data collected from 10/1/2020 to 9/30/2021

Table 4. Effluent Characterization Using Self-Monitoring Data

			Current Permit Limits			Percentiles		
Parameter	Season	Units	30-Day	Daily	# Obs.	50th	95th	Data Range
Outfall 001								
Water Temperature	Annual	°F	-	-	1880	82.4	95	30-187
Dissolved Oxygen	Annual	mg/L	-	5.0[m]	1244	7.62	6.92*	5 - 10.1
Oil and Grease	Annual	mg/L	-	10.0	249	0	0	0-0
Nitrogen, Ammonia (NH3)	Annual	mg/L	-	-	74	.245	.731	0 - 1.1
Phosphorus	Annual	mg/L	-	1.0	249	0.34	0.66	0-0.89
Iron	Annual	µg/L	-	-	249	0	141	0-1180
Nickel	Annual	µg/L	-	-	12	9	28.4	4-30
Silver	Annual	µg/L	-	-	249	0	0	0-0
Zinc	Annual	µg/L	230	470	249	0	19.6	0-153
Lead	Annual	µg/L	-	-	249	0	0	0-11
Copper	Annual	µg/L	-	-	249	0	14.6	0-25
Pentachlorophenol	Annual	µg/L	-	-	19	0	0	0-0
Flow Rate	Annual	MGD	-	-	1881	0.246	0.331	0-0.975
Chlorine, Total Residual	Annual	mg/L	-	0.038	266	0	0	0-0
Mercury (Low Level)	Annual	ng/L	2.73	1700	79	0.5	3.52	0-4.96
Acute Toxicity, *Ceriodaphnia dubia*	Annual	TUa	-	-	11	0	0.565	0-1.13
Acute Toxicity, *Pimephales promelas*	Annual	TUa	-	-	11	0	0	0-0
pH, Maximum	Annual	S.U.	-	9.0	1246	8.23	8.52	7.03-9
pH, Minimum	Annual	S.U.	-	6.5	250	8.04	7.65*	7.26-8.6
Residue, Total Filterable	Annual	mg/L	-	-	249	2080	3090	841-4480
Toxicity Equivalent	Annual	pg/L	-	-	19	0	0	0-0
Outfall 002								
Zinc	Annual	µg/L	-	-	14	36	142.8	12-161
Aluminum	Annual	µg/L	-	-	14	3610	10635	429-10700
Outfall 003								
Zinc	Annual	µg/L	-	-	14	39	155.5	0-183
Aluminum	Annual	µg/L	-	-	14	1735	31475	165-70800
Outfall 004								
Zinc	Annual	µg/L	-	-	14	29	113.45	0-158
Aluminum	Annual	µg/L	-	-	14	3165	23300	602-47900
Outfall 600								
Mercury (Low Level)	Annual	ng/L	-	-	58	2.96	12.7	0-18.4
Outfall 601								
pH	Annual	S.U.		6.5-9.0	1168	7.65	8	7.03-8.59
Total Suspended Solids	Annual	mg/L	-	-	249	0	9.6	0-50
Oil and Grease	Annual	mg/L	-	-	249	0	0	0-0
Lead	Annual	µg/L	-	-	249	0	0	0-5
Zinc	Annual	µg/L	-	-	249	0	19	0-44
Flow Rate	Annual	MGD	-	-	1881	0.273	0.374	0-0.551

* = For pH minimum and dissolved oxygen, 5th percentile shown in place of 95th percentile
[m] = Minimum limit
Data collected from January 2017 to February 2022

