VPDES Permit VA0001589, Steel Dynamics, Inc. - 2021 Fact Sheet

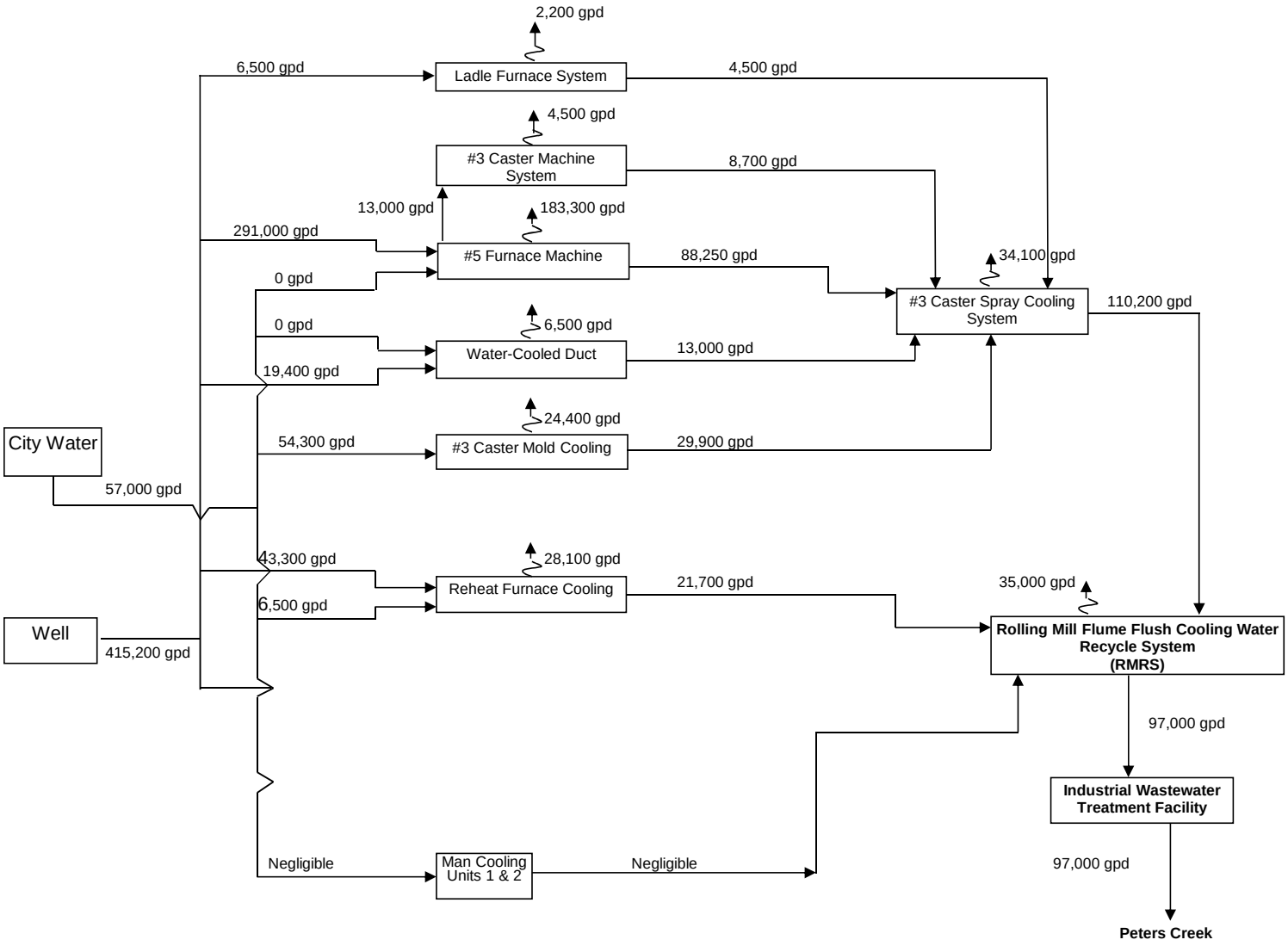
Table of Contents for the Fact Sheet Appendices

VPDES Permit VA0001589
Steel Dynamics, Inc. - Roanoke Bar Division
Reissuance 2021

ATTACHMENT A - Facility Information

- Industrial process water flow diagram of from permit application
- Waste water treatment flow diagram from 2020 O&M Manual
- Portion of Roanoke & Salem USGS quadrangles (109 C & 110D)
- Threatened and Endangered Species (T&E) submittal & reply
  - DEQ T&E Species coordination form
  - DCR Natural Heritage January 13, 2021 comment letter
  - DWR (formerly DGIF) February 8, 2021 comments letter
  - US Fish & Wildlife Service March 21, 2021 comments
- Email USEPA comments on draft review & TMDL staff comments on Mercury TMDL

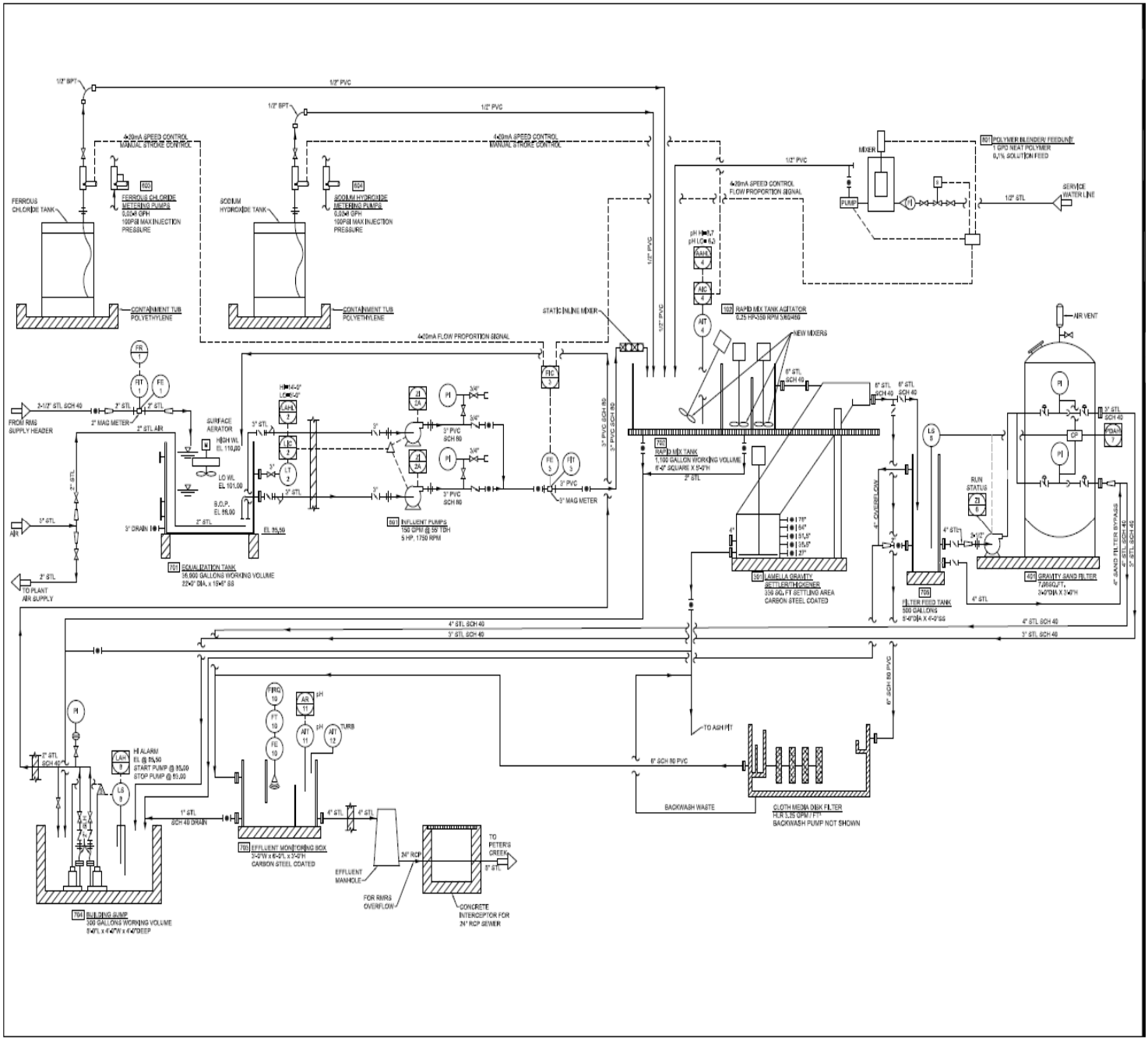
Steel Dynamics, Inc. Roanoke Bar Division
Process Water Flow Diagram