Table 5. Projected Effluent Quality at Outfall 001

Parameter	Units	Number of Samples	Number >MDL	PEQ Average	PEQ Maximum
Self-Monitoring (DMR) Data					
Ammonia (Summer)	mg/L	27	27	0.673	1.062
Ammonia (Winter)	mg/L	20	14	0.417	0.671
Chlorine, Total Residual	mg/L	266	0	--	--
Copper [A]	µg/L	250	66	9.892	14.76
Iron	µg/L	249	75	603	826
Lead	µg/L	245	1	5.621	7.7
Mercury [A]	ng/L	80	42	2.422	3.623
Nickel [A]	µg/L	13	13	29.71	53.41
Pentachlorophenol	µg/L	20	0	--	--
Phosphorus	mg/L	249	248	0.53	0.726
Silver [A]	µg/L	250	0	--	--
Total Filterable Residue	mg/L	249	249	2605	3221
Zinc	µg/L	249	29	16.74	22.33
Form 2C data					
Aluminum	µg/L	1	1	914	1252
Antimony	µg/L	1	1	226.3	310
Arsenic	µg/L	1	1	99.57	136.4
Barium	µg/L	1	1	81.47	111.6
Boron	µg/L	1	1	5522	7564
Bromide	mg/L	1	1	36.66	50.22
Bromoform	µg/L	1	1	271.6	372
Chlorodibromomethane	µg/L	1	1	4.979	6.82
Dichlorobromomethane	µg/L	1	1	24.44	33.48
Fluoride	mg/L	1	1	316.8	434
Molybdenum	µg/L	1	1	18647	25544
Phenol	µg/L	1	1	0.045	0.062
Sulfates	mg/L	1	1	842	1153

[A] Combined other data sources including Form 2.C. data
DMR = Discharge monitoring report
MDL = Analytical laboratory method detection limit
PEQ = Projected effluent quality
Data collected from January 2017 to February 2022

Table 6. Summary of Acute Toxicity Results at Outfall 001

Date	*Ceriodaphnia dubia* Acute (TU_a)	*Pimephales promelas* Acute (TU_a)
3/17/2017	AH ()	AH ()
6/19/2017	AA (0.2)	AA (0.2)
12/4/2017	AA (0.2)	AA (0.2)
6/18/2018	AA (0.2)	AA (0.2)
12/3/2018	AA (0.2)	AA (0.2)
6/3/2019	AA (0.2)	AA (0.2)
12/2/2019	AA (0.2)	AA (0.2)
6/2/2020	AA (0.2)	AA (0.2)
8/3/2020	AA (0.2)	AA (0.2)
6/7/2021	1.13	AA (0.2)
12/6/2021	AA (0.2)	AA (0.2)

AA = Non-detection; analytical method detection limit of 0.2 TU_a, 1.0 TU_c
AH = Due to laboratory oversight, sample was not collected
TU_a = Acute toxicity unit
Data collected from January 2017 to February 2022

Table 7. Use Attainment Table

Location	River Mile	Use Designation	Attainment Status
Maumee River at water works intake	47.10	MWH	Full
Maumee River upstream State Route 109	41.24	MWH	Full
Maumee River upstream Grand Rapids Dam	32.60	MWH	Full

MWH = Modified Warmwater Habitat
Table From: Biological and Water Quality Study of the Maumee River and Auglaize River 2012-2013

Table 8. Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria				Maximum Aquatic Life [A]	Inside Mixing Zone Maximum [A]
			Average				
		Wildlife	Human Health [A]	Agri-culture	Aquatic Life [A]		
Aluminum	µg/L	--	4500	--	--	--	--
Ammonia (Summer)	mg/L	--	--	--	0.5	--	--
Ammonia (Winter)	mg/L	--	--	--	2.3	--	--
Antimony	µg/L	--	780	--	190 [B]	900 [B]	1800 [B]
Arsenic	µg/L	--	580	100	150	340	680
Barium	µg/L	--	160000	--	1200 [B]	5300 [B]	11000 [B]
Boron	µg/L	--	200000	--	3900	33000	65000
Bromide	mg/L	--	--	--	--	--	--
Bromoform [C]	µg/L	--	890	--	230 [B]	1100 [B]	2200 [B]
Chlorine, Total Residual	mg/L	--	--	--	0.011	0.019	0.038
Chlorodibromomethane	µg/L	--	150	--	320	2900	5800
Copper	µg/L	--	64000	500	18	29	57
Dichlorobromomethane [C]	µg/L	--	180	--	340	3100	6200
Fluoride	mg/L	--	--	2	--	--	--
Iron	µg/L	--	--	5000	--	--	--
Lead	µg/L	--	--	100	17	320	640
Mercury (BCC)	ng/L	1.3	3.1	10000	910	1700	1700
Methyl bromide	µg/L	--	2600	--	16 [B]	38 [B]	75 [B]
Methyl chloride [C]	µg/L	--	7300	--	--	--	--
Molybdenum	µg/L	--	10000	--	20000	190000	370000
Nickel	µg/L	--	43000	200	99	890	1800
Pentachlorophenol [C]	µg/L	--	1.6	--	--	--	--
Phenol	µg/L	--	2400	--	400	4700	9400
Phosphorus	mg/L	--	--	--	--	--	--
Silver	µg/L	--	11000	--	1.3	5.9	12
Sulfates	mg/L	--	--	--	--	--	--
Total Filterable Residue	mg/L	--	--	--	1500	--	--
trans-1,2-Dichloroethylene	µg/L	--	25000	--	--	--	--
Zinc	µg/L	--	35000	25000	230	230	450