****Note**: All Flow Rates are variable due to production increases and decreases, and demand requirements for the various systems.**

Exhibit 2: Process Flow Diagram

Wastewater Treatment Plant



Latitude:
037° 16' 19.73" N
Longitude:
- 079° 59' 40.44" W

Property Boundary

Source: USGS Topographic Map of the Roanoke Quadrangle, Virginia, 7.5 Minute Series (1984).	SCALE: 1 : 24,000	VPDES Permit Renewal	APEX Companies, LLC 7744 Garland Circle Roanoke, Virginia 24019 (540) 563-4920	Site Map Steel Dynamics, Inc. - Roanoke Bar Division 102 Westside Boulevard Roanoke, Virginia 24017
Vertical Datum: National Geodetic Vertical Datum 1929	CK.:			
Horizontal Datum: North American Datum 1927	APP'D.:			
	Contour Interval: 20 feet			
	APEX JOB NO.: 726001-010			DRAWING NUMBER: FIGURE No. 1 — REV: 0
	www.apexcos.com			

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

VPDES PERMITS

Threatened and Endangered Species VPDES Coordination

(NOT for 316(b) Coordination)

To:

- ☒ DWR, Environmental Review Coordinator
- ☒ DCR, Environmental Review Coordinator
- ☒ US Fish & Wildlife Service, T/E Review Coordinator

From: Susan Edwards, Env. Engineer Sr.
Blue Ridge Regional Office
901 Russell Drive, Salem VA 24153

Date Sent: December 2, 2020

Permit Number: VA0001589

Facility Name: Steel Dynamics Inc.
Roanoke Bar Division

Contact: Thomas Stinson, Env. Engineer

Phone: (540)983-7240

Address: 102 Westside Blvd
Roanoke, VA 24017

Location: 102 Westside Blvd
Roanoke, VA 24017

USGS Quadrangle: Salem & Roanoke (109C & 110D)

Latitude/Longitude: N 37° 16' 25"/ W 79° 59' 49"

Receiving Stream: Peters Creek

Receiving Stream Flow Statistics used for Permit:
7Q10: 0.49 MGD 1Q10: 0.47 MGD
Critical flow statistics based on drainage area comparison

Effluent Characteristics and Max Daily Flow:

Industrial process treated wastewater & stormwater associated with industrial activity. Wastewater treated results from the refining of scrap metal into steel billets to produce hot rolled bars, bar shapes and structural steel.

Average industrial flow outfall 005: 0.097 MGD

Species Search Results (or attach database report and map):

I have not re-queried the database for any changes. This is a reissuance of an existing VPDES Major Industrial discharge Permit.

Draft permit effluent limits pages are not yet prepared. A complete application for reissuance has been submitted. The application, a 2020 site inspection report and the 2016 VPDES Permit are available for review on the DEQ Fileshare site http://www.deq.virginia.gov/fileshare/wps/ with the folder name 'wps/BRRO/VA0001589 Steel Dynamics Inc 2021'

DGIF email: projectreview@dwr.virginia.gov to Ernie Aschenbach attention.

USFWS email: joann_banda@fws.gov (JoAnn Banda joann_banda@fws.gov)

DCR: (nhreview@dcr.virginia.gov)

If Natural Heritage Data Explorer (NHDE) has the needed information DCR does not need this form. If you have additional information you wish to add, you may do so in the comments field on the NHDE form. DCR will contact you directly if they need more information.

Matthew J. Strickler
Secretary of Natural Resources

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
Deputy Director of Administration and Finance

Russell W. Baxter
Deputy Director of Dam Safety & Floodplain Management and Soil & Water Conservation

Nathan Burrell
Deputy Director of Government and Community Relations

Thomas L. Smith
Deputy Director of Operations

January 13, 2021

Susan Edwards
DEQ-BRRO
901 Russell Drive
Salem, VA 24153

Re: VA0001589, Steel Dynamics, Roanoke Bar Division Permit Reissuance

Dear Ms. Edwards:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, the Roanoke River – North and South Forks Stream Conservation Unit (SCU) is located within 100 ft of the project area. SCUs identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. SCUs are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. The Roanoke River – North and South Forks SCU has been given a biodiversity significance ranking of B1, which represents a site of outstanding significance. The natural heritage resources of concern associated with this SCU are:

Noturus gilberti	Orangefin madtom	G2/S2/SOC/LT
Percina rex	Roanoke logperch	G1G2/S1S2/LE/LE
Allocapnia simmonsi	Spatulate snowfly	G3/S1S2/NL/NL

The Orangefin madtom is native to the Roanoke and James River systems of North Carolina and Virginia (NatureServe, 2009). The Orangefin madtom inhabits moderate to strong riffles and runs having little or no silt in moderate-gradient, intermontane and upper Piedmont streams. This species is an intersticine dweller, found in or near cavities formed by rubble and boulders (Jenkins and Burkhead, 1993). Please note that this species is currently classified as a species of concern (not a legal designation) by the United States Fish and Wildlife Service (USFWS) and as threatened by the Virginia Department of Game and Inland Fisheries (VDGIF). Threats to the Orangefin madtom include channelization, siltation, various forms of chronic pollution, catastrophic chemical spills, impoundment, dewatering, and bait-seining (NatureServe, 2009). Its low reproductive rate and short life span (Simonson 1997, Simonson and Neves 1992, Simonson 1987) exacerbate these threats (Burkhead and Jenkins 1991).

The Roanoke logperch is endemic to the Roanoke and Chowan River drainages in Virginia (Burkhead and Jenkins, 1991) and inhabits medium and large, warm and usually clear rivers with sandy to boulder spotted bottoms (NatureServe, 2009). Please note that this species is currently classified as endangered by the USFWS and the VDGIF. The Roanoke logperch is threatened by channelization, siltation, impoundment, pollution, and de-watering activities (Burkhead & Jenkins, 1991).

Spatulate snowfly is a stonefly documented in only two locations in Virginia. Stoneflies are generally medium-sized to small, somewhat flattened, soft-bodied, rather drab-colored insects found near streams or rocky lake shores (Borror, 1981). They are poor fliers and are seldom found far from water. Stonefly nymphs are often found under stones in streams but may occasionally be found anywhere in a stream where food is available (Borror, 1981). Stoneflies are highly sensitive to any practices that degrade the quality of its aquatic habitat.

To minimize impacts to aquatic resources, DCR recommends the use of uv/ozone to replace chlorination disinfection and utilization of new technologies as they become available to improve water quality. Due to the legal status of the Roanoke logperch and Orangefin madtom, DCR also recommends coordination with the USFWS and the VDGIF to ensure compliance with protected species legislation.

This project has intersected the karst bedrock screening layer. DCR recommends all applicable federal, state and local regulations and guidelines be met for the reissuance of the VPDES Permit for the project. If these regulations are met, it will help reduce any potential impact to the karst, groundwater and surface water resources as well as any associated fauna and flora.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The VDWR maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dwr.virginia.gov.

Should you have any questions or concerns, feel free to contact René Hypes at 804-371-2708. Thank you for the opportunity to comment on this project.

Sincerely,

S. René Hypes
Natural Heritage Project Review Coordinator

Cc: Ernie Aschenbach, VDWR
Troy Andersen, USFWS
Wil Orndorff, DCR-Karst

Literature Cited

Borror, D.J., D. M. De Long, and C. A. Triplehorn. 1981. An Introduction to the Study of Insects. Saunders College Publishing, Philadelphia.

Burkhead, N.M. and R.E. Jenkins. 1991. Roanoke logperch. In Virginia's Endangered Species: Proceedings of a Symposium. K. Terwilliger ed. The McDonald and Woodward Publishing Company, Blacksburg, Virginia. p. 395-397.

Jenkins, R. E., and N. M. Burkhead. 1993. Freshwater fishes of Virginia. American Fisheries Society, Bethesda, Maryland.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: June 21, 2010).

Simonson, T. D. 1987. Distribution, ecology, and reproductive biology of the orangefin madtom (Noturus gilberti). M.S. Thesis, Virginia Polytechnic Institute & State University, Blacksburg.

Simonson, T. D. 1997. Orangefin madtom. Pages 15-16 in E. F. Menhinick and A. L. Braswell, editors. Endangered, threatened, and rare fauna of North Carolina. Part IV. A reevaluation of the freshwater fishes. Occasional Papers of the North Carolina Museum of Natural Sciences and the North Carolina Biological Survey No. 11.

Simonson, T. D., and R. J. Neves. 1992. Habitat suitability and reproductive traits of the orangefin madtom NOTURUS GILBERTI (Pisces: Ictaluridae). American Midland Naturalist 127:115-24.

Susan Edwards

From: ernie.aschenbach@dwr.virginia.gov on behalf of ProjectReview (DGIF), rr
Sent: Monday, February 8, 2021 3:39 PM
To: Susan Edwards; rr nhreview; Banda, JoAnn; rr ProjectReview (DGIF)
Subject: Re: [EXTERNAL] T&E Species review 2021 VPDES Permit VA0001589

Follow Up Flag: Follow up
Flag Status: Flagged

ESSLog 30389; DEQ VPDES reissuance VA0001589 for the Steel Dynamics, Roanoke Bar Division in Roanoke, VA

According to DEQ, the 2021 permit and effluent characteristics are not available at this time. Based on 2016 VPDES materials and effluent characteristics, effluent consists of industrial process treated wastewater and stormwater. As an industrial discharge there is no disinfection by chlorine associated with the wastewater treatment process. The average discharge is approximately 0.097 MGD; the 7Q10 of the receiving reach of Peters Creek is 0.49 MGD.

According to our records, Peters Creek is a headwater tributary to the Roanoke River, designated T&E species waters for the FESE Roanoke logperch and ST orangefin madtom. Provided strict adherence to the effluent limitations and monitoring requirements, we do not anticipate the reissuance of this permit to result in adverse impact to resources under our purview. If the 2021 effluent characteristics and/or monitoring requirements identified in the permit (reissuance) change from the 2016 permit, we recommend DEQ notify DWR, UFWS, and DCR-DNH. We will review new information and comment as appropriate.

We recommend contacting the USFWS regarding all federally listed species. This project is located within 2 miles of a documented occurrence of a state or federal threatened or endangered plant or insect species and/or other Natural Heritage coordination species. Therefore, we recommend coordination with VDCR-DNH regarding the protection of these resources. Thanks.

Please note as of July 1, 2020 DGIF will become the Department of Wildlife Resources (DWR). Our new email addresses will end in @dwr.virginia gov*

Ernie Aschenbach
Environmental Services Biologist
P 804.367.2733
Email: Ernie.Aschenbach@dgif.virginia.gov
New Email: Ernie.Aschenbach@dwr.virginia gov
Virginia Department of Wildlife Resources
CONSERVE. CONNECT. PROTECT.
A 7870 Villa Park Drive, P.O. Box 90778, Henrico, VA 23228-0778
www.dwr.virginia.gov

Susan Edwards

From: Price-Fay, Michelle <Price-Fay.Michelle@epa.gov> on behalf of Price-Fay, Michelle
Sent: Wednesday, March 24, 2021 5:04 PM
To: Susan Edwards
Cc: Daub, Elleanore; Martinsen, Jessica; Shuart, Ryan; Fulton, Jennifer
Subject: VA0001589 Steel Dynamics Inc.

Follow Up Flag: Follow up
Flag Status: Flagged

Hello Susan,

EPA has reviewed the below referenced permit in accordance with 40 CFR §123.44, EPA review of and objection to State Permits, and the MOA between The Virginia State Water Control Board and the EPA.

Steel Dynamics Inc.
NPDES Permit Number: VA0001589
EPA Received: 2/22/2021
30-day response date: 3/24/2021

EPA has exercised its discretion to perform a limited review of the state submitted draft permit for adherence to impaired waters requirements. EPA has chosen to perform a limited review based on the following: mercury impairment, the iron and steel manufacturing effluent limit guideline (ELG), the Roanoke River Bacteria TMDL and the Roanoke PCB TMDL Requirements. As a result of the limited review EPA offers the following recommendation:

1. The fact sheet identifies that the Roanoke River is impaired for fish consumption due to mercury. The mercury impaired waters designation has not yet completed TMDL development. EPA recommends collecting additional mercury data in advance of the TMDL approval to determine any potential contribution this discharge may have on the impaired receiving water. This should be done at a frequency greater than once per permit cycle which is the current frequency of the application sampling requirements. EPA also recommends including a sufficiently sensitive test method requirement in accordance with 40 CFR 122.21(e)(3) to detect concentrations that could be potentially contributing to the Category 5A impairment for mercury in fish tissue.

If there are any changes proposed to the draft permit and/or fact sheet, please coordinate with Ryan Shuart on my staff via telephone at 215-814-2714 or via electronic mail at shuart.ryan@epa.gov prior to issuance.

Sincerely,
Michelle

Michelle Price-Fay, Chief
Clean Water Branch
Water Division (3WD40)
U.S. EPA Region III
1650 Arch Street
Philadelphia, Pa 19103
215-814-3397

Susan Edwards

Subject: RE: VA0001589 Steel Dynamics Inc. Mercury TMDL

From: Smith, Lucy <lucy.smith@deq.virginia.gov>
Sent: Friday, March 26, 2021 8:01 AM

Hi Susan,
I heard back from Mark today and the plan is still to pursue a reclassification of HG impaired waters rather than conduct a TMDL. We will be submitting our 2022 priorities sometime in the next 6 months and we are including Hg in the narrative section with the thought that 5M makes most sense for those waters that are most likely affected by atmospheric derived Hg. I think we have had some initial conversations with EPA about this and other states have taken a similar approach but we have not submitted anything official yet to my knowledge.

On Thu, Mar 25, 2021 at 10:21 AM Susan Edwards <susan.edwards@deq.virginia.gov> wrote:

> Hi Lucy,
> Hmm, very interesting for process we're in now.
> How certain is this and is EPA aware of the potential shift in direction on this?
> I look forward to learning of what CO indicates!

From: Smith, Lucy <lucy.smith@deq.virginia.gov>
Sent: Thursday, March 25, 2021 10:11 AM

Hi Susan,

The last I heard from Central Office is that we are pursuing to reclassify mercury impairments as 5M, which means that the primary cause of the impairment is due to atmospheric deposition. This means that a TMDL will not be required and monitoring is not needed. I will reach out to CO to confirm that this is still the plan.