[A] Human Health and Aquatic Life Criteria are Tier I unless otherwise indicated.
[B] Tier II criteria
[C] Carcinogen
BCC = Bioaccumulative Chemical of Concern

Table 9. Instream Conditions and Discharger Flow

Parameter	Units	Season	Value	Basis
Upstream flows:				
Maumee R. above North Star and Worthington Industries				
1Q10	cfs	annual	53.2	USGS gage #04193500, 1940-2021 data
7Q10	cfs	annual	91.9	USGS gage #04193500, 1940-2021 data
30Q10	cfs	summer	139.3	USGS gage #04193500, 1940-2020 data
	cfs	winter	351.1	USGS gage #04193500, 1939-2021 data
Harmonic Mean Flow	cfs	annual	750.2	USGS gage #04193500, 1939-2021 data
Mixing Assumption	%	average	25	Stream-to-discharge ratio
(Maumee R.)	%	maximum	66.8	Stream-to-discharge ratio
Worthington Industries				
Outfall 001 flow rate	cfs (MGD)	average	0.34 (0.22)	NPDES permit application
North Star Steel				
Outfall 001 flow rate	cfs (MGD)	average	0.44 (0.29)	NPDES permit application
Instream Hardness	mg/L	annual	213	STORET; 49 values, 2012-21
Background Water Quality for the Maumee River				
Aluminum	µg/L	annual	435.5	STORET; 12 values, 0<MDL, 2012-13
Ammonia	mg/L	summer	0.08	DMR; Napoleon 901, 20 values, 0<MDL,2017-22
Ammonia	mg/L	winter	0.181	DMR; Napoleon 901, 16 values, 0<MDL,2017-22
Antimony	µg/L	annual	0	No representative data available.
Arsenic	µg/L	annual	2.35	STORET; 12 values, 4<MDL, 2012-13
Barium	µg/L	annual	51	STORET; 12 values, 0<MDL, 2012-13
Bis(2-ethylhexyl)phthalate	µg/L	annual	0	No representative data available.
Boron	µg/L	annual	0	No representative data available.
Bromide	mg/L	annual	0	No representative data available.
Bromoform	µg/L	annual	0	No representative data available.
Bromomethane	µg/L	annual	0	No representative data available.
Chlorine, Total Residual	mg/L	annual	0	No representative data available.
Chlorodibromomethane	µg/L	annual	0	No representative data available.
Chloroform	µg/L	annual	0	No representative data available.
Chromium	µg/L	annual	1	STORET; 12 values, 10<MDL, 2012-13
Copper	µg/L	annual	2.45	STORET; 12 values, 0<MDL, 2012-13
Dichlorobromomethane	µg/L	annual	0	No representative data available.
Fluoride	mg/L	annual	0	No representative data available.
Iron	µg/L	annual	582.5	STORET; 12 values, 0<MDL, 2012-13
Lead	µg/L	annual	1	STORET; 12 values, 11<MDL, 2012-13
Manganese	µg/L	annual	0	No representative data available.
Mercury (BCC)	ng/L	annual	0	No representative data available.
Methyl bromide	µg/L	annual	0	No representative data available.

Parameter	Units	Season	Value	Basis
Background Water Quality for the Maumee River				
Methyl chloride	µg/L	annual	0	No representative data available.
Molybdenum	µg/L	annual	0	No representative data available.
Nickel	µg/L	annual	4.85	STORET; 12 values, 0<MDL, 2012-13
Nitrate-N + Nitrite-N	mg/L	annual	1.4	STORET; 12 values, 4<MDL, 2012-13
Pentachlorophenol	µg/L	annual	0	No representative data available.
Phenol	µg/L	annual	0	No representative data available.
Silver	µg/L	annual	0	No representative data available.
Total Filterable Residue	mg/L	annual	392	STORET; 13 values, 0<MDL, 2012-13
trans-1,2-Dichloroethylene	µg/L	annual	0	No representative data available.
Zinc	µg/L	annual	5	STORET; 12 values, 10<MDL, 2012-13