On Thu, Mar 25, 2021 at 9:12 AM Susan Edwards <susan.edwards@deq.virginia.gov> wrote:

> Hi Lucy,
>
> What is the status on the TMDL development for Mercury in the Roanoke River for fish consumption?
> Have you seen any other facility VPDES Permit reissuance where EPA has asked for monitoring for development of this TMDL?
> As indicated below, I'm looking for information on precedent & if there is none being mindful of setting such for others.
>
> This individual permit expires 3/31/21 (next Wednesday) so we need to move on this quickly.
> Thank you for any input you can provide.
> Best regards, Susan

--
Lucy Smith *(Baker)*
TMDL Project Coordinator
Virginia Department of Environmental Quality
Blue Ridge Regional Office, 901 Russell Drive, Salem, VA 24153
lucy.baker@deq.virginia.gov 540-562-6718

VPDES Permit VA0001589
Steel Dynamics, Inc. - Roanoke Bar Division
Reissuance 2021

APPENDIX B – Receiving Stream Information

- Flow Frequency Memo of March 25, 2010
- 2020 Bacterial Impairment Waters Fact Sheet
- 2020 Benthic Impairment Waters Fact Sheet
- 2020 Impaired Waters Fact Sheets for PCB
- 2020 Mercury Impaired Fact Sheets
- Excerpt for Bacterial TMDL for Roanoke River Watershed, with allocation for Steel Dynamics as Roanoke Electric Steel (RES) Corporation
- Excerpt for Benthic TMDL for Roanoke River Watershed, reference to Steel Dynamics with allocations for the process wastewater and stormwater discharges as Roanoke Electric Steel Corporation
- Excerpt for PCB TMDL for Roanoke River Watershed, reference to Steel Dynamics with allocation for the process wastewater and stormwater discharges
- STORET monitoring data for station 4APEE01.04 - pH, hardness and temperature

MEMORANDUM
DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION

Water Permitting, Blue Ridge Regional Office - Roanoke
3019 Peters Creek Road, Roanoke, VA 24019-2738

SUBJECT: Flow Frequency Determination, Steel Dynamics (Roanoke Bar Division) - VA0001589

TO: Permit reissuance file

FROM: Susan Edwards, Environmental Engineer Senior, Water Permitting - BRRO Roanoke

DATE: March 25, 2010

This memo supercedes the November 2004 memo concerning the subject VPDES permit.

The Steel Dynamic's treated industrial wastewater discharges to Peters Creek just upstream of the extremely large culvert under a large area of railroad tracks and the confluence of Peters Creek with the Roanoke River on the western side of Roanoke, VA. Stream flow frequencies are required at this site for the purpose of calculating effluent limitations for the VPDES permit.

The VDEQ and USGS have operated a continuous record gage on Tinker Creek (#02055100) since 1956. The gage is located 1.3 miles northwest of Daleville, VA. The flows at the discharge point were calculated by drainage area comparison and do not address any withdrawals, discharges, or springs that may lie upstream. The flow frequencies for the gage and the discharge point are presented below. There are no site specific flow values.

Tinker Creek near Daleville, VA (#02055100): (statistical period 1956 - 2003)

Drainage Area = 11.7 mi^2	30Q5 = 1.6 cfs
Harmonic Mean = 5.0 cfs	30Q10 = 1.2 cfs
High Flow 30Q10 = 3.2 cfs	7Q10 = 1.0 cfs
High Flow 7Q10 = 2.6 cfs	1Q10 = 0.96 cfs
High Flow 1Q10 = 2.3 cfs	1Q30 = 0.65 cfs

Peters Creek at discharge point:

Drainage Area = 8.95 mi^2	30Q5 = 1.22 cfs / 0.79 MGD
Harmonic Mean = 3.82 cfs / 2.47 MGD	30Q10 = 1.07 cfs / 0.69 MGD
High Flow 30Q10 = 2.45 cfs / 1.58 MGD	7Q10 = 0.76 cfs / 0.49 MGD
High Flow 7Q10 = 1.99 cfs / 1.29 MGD	1Q10 = 0.73 cfs / 0.47 MGD
High Flow 1Q10 = 1.76 cfs / 1.14 MGD	1Q30 = 0.50 cfs / 0.32 MGD

The high flow months are January through May.

Fact Sheets for Impaired (Category 4 or 5) Waters in 2020

Roanoke and Yadkin River Basins

***Cause Group Code:* L04R-06-BAC Peters Creek**

Cause Location: Peters Creek mainstem from its headwaters (Salem Quad) extending downstream to the Peters Creek confluence on the Roanoke River (Roanoke Quad).

City / County: Roanoke City Roanoke Co.

Use(s): Recreation

Cause(s) / VA Category: Escherichia coli (E. coli) / 4A

The 2002 303(d) Listed 7.20 mile Peters Creek Recreational impairment remains.

The Roanoke River Bacteria Total Maximum Daily Load (TMDL) is U.S. EPA approved on 8/02/2006 [Fed ID 24538] with SWCB approval on 6/27/2007. 1996 & 2002 fecal coliform (FC) observations are the basis for the original Roanoke River bacteria impaired listing. The 2014 total bacteria impaired length is 29.56 miles on the Roanoke and 165.29 acres in Smith Mountain Lake. The approved TMDL did not specifically address the Peters Creek bacteria impairment but is nested within the Roanoke Bacteria TMDL Watershed. Allocation scenario development is for the entire drainage to provide pollutant reductions for all watersheds contributing to the bacteria impairment. The entirety of the approved TMDL and allocations can be viewed at http://www.deq.virginia.gov.

4APEE001.04- (Shenandoah Avenue Bridge) There are no additional data beyond the 2012 assessment which reported escherichia coli (E.coli) exceedances of the 235 cfu/100 ml instantaneous criterion in two of 14 samples at 280 and 420 cfu/10 ml. There are no additional data beyond the 2012 data window. One of two remaining observations exceeds at 280 cfu/100 ml within both the 2014 and 2016 data windows. Data within both the 2010 and 2008 data windows find E.coli exceeds the instantaneous criterion in 11 of 32 observations ranging from 250 cfu/100 ml to greater than 2000. The 2006 Integrated Report (IR) finds the same range of exceedance from 10 of 20 samples. The original 2002 bacteria 303(d) Listing is based on a Special Study (SS 975101) conducted in 1997 where fecal coliform data resulted in geometric mean exceedances of the former WQS criterion and frequency of samples derived from the special study data.

Assessment Unit / Water Name / Location Desc.	Cause Category	Cause Name	Cycle First Listed	TMDL Dev. Priority	Water Size
VAW-L04R_PEE01A02 / Peters Creek / Peters Creek mainstem from its confluence with the Roanoke River upstream to the Melrose Avenue Bridge (Rt. 11/460) (RU14).	4A	Escherichia coli (E. coli)	2006	L	2.58
VAW-L04R_PEE02A02 / Peters Creek / Peters Creek mainstem from the Melrose Avenue Bridge (Rt. 11/460) upstream to its headwaters (RU14).	4A	Escherichia coli (E. coli)	2006	L	4.62

Peters Creek **Recreation**	Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
Escherichia coli (E. coli) - Total Impaired Size by Water Type:			**7.20**

Sources:

- Discharges from Municipal Separate Storm Sewer Systems (MS4)
- Municipal (Urbanized High Density Area)
- Unspecified Domestic Waste
- Wet Weather Discharges (Non-Point Source)
- Wildlife Other than Waterfowl

Fact Sheets for Impaired (Category 4 or 5) Waters in 2020

Roanoke and Yadkin River Basins

***Cause Group Code:* L04R-09-BEN Peters Creek**

Cause Location: Peters Creek mainstem from its headwaters (Salem Quad) extending downstream to the Peters Creek confluence on the Roanoke River (Roanoke Quad).

City / County: Roanoke City Roanoke Co.

Use(s): Aquatic Life

Cause(s) / VA Category: Benthic Macroinvertebrates Bioassessments / 4A

The Peters Creek benthic community exhibits impaired conditions for the 7.20 mile 2016 initially 303(d) Listed waters. The Roanoke River General Standard - Benthic (Sediment) TMDL Study received U.S. EPA approval on 5/10/2006 [Fed. ID 33861] and SWCB approved 9/07/2006. Peters Creek is nested within the Roanoke River General Standard - Benthic (Sediment) TMDL watershed (2016 IR).

4APEE001.16 (Strass Park, on Westside Boulevard)- Bio- 'IM' Two 2013 VSCI surveys scoring spring 26.3 and fall 27.5 with an average score of 26.9. The benthic community is dominated by pollution tolerant organisms, particularly Chironomidae (midges) in both spring and fall. This station is located in a suburban and commercial watershed which receives high levels of storm water runoff. During both sampling events algae is very thick on stream substrate indicating nutrient enrichment. Habitat scores were impacted by excessive sedimentation, eroded stream banks and sparse riparian buffers.

Assessment Unit / Water Name / Location Desc.	Cause Category	Cause Name	Cycle First Listed	TMDL Dev. Priority	Water Size
VAW-L04R_PEE01A02 / Peters Creek / Peters Creek mainstem from its confluence with the Roanoke River upstream to the Melrose Avenue Bridge (Rt. 11/460) (RU14).	4A	Benthic Macroinvertebrates Bioassessments	2016	L	2.58
VAW-L04R_PEE02A02 / Peters Creek / Peters Creek mainstem from the Melrose Avenue Bridge (Rt. 11/460) upstream to its headwaters (RU14).	4A	Benthic Macroinvertebrates Bioassessments	2016	L	4.62

Peters Creek	Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
Aquatic Life			
Benthic Macroinvertebrates Bioassessments - Total Impaired Size by Water Type:			**7.20**

Sources:

- Loss of Riparian Habitat
- Municipal (Urbanized High Density Area)
- Residential Districts
- Urban Runoff/Storm Sewers
- Wet Weather Discharges (Non-Point Source)

Fact Sheets for Impaired (Category 4 or 5) Waters in 2020

Roanoke and Yadkin River Basins

***Cause Group Code:* L12L-01-PCB** **Roanoke River, Tinker Creek and Peters Creek.**

Cause Location: Roanoke River from the confluence of the North and South Forks downstream to Niagara Dam. The impairment includes Peters Creek from the Rt. 460 Bridge downstream to its confluence on the Roanoke River; and Tinker Creek from the mouth of Deer Branch downstream to the Tinker Creek confluence on the Roanoke River.

City / County: Montgomery Co. Roanoke City Roanoke Co. Salem City

Use(s): Fish Consumption Public Water Supply Wildlife

Cause(s) / VA Category: PCBs in Fish Tissue / 4A Polychlorinated Biphenyls (PCBs) / 4A

The waters of the Roanoke River (28.61 miles), Peters Creek (2.52 miles) and Tinker Creek (5.37 miles) are under a Virginia Department of Health (VDH) Fish Consumption Advisory for Polychlorinated Biphenols (PCB) issued 7/27/05. An additional 3.16 miles on the Roanoke from Niagara Dam to Smith Mtn. Lake are under advisory and described in Fact Sheet L12L-02-PCB. The VDH Advisory is based on fish tissue found to originally contain greater than 50 parts per billion (ppb) of PCBs. The DEQ Water Quality Standard (WQS) based tissue value (TV) criterion is 20 ppb in fish tissue. The previous advisory (issued 10/20/03) recommended that no more than two eight-ounce meals per month of flathead catfish (less than 32 inches in size), striped bass, gizzard shad, redhorse sucker, largemouth bass and carp should be consumed. Per the previous advisory, flathead catfish (greater than 32 inches in size) should not be eaten. The advisory has been updated to also recommend that no more than two eight-ounce meals per month of channel catfish should be consumed.

The Roanoke (Staunton) River PCB TMDL Study is U.S. Environmental Protection Agency (EPA) approved on 4/9/2010 and State Water Control Board (SWCB) approved 12/9/2010. A 3.16 mile portion of the Roanoke River is not included in the PCB TMDL Study. The following Federal Identification Numbers by watershed are approved:

L03R Roanoke River: 38624, 38625, 38627, 38629, 38543, 38630
L04R Roanoke River: 24537, 38552, 38632, 38633, 38634, 38635, 38636
Peters Creek: 38468
L05R Tinker Creek: 38467

Fish tissue collections from locations on the Roanoke mainstem, Blackwater River, Mason Creek, Mudlick Creek, Paint Bank Branch, Peters Creek, Tinker Creek and the North and South Forks of the Roanoke River are reviewed by the VDH in making an advisory determination. A complete listing of collection sites and associated fish tissue data are available at http://www.deq.virginia.gov/fishtissue/fishtissue.html. A more detailed presentation of the data can also be found using an interactive mapping application at http://www.deq.virginia.gov/wqa/. The VDH Advisory information is also available via the web at http://www.vdh.virginia.gov/epidemiology/DEE/PublicHealthToxicology/Advisories/index.htm.

Thirty day deployment of Semi-Permeable Membrane Devices (SPMD) or virtual fish in 2008 find exceedances of the WQS PCB water column criterion of 0.00064 micrograms per liter (µg/L) or 640 picograms per liter (pg/L). Exceedances are recorded for the Fish Consumption Use via WQS 'Other Waters' (12.09 miles) as well as the Wildlife Use (12.09 miles) and the 'Public Water Supply Use' (PWS 1.64 miles) for the human health criterion at the stations listed below. The 640 pg/L criterion applies to these Uses. The 'PCB in Water Column' impairment on the mainstem of the Roanoke River extends from the confluence of Mason Creek downstream to the mouth of Back Creek (15.23 miles). Fact Sheet L12L-02-PCB describes and the additional 3.14 miles for each of these uses. The 'PCB in Water Column' impairment overlays a total 15.23 mile portion of the overall VDH Fish Consumption Advisory area above Smith Mountain Lake.

4AROA207.08- (Near Memorial Bridge downstream of Peters Creek)- 2008 SPMD 'OE'. Exceeds PCB WQS 'Other Waters' 640 pg/L criterion from one of two deployments at 642.

4AROA204.76 (Downstream of Ore Br., near VA Scrap Iron Co. above American Visco)- Two 2008 SPMD deployments find exceedance of the WQS 'Other Waters' 640 pg/L criterion at 987 and 3,014 pg/L.

4AROA202.20 (13th Street Bridge - above STP)- Two 2008 SPMD deployments find exceedance of the WQS 'Other Waters' 640 pg/L criterion at 1,376 and 3,044 pg/L.

4AROA199.20 (Blue Ridge Parkway Bridge - Niagara)- Two 2008 SPMD deployments find exceedance of the WQS 'Other Waters' and 'PWS' 640 pg/L criterion at 1,213 and 1,588 pg/L.