DMR = Discharge Monitoring Report
MDL = Method Detection Limit
NPDES = National Pollutant Discharge Elimination System
STORET = United States Environmental Protection Agency Storage and Retrieval Data Warehouse
USGS = United States Geological Survey

Table 10. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

			Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
			Average			Maximum	
Parameter	Units	Wildlife	Human Health	Agri Supply	Aquatic Life	Aquatic Life	
Aluminum [B]	µg/L	--	1736000	--	--	--	--
Ammonia (Summer)	mg/L	--	--	--	50.31	--	--
Ammonia (Winter)	mg/L	--	--	--	636	--	--
Antimony	µg/L	--	333166 [A]	--	10113 [A]	73350 [A]	1800
Arsenic	µg/L	--	246738 [A]	41712 [A]	7861 [A]	27821 [A]	680
Barium [B]	µg/L	--	38610000 [A]	--	35051 [A]	243658 [A]	11000
Boron	µg/L	--	48280000 [A]	--	118800 [A]	1532000 [A]	65000
Bromide	mg/L	--	--	--	--	--	--
Bromoform	µg/L	--	380151 [A]	--	12242 [A]	89650 [A]	2200
Chlorine, Total Residual [B]	mg/L	--	--	--	0.3351 [A]	0.8818 [A]	0.038
Chlorodibromomethane [B]	µg/L	--	64070 [A]	--	17033 [A]	236350 [A]	5800
Copper	µg/L	--	15450000 [A]	120103 [A]	476 [A]	1235 [A]	57
Dichlorobromomethane [B]	µg/L	--	43449 [A]	--	10357 [A]	143872 [A]	6200
Fluoride	mg/L	--	--	854	--	--	--
Iron [B]	µg/L	--	--	1067000	--	--	--
Lead [B]	µg/L	--	--	23898 [A]	488	14806 [A]	640
Mercury (BCC)	ng/L	1.3	3.1	10000 [A]	910	1700	1700
Methyl bromide [B]	µg/L	--	1111000 [A]	--	852 [A]	3097 [A]	75
Methyl chloride [B]	µg/L	--	3118000	--	--	--	--
Molybdenum	µg/L	--	2414000 [A]	--	609231 [A]	8818000 [A]	370000
Nickel [B]	µg/L	--	10380000 [A]	47111 [A]	2873 [A]	41085 [A]	1800
Pentachlorophenol [B]	µg/L	--	386	--	--	--	--
Phenol [B]	µg/L	--	1025000 [A]	--	21291 [A]	383050 [A]	9400
Silver [B]	µg/L	--	2655000 [A]	--	40 [A]	274 [A]	12
Total Filterable Residue	mg/L	--	--	--	34143	--	--
trans-1,2-Dichloroethylene	µg/L	--	10680000	--	--	--	--
Zinc [B]	µg/L	--	8447000	6033000 [A]	6859 [A]	10447 [A]	450

[A] Allocation must not exceed the Inside Mixing Zone Maximum.
[B] Parameter would not require a WLA based on reasonable potential procedures, but allocation requested by permit staff.
BCC = Bioaccumulative Chemical of Concern

Table 11. Parameter Assessment

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

Bromide	Sulfates

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

Aluminum	Ammonia (Winter)	Barium
Chlorine, Total Residual	Chlorodibromomethane	Dichlorobromomethane
trans-1,2-Dichloroethylene	Iron	Methyl bromide
Methyl chloride	Pentachlorophenol	Phenol
Silver	Zinc	

Group 3: PEQmax < 50% of maximum PEL and PEQavg < 50% of average PEL. No limit recommended, monitoring optional.

Ammonia (Summer)	Antimony	Arsenic
Boron	Bromoform	Copper
Total Filterable Residue	Fluoride	Lead
Molybdenum	Nickel	

Group 4: PEQmax > 50% but <100% of the maximum PEL or PEQavg > 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

			Recommended Effluent Limits	
Parameter	Units	Period	Average	Maximum
Mercury (BCC)	ng/L	annual	1.3	1700

PEL = preliminary effluent limit
PEQ = projected effluent quality
WLA = wasteload allocation
WQS = water quality standard