Fact Sheets for Impaired (Category 4 or 5) Waters in 2020

Roanoke and Yadkin River Basins

Assessment Unit / Water Name / Location Desc.	Cause Category	Cause Name	Cycle First Listed	TMDL Dev. Priority	Water Size
VAW-L03R_ROA01A00 / Roanoke River / Roanoke River mainstem from the Mason Creek mouth upstream to the Rt. 419 Bridge (RU09).	4A	PCBs in Fish Tissue	2002	L	1.20
VAW-L03R_ROA02A00 / Roanoke River / Roanoke River mainstem from the Rt. 419 Bridge upstream to the City of Salem downtown intake on the Roanoke River (RU09).	4A	PCBs in Fish Tissue	2002	L	2.67
VAW-L03R_ROA03A00 / Roanoke River / Roanoke River mainstem from the Salem City WTP downtown intake upstream to the Big Bear Branch mouth on the Roanoke River (RU09).	4A	PCBs in Fish Tissue	2002	L	3.42
VAW-L03R_ROA04A00 / Roanoke River / Roanoke River mainstem from the Big Bear Rock Branch mouth upstream to end of the WQS designated public water supply (PWS) section just downstream of an unnamed tributary at Dixie Caverns (RU09).	4A	PCBs in Fish Tissue	2002	L	5.57
VAW-L03R_ROA05A00 / Roanoke River / Roanoke River mainstem from the end of the WQS designated public water supply (PWS) section just downstream of an unnamed tributary at Dixie Caverns upstream to the Roanoke County Spring Hollow Reservoir intake (RU09).	4A	PCBs in Fish Tissue	2002	L	1.43
VAW-L03R_ROA06A00 / Roanoke River / Roanoke River mainstem from the Roanoke County Spring Hollow Reservoir intake upstream to the Montgomery/Roanoke County Line (RU09).	4A	PCBs in Fish Tissue	2002	L	0.95
VAW-L03R_ROA07A12 / Roanoke River / Roanoke River mainstem from the Montgomery/Roanoke County Line upstream to the confluence of the North & South Forks of the Roanoke River (RU09).	4A	PCBs in Fish Tissue	2002	L	1.26
VAW-L04R_PEE01A02 / Peters Creek / Peters Creek mainstem from its confluence with the Roanoke River upstream to the Melrose Avenue Bridge (Rt. 11/460) (RU14).	4A	PCBs in Fish Tissue	2004	L	2.58
VAW-L04R_ROA02A00 / Roanoke River Niagara / These are the Roanoke River mainstem impounded waters of the Niagara Dam (PWS section 6i) (RU14).	4A	PCBs in Fish Tissue	2002	L	0.76
VAW-L04R_ROA03A00 / Roanoke River Niagara / Roanoke River mainstem from near the backwaters of the Niagara Impoundment upstream to the end of the WQS designated public water supply (PWS section 6i) segment. The upstream ending of the PWS segment from SML 795 ft. pool elevation (RU14).	4A	PCBs in Fish Tissue	2002	L	0.87
VAW-L04R_ROA04A00 / Roanoke River / Roanoke R. mainstem from near the backwaters of Niagara Impoundment upstream to the Tinker Cr. confluence on the Roanoke R. (section 6). The upstream ending of the WQS designated public water supply (PWS) segment from SML 795 ft. pool elevation (RU14).	4A	PCBs in Fish Tissue	2002	L	0.20
VAW-L04R_ROA05A00 / Roanoke River / Roanoke River mainstem from the Western Virginia Water Authority Roanoke Regional Water Pollution Control Plant downstream to the Tinker Creek confluence (WQS section 6) (RU14).	4A	PCBs in Fish Tissue	2002	L	0.40
VAW-L04R_ROA06A00 / Roanoke River / Roanoke River mainstem from the Murray Run mouth downstream to the Western Virginia Water Authority Roanoke Regional Water Pollution Control Plant (RU14).	4A	PCBs in Fish Tissue	2002	L	4.34
VAW-L04R_ROA07A00 / Roanoke River / Roanoke River	4A	PCBs in Fish Tissue	2002	L	3.32

mainstem from the Peters Creek mouth downstream to the Murray Run confluence on the Roanoke River (RU14).					
VAW-L04R_ROA08A02 / Roanoke River / Roanoke River mainstem from the Mason Creek mouth downstream to the confluence of Peters Creek on the Roanoke River (RU14).	4A	PCBs in Fish Tissue	2002	L	2.22
VAW-L05R_TKR01A00 / Tinker Creek / Tinker Creek mainstem from the its confluence with the Roanoke River upstream to the mouth of Carvin Creek (RU13).	4A	PCBs in Fish Tissue	2006	L	5.37

Roanoke River, Tinker Creek and Peters Creek.	Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
Fish Consumption			
PCBs in Fish Tissue - Total Impaired Size by Water Type:			**36.56**

Assessment Unit / Water Name / Location Desc.	Cause Category	Cause Name	Cycle First Listed	TMDL Dev. Priority	Water Size
VAW-L04R_ROA02A00 / Roanoke River Niagara / These are the Roanoke River mainstem impounded waters of the Niagara Dam (PWS section 6i) (RU14).	4A	Polychlorinated Biphenyls (PCBs)	2010	L	0.76
	4A	Polychlorinated Biphenyls (PCBs)	2010	L	0.76
VAW-L04R_ROA03A00 / Roanoke River Niagara / Roanoke River mainstem from near the backwaters of the Niagara Impoundment upstream to the end of the WQS designated public water supply (PWS section 6i) segment. The upstream ending of the PWS segment from SML 795 ft. pool elevation (RU14).	4A	Polychlorinated Biphenyls (PCBs)	2010	L	0.87
	4A	Polychlorinated Biphenyls (PCBs)	2010	L	0.87
VAW-L04R_ROA04A00 / Roanoke River / Roanoke R. mainstem from near the backwaters of Niagara Impoundment upstream to the Tinker Cr. confluence on the Roanoke R. (section 6). The upstream ending of the WQS designated public water supply (PWS) segment from SML 795 ft. pool elevation (RU14).	4A	Polychlorinated Biphenyls (PCBs)	2010	L	0.20
VAW-L04R_ROA05A00 / Roanoke River / Roanoke River mainstem from the Western Virginia Water Authority Roanoke Regional Water Pollution Control Plant downstream to the Tinker Creek confluence (WQS section 6) (RU14).	4A	Polychlorinated Biphenyls (PCBs)	2010	L	0.40
VAW-L04R_ROA06A00 / Roanoke River / Roanoke River mainstem from the Murray Run mouth downstream to the Western Virginia Water Authority Roanoke Regional Water Pollution Control Plant (RU14).	4A	Polychlorinated Biphenyls (PCBs)	2010	L	4.34
VAW-L04R_ROA07A00 / Roanoke River / Roanoke River mainstem from the Peters Creek mouth downstream to the Murray Run confluence on the Roanoke River (RU14).	4A	Polychlorinated Biphenyls (PCBs)	2010	L	3.32
VAW-L04R_ROA08A02 / Roanoke River / Roanoke River mainstem from the Mason Creek mouth downstream to the confluence of Peters Creek on the Roanoke River (RU14).	4A	Polychlorinated Biphenyls (PCBs)	2010	L	2.22

Roanoke River, Tinker Creek and Peters Creek.	Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
Public Water Supply			
Polychlorinated Biphenyls (PCBs) - Total Impaired Size by Water Type:			**13.74**

Roanoke and Yadkin River Basins

Sources:

Landfills	Source Unknown	Urban Runoff/Storm Sewers	Wet Weather Discharges (Non-Point Source)

Fact Sheets for Impaired (Category 4 or 5) Waters in 2020

Roanoke and Yadkin River Basins

***Cause Group Code:* L04R-01-HG** **Roanoke River**

Cause Location: Roanoke River from the confluence of Mason Creek downstream to the confluence of Tinker Creek.

City / County: Roanoke City Roanoke Co. Salem City

Use(s): Fish Consumption

Cause(s) / VA Category: Mercury in Fish Tissue / 5A

This initial 2010 303(d) Listing is based on 2006 fish tissue collections and new Water Quality Standards effective 2/01/2010. Mercury (Hg) exceedances of the DEQ 0.3 parts per million (ppm) and Virginia Department of Health (VDH) level of concern of 0.5 ppm are found in fish tissue causing impairment of the Fish Consumption Use. No VDH Fish Consumption or Drinking Water Advisories are issued for mercury for these waters. Please visit http://www.deq.virginia.gov for more information about mercury contamination and http://www.vdh.virginia.gov/environmental-epidemiology/public-health-toxicology/fish-consumption-advisories/ for VDH Advisories or Bans.

4AROA206.80 (Roanoke R. @Wasena Park near Rt. 11 Bridge)- Exceedance of the Mercury (Hg) WQS based tissue value (TV) of 0.3 ppm is found in two species from 2006 collections; smallmouth bass (1 fish 37.0 cm) at 0.37 ppm and (4 fish composite 21.8-27.5 cm) at 0.537 ppm and rock bass (6 fish composite 17.4-19.4 cm) at 0.446 ppm. There are no additional data.

Assessment Unit / Water Name / Location Desc.	Cause Category	Cause Name	Cycle First Listed	TMDL Dev. Priority	Water Size
VAW-L04R_ROA05A00 / Roanoke River / Roanoke River mainstem from the Western Virginia Water Authority Roanoke Regional Water Pollution Control Plant downstream to the Tinker Creek confluence (WQS section 6) (RU14).	5A	Mercury in Fish Tissue	2010	L	0.40
VAW-L04R_ROA06A00 / Roanoke River / Roanoke River mainstem from the Murray Run mouth downstream to the Western Virginia Water Authority Roanoke Regional Water Pollution Control Plant (RU14).	5A	Mercury in Fish Tissue	2010	L	4.34
VAW-L04R_ROA07A00 / Roanoke River / Roanoke River mainstem from the Peters Creek mouth downstream to the Murray Run confluence on the Roanoke River (RU14).	5A	Mercury in Fish Tissue	2010	L	3.32
VAW-L04R_ROA08A02 / Roanoke River / Roanoke River mainstem from the Mason Creek mouth downstream to the confluence of Peters Creek on the Roanoke River (RU14).	5A	Mercury in Fish Tissue	2010	L	2.22

Roanoke River **Fish Consumption**	Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
Mercury in Fish Tissue - Total Impaired Size by Water Type:			**10.28**

Sources:

Source Unknown

Bacteria TMDLs for Wilson Creek, Ore Branch and Roanoke River Watersheds, Virginia

Submitted by

Virginia Department of Environmental Quality

Prepared by

and

THE Louis Berger Group, INC.
2300 N Street, NW
Washington, DC 20037

February 2006

Table 4-4: Permitted Dischargers in the Wilson Creek, Ore Branch, and Roanoke River Watersheds

Permit Number	Facility Name	Facility Type	Design Flow (mgd)	Receiving Waterbody	Ave. Bacteria Conc. (cfu/100 mL)	Status
VA0001252	Associated Asphalt Inc	I	0.054	Roanoke River	N/A	Active
VA0001333	Koppers Inc	I	0.6	Roanoke River	N/A	Active
VA0001431	Motiva Enterprises LLC - Roanoke	I	5.32	Back Creek, UT	N/A	Active
VA0001473	Roanoke City - Carvins Cove Water Filtration Plant	I	0.474	Carvin Creek, UT	N/A	Active
VA0001589	Roanoke Electric Steel (RES) Corporation	I	0.039	Peters Creek	N/A	Active
VA0001597	Norfolk Southern Railway Co - Shaffers Crossing	I	0.050	Hortons Branch; Lick Run, UT	N/A	Active
VA0024031	Shawsville Town - Sewage Treatment Plant	M	0.2	South Fork Roanoke River	25.3	Active
VA0025020	Western Virginia Water Authority	M	62	Roanoke River	Below permitted limits	Active
VA0027481	Blacksburg Country Club Sewage Treatment Plant	M	0.035	North Fork Roanoke River	N/A	Active
VA0028711	Suncrest Heights	M	0.020	Back Creek, UT	N/A	History
VA0062219	Montgomery County PSA - Elliston-Lafayette WWTP	M	0.25	South Fork Roanoke River	N/A	Active
VA0077895	Roanoke Moose Lodge	M	0.0047	Mason Creek	N/A	Active
VA0086541	Marathon Ashland - Roanoke Terminal	I	1.47	Back Creek, UT	N/A	Active
VA0087092	American Electric Power - Niagara Hydro Plant	I	0.143	Roanoke River	N/A	Active
VA0088358	Fred Whitaker Co	I	0.151	Roanoke River	N/A	Active
VA0089702	Safety Kleen Systems Inc.	I	NA	NA	N/A	History
VA0089991	Federal Mogul Corp - Blacksburg	I	0.065	Wilson Creek, UT	N/A	Active
VA0091065	Crystal Springs WTP	I	0.092	Roanoke River	N/A	Active

mgd: Million Gallons per Day
N/A: Data not available or not applicable
I: Industrial; M: Municipal

Benthic TMDL Development for the Roanoke River, Virginia

Submitted to

Virginia Department of Environmental Quality

Prepared by

THE Louis Berger Group, INC.
2300 N Street, NW
Washington, DC 20037

March 2006

7.1.2 Wasteload Allocation

The wasteload allocated to point sources in the watershed was based on the permitted discharge loading rate for total suspended solids for each facility as shown in Table 7-1. Because the facilities typically contribute only non-settleable solids, and their overall contribution to the total annual watershed sediment load is small, no reductions are required for these sources.

The Cities of Roanoke and Salem, as well as portions of Roanoke, Botetourt, and Montgomery Counties, and three facilities located within the Roanoke City metropolitan area, are covered by MS4 permits which are included in the wasteload allocations. As discussed in Section 6.0, land-based loads were allocated to the MS4 based on an area weighted method. The MS4 wasteload allocations by land use type for all the permitees are presented in Table 7-2. Table 7-3 shows the individual sediment allocation for each MS4 urban area. As indicated in Table 7-2, a 69.5 percent reduction in urban, agricultural, and transitional land-based sources and instream erosion allocated to the MS4s is required to achieve the TMDL endpoint. Wasteload allocations were based on an equal percent reduction from controllable sources. Loads from forested lands are considered to be representative of the natural condition and therefore were not subject to reductions.

Wasteload allocations for facilities in the watershed holding general stormwater permits are presented in Appendix D. The majority of the facilities holding general stormwater permits is located in areas covered by MS4 permits, and is thus included in the MS4 wasteload allocation.

Appendix D provides a finer breakdown of the wasteload allocation by providing specific wasteload allocations for each facility holding a general stormwater permit.

Table 7-1: Point Source Wasteload Allocations for Roanoke River

Facility Name	Permit Number	Annual Sediment Loads (tons/yr)	Allocated Loads (tons/yr)	Percent Reduction
Western Virginia Water Authority	VA0025020	472.2	472.2	0
Roanoke Electric Steel Corporation	VA0001589	92.9	92.9	0
Shawville Town STP	VA0024031	9.1	9.1	0
Carvin Cove Water Filtration Plant	VA0001473	17.6	17.6	0
Crystal Springs WTP	VA0091065	8.8	8.8	0
Norfolk Southern Railway Company - Shaffers Crossings	VA0001597	1.62	1.62	0
Ellison Lafayette WWTP	VA0062219	11.2	11.2	0
Blacksburg Country Club STP	VA0027481	1.57	1.57	0
Roanoke Moose Lodge	VA0077895	0.21	0.21	0
		Total Allocated Load	615.3	0

Table 7-2: MS4 Wasteload Allocation by Land Use Type

Source	Land Use Type	Average Annual Sediment Load (tons/yr)		Percent Reduction
		Existing	Allocated	
Point Sources - MS4s	Open Water	0.0	0.0	0
	Low Intensity Residential	125.0	38.1	69.5
	High Intensity Residential	72.5	22.1	69.5
	Commercial/Industrial	3239.3	988.9	69.5
	Quarries/Strip Mines	401.4	122.6	69.5
	Transitional	321.7	98.1	69.5
	Deciduous Forest	78.6	78.6	0
	Evergreen Forest	6.1	6.1	0
	Mixed Forest	29.3	29.3	0
	Pasture/Hay	527.0	160.7	69.5
	Row Crop	203.7	62.3	69.5
	Urban/Recreational Grasses	31.8	9.7	69.5
	Woody Wetlands	0.0	0.0	0
	Emergent Wetlands	0.0	0.0	0
	Instream Erosion	9686.8	2956.4	69.5
Total		**14,723**	**4,573**	**69.5**