Table 12. Final Effluent Limits and Monitoring Requirements

Parameter	Units	Concentration		Loading (kg/day)[a]		Basis[b]
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Outfall 001						
Water Temperature	°F	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		M[c]
Dissolved Oxygen	mg/L	--	5.0[m]	--	--	WQS
Oil & Grease	mg/L	--	10.0	--	--	WQS
Nitrogen, Ammonia	mg/L	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		M[c]
Phosphorus	mg/L	--	1.0	--	1.1	BTJ
Iron	µg/L	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		M[c]
Nickel	µg/L	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		M[c]
Zinc	µg/L	--	450	--	0.49	WLA/IMZM
Lead	µg/L	--	640	--	0.7	WLA/IMZM
Copper	µg/L	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		M[c]
Flow Rate	MGD	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		M[c]
Total Residual Chlorine	mg/L	--	0.038	--	--	WLA/IMZM
Mercury	ng/L	2.42	1700	0.0000027	0.00187	VAR/WLA
Acute Toxicity, *Ceriodaphnia dubia*	TU_a	--	1.0	--	--	WET
Acute Toxicity, *Pimephales promelas*	TU_a	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		WET
pH	S.U.	6.5 - 9.0		--	--	WQS
Total Filterable Residue	mg/L	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		M[c]
Internal Monitoring Station 601						
pH	S.U.	6.0 - 9.0		--	--	NSPS
Total Suspended Solids	mg/L	--	--	80.8	217	NSPS/ABS
Oil & Grease	mg/L	--	--	8.77	59.9	NSPS/ABS
Lead	µg/L	--	--	0.220	0.645	NSPS/ABS
Zinc	µg/L	--	--	0.322	0.968	NSPS/ABS
Flow Rate	MGD	- - - - - - - - - - - -	Monitor	- - - - - - - - - - - -		M[c]

[a] Effluent loadings for outfall 001 based on average design discharge flow of 0.29 MGD.
Effluent loadings for outfall 601 based on average production rates of 9,300 tons/day

[b] Definitions:
ABS = Antibacksliding Rule (OAC 3745-33-05(F) and 40 CFR Part 122.44(l))
AD = Antidegradation Rule
BTJ = Best Technical Judgment
M = BEJ of Permit Guidance 2: Determination of Sampling Frequency Formula for Industrial Waste Discharges
NSPS = New Source Performance Standards in 40 CFR Part 420
VAR = Mercury variance (OAC 3745-1-38(J))
WET = Reasonable potential for requiring monitoring requirements for Whole Effluent Toxicity in NPDES permits (40 CFR Part 132, Appendix F, Procedure 6, and OAC 3745-33-07(B))
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 plant performance.

Attachment 1. List of Approved Boiler/Cooling Water System Additives

Plant Location	Product Name	Purpose	Proposed Discharge Concentration at Outfall (mg/L)
503 contact cooling water system	Nalco 3DT325	Cooling water treatment	0
503 contact cooling water system	Nalco 3DT337	Cooling water treatment	0
Plant recycle system	Nalco 7385	Corrosion control	0
503, 501, 510, and Six Cell cooling towers	3D TRASAR™ 3DT120	Control feed rate with dye	< 1.0
503, 501, 510, and Six Cell cooling towers	3D TRASAR™ 3DT180	Control feed rate with dye	< 0.5
503, 501, 510, and Six Cell cooling towers	Chlorine dioxide	Control biofouling	0.038 (residual chlorine)
Water treatment and EAF systems	3D TRASAR™ 3DT401	Cooling water treatment	2.67
Water treatment and EAF systems	Nalsperse 7308	Cooling water treatment	0.819

Attachment 2. Applicable Federal Effluent Limitation Guidelines

Subpart F – Continuous Casting Subcategory		
40 CFR 420.64 - New Source Performance Standards		
9300 tons product/day = 8436818 kg product/day		
	Effluent Limits	
Parameter	Daily Maximum	30-Day Average
	(kg/1000 kg of product)	
Total Suspended Solids	0.0073	0.00261
Oil & Grease	0.00313	0.00104
Lead, Total	0.0000939	0.0000313
Zinc, Total	0.000141	0.0000469
pH	6.0 – 9.0	

Subpart G – Hot Forming Subcategory		
40 CFR 420.74(c)(1) - New Source Performance Standards, Flat Mills, Hot Strip and Sheet Mills, Carbon and Specialty		
9300 tons product/day = 8436818 kg product/day		
	Effluent Limits	
Parameter	Daily Maximum	30-Day Average
	(kg/1000 kg of product)	
Total Suspended Solids	0.0435	0.0163
Oil & Grease	0.0109	--
pH	6.0 – 9.0	

Entire Process Total Effluent Limit Calculation		
Average Production Rate = 9300 tons product/day		
	Loading Limits	
Parameter	Daily Maximum	30-Day Average
	(kg/day)	
Total Suspended Solids	61.6+367=429	22.0+138=160
Oil & Grease	26.4+92.0=118	8.77
Lead, Total	0.792	0.264
Zinc, Total	1.19	0.396
pH	6.0 – 9.0	

Attachment 3. Whole Effluent Toxicity Reasonable Potential Analysis

	Water Flea (*Ceriodaphnia dubia*) Acute	Fathead Minnow (*Pimephales Promelas*) Acute
WLA (TU)	1.0	1.0
Total # of Tests	10	10
Maximum Value (TU)	1.13	--
Coefficient of Variation[1] (standard deviation/mean) [Where # tests ≥ 10]	1.0	--
Multiplying Factors[2]	2.3	--
PEQ (Maximum Value x Multiplying Factor)	2.6	--
Reasonable Potential Demonstrated? (Yes/No) (Yes if PEQ > WLA)	Yes	No

[1] 40 CFR Part 132, Appendix F, Paragraph D(3)
[2] 40 CFR Part 132, Appendix F, Table F6-1

North Star BlueScope Steel shows evidence of acute toxicity to water fleas. Limits and increased monitoring are proposed.

Attachment 4. Comparison of Water Quality Based Effluent Limits (WQBELs) to Federal Effluent Limitation Guidelines (ELGs)

	Outfall 001 WQBELs				Internal Station 601 ELGs*				Current Permit Internal Station 601 Limits*	
	Concentration (µg/L)		Load [a] (kg/day)		Concentration (µg/L)		Load (kg/day)		Load (kg/day)	
Pollutant	30-day Avg.	Daily Max.	30-day Avg.	Daily Max.	30-day Avg.	Daily Max.	30-day Avg.	Daily Max.	30-day Avg.	Daily Max.
TSS	--	--	--	--	147000	395000	160	429	**80.8**	**217**
O&G	--	10000	--	--	8070	109000	**8.77**	118	10.6	**59.9**
Lead	488	640	0.530	0.695	243	729	0.264	0.792	**0.220**	**0.645**
Zinc	6859	450	7.45	0.489	365	1100	0.396	1.19	**0.322**	**0.968**

TSS = total suspended solids
O&G = oil and grease

[a] = effluent loading limits calculated based on the 95th percentile of monthly average effluent flow of 0.287 MGD.

*Calculated ELG loading limits are compared to the current permit loading limits for each parameter for Station Number 2ID00015601.

Bolded values represent the most stringent limit to be applied in the renewed permit.

Addendum 1. Acronyms

ABS	Anti-backsliding
BAT	Best Available Technology Economically Achievable
BCT	Best Conventional Pollutant Control Technology
BPJ	Best professional judgment
BPT	Best Practicable Control Technology Currently Available
BTJ	Best technical judgment
CFR	Code of Federal Regulations
CONSWLA	Conservative substance wasteload allocation
CWA	Clean Water Act
CWIS	Cooling water intake structure
DMR	Discharge Monitoring Report
DMT	Dissolved metal translator
ELG	Federal effluent limitation guideline
gpm	Gallons per minute
IMZM	Inside mixing zone maximum
MDL	Analytical method detection limit
MGD	Million gallons per day
NPDES	National Pollutant Discharge Elimination System
NSPS	New source performance standards
OAC	Ohio Administrative Code
Ohio EPA	Ohio Environmental Protection Agency
ORC	Ohio Revised Code
ORSANCO	Ohio River Valley Water Sanitation Commission
PEL	Preliminary effluent limit
PEQ	Projected effluent quality
PMP	Pollution Minimization Program
PPE	Plant performance evaluation
SIC	Standard Industrial Classification
TBEL	Technology-based effluent limit
TMDL	Total Daily Maximum Load
TRE	Toxicity reduction evaluation
TU	Toxicity unit
U.S. EPA	United States Environmental Protection Agency
WET	Whole effluent toxicity
WLA	Wasteload allocation
WQBEL	Water-quality-based effluent limit
WQS	Water Quality Standards