APPENDIX D: General Permit & Individual Permit Stormwater TMDL Allocations

The TSS allocation for each permitted facility was calculated using a DEQ assigned TSS concentration and the corresponding runoff amount generated on the site based on the facility area or the facility discharge. The TSS allocated load for each permit type was calculated as follows:

- For individual permitted facilities, the allocated load was calculated based on a TSS concentration of 100 mg/L, the facility area, and 72.54 cm of runoff per year. The annual average runoff of 72.54 cm corresponds to an annual average rainfall of 40.8 inches (103.63 cm) and an industrial land cover with 70 percent imperviousness.
- For general stormwater permits issued to industrial facilities, the allocated load was calculated based on a TSS concentration of 100 mg/L, the facility area, and 72.54 cm of runoff per year.
- For general permits issued to domestic sewage facilities, the allocated load was calculated based on a TSS concentration of 30 mg/L and a flow value of 1,000 gallons per day.
- For general permits issued to mines, the allocated load was calculated based on a TSS concentration of 30 mg/L, the facility area, and 45.9 cm of runoff per year.
- For general permits issued to concrete facilities, the allocated load was calculated based on a TSS concentration of 30 mg/L, the facility area, and 72.54 cm of runoff per year.
- For general stormwater permits issued to carwashes, the allocated load was calculated based on a TSS concentration of 60 mg/L, the facility area, and 72.54 cm of runoff per year.
- For general stormwater permits issued to construction sites, the total allocated load was calculated based on a per acre loading unit of 10.97 metric tons of sediment per hectare, the disturbed construction area, and a sediment delivery ratio of 0.136. Table D-7 depicts the combined sediment load from all construction sites based on an average annual disturbed area of 467 acres. The average annual acreage of 467 acres was derived using information from the VADEQ Comprehensive Environmental Database System (CEDS) database for the period of 2002 to 2004.

Table D-1: Stormwater TMDL Allocations for Individual Permitted Facilities

Permit Number	Facility	TSS Stormwater Allocation (tons/yr)
VA0001252	Associated Asphalt Inc.	2.78
VA0001333	Koppers Inc.	18.24
VA0001589	Roanoke Electric Steel Corp.	56.55
VA0001511	Norfolk Southern Railway Co - East End Shops	35.70
VA0001597	Norfolk Southern Railway Co. - Shaffers Crossing	28.83
VA0025020	Western Virginia Water Authority	34.17
VA0088358	Fred Whitaker Co.	0.97
VA0089991	Federal Mogul Corp.	12.30

Table D-2: TMDL Allocations for General Stormwater Permits Issued to Industrial Facilities

Permit Number	Facility	Receiving Waterbody	MS4 Area	TSS Allocation (tons/yr)
VAR050027	Auto Salvage & Sales, Inc.	Tinker Creek	Roanoke City	0.53
VAR050134	Greater Roanoke Transit Company	Lick Run	Roanoke City	0.81
VAR050135	Virginia Scrap Iron & Metal Company Inc	Roanoke River	Roanoke City	1.66
VAR050143	Virginia Scrap Iron & Metal Incorporated	Roanoke River	Roanoke City	1.66
VAR050144	North 11 Asphalt Plant - Roanoke	Carvins Creek	Roanoke City	27.43
VAR050145	Holland-Richards Vault Service	Mason Creek	Roanoke City	0.25
VAR050178	BFI Waste Systems LLC - Roanoke	Roanoke River	Roanoke City	0.63
VAR050207	1915 Plantation Rd LLC	Lick Run	Roanoke City	0.63
VAR050208	Walker Machine & Foundry Corp	Roanoke River	Roanoke City	2.40
VAR050272	Roanoke Regional Airport	Deer Creek	Roanoke City	179.22
VAR050273	Ralph Smith Inc Steel Fabrication	Roanoke River UT	Roanoke City	0.67
VAR050274	USPS Roanoke Vehicle Maintenance Service	Roanoke River	Roanoke City	3.56
VAR050275	Old Dominion Auto Salvage	Tinker Creek	Roanoke City	3.46
VAR050436	Norfolk Southern Corp - Roadway Material Yard	Roanoke River	Roanoke City	0.49
VAR050437	Estes Express Lines Incorporated	Roanoke River, UT	Roanoke City	2.33
VAR050460	Yellow Freight System Inc	Tinker Creek	Roanoke City	1.62
VAR050496	Federal Express Corp - ROAA Station	Lick Run	Roanoke City	1.69
VAR050516	Mennel Milling Company	Roanoke River	Roanoke City	0.32
VAR050519	FedEx Freight East, Inc.	UT to Lick Run	Roanoke City	1.73
VAR050520	O'Neal Steel Inc	Tinker Creek	Roanoke City	6.46
VAR050522	Progress Rail Services Corp - Roanoke	Roanoke River	Roanoke City	3.95

Stream	Point sources			Stormwater dischargers[a]			MS4s		
	Baseline (mg/yr)	WLA (mg/yr)	% Reduction[b]	Baseline (mg/yr)	WLA (mg/yr)	% Reduction[b]	Baseline (mg/yr)	WLA (mg/yr)	% Reduction[b]
Roanoke River[e]	78,305.9	1,926.7	97.5	82,724.2	5.1	100.0	0.0	0.0	0.0
Lower Total	**78,305.9**	**1,926.7**	**97.5**	**388,012.2**	**7.5**	**100.0**	**11.7**	**0.1**	**99.3**

a. Stormwater loads were assigned to streams based on the spatial orientation of the permitted area within the subbasin network
b. WLA percent reductions differ from TMDL percent reductions because they do not include an MOS load
c. 2008 303(d) segment L12L-01-PCB
d. 2008 303(d) segment L26R-01-PCB
e. 2008 303(d) segment L19R-01-PCB

Table 6-4. Point source tPCBs WLAs

Stream	NPDES ID	Facility	Pipe	Baseline (mg/yr)	WLA (mg/yr)	% Reduction[a]
Upper Roanoke River						
North Fork Roanoke River	VA0027481	Blacksburg Country Club	1	10.7	17.8	-66.3
North Fork Roanoke River Total				**10.7**	**17.8**	**-66.3**
South Fork Roanoke River	VA0062219	Montgomery County PSA - Elliston Lafayette WWTP	1	38.5	127.0	-229.6
South Fork Roanoke River	VA0024031	Montgomery County PSA - Shawsville STP	1	29.9	101.6	-239.6
South Fork Roanoke River Total				**68.4**	**228.6**	**-234.0**
Peters Creek	VA0001589	Steel Dynamics	5	90.7	50.8	44.0 ←
Peters Creek Total[b]				**90.7**	**50.8**	**44.0**
Roanoke River	VA0025020	WVWA Roanoke Regional Water Pollution Control Plant	1	17,491.1	27,934.4	-59.7
Roanoke River	VA0001597	Norfolk Southern Railway Co - Shaffers Crossing	2	4.8	35.6	-642.0
Roanoke River Total[b]				**17,495.9**	**27,969.9**	**-59.9**
Upper Total				***17,665.8***	***28,267.1***	***-60.0***
Lower Roanoke (Staunton) River						
Roanoke River	VA0083097	Old Dominion Clover Power Station	1	197.4	319.3	-61.8
Roanoke River	VA0022241	Brookneal Town - Staunton River Lagoon	1	8.2	14.4	-74.2
Roanoke River	VA0001538	Dan River, Inc- Brookneal	1	474.8	244.1	48.6
Roanoke River	VA0083402	Old Dominion Altavista Power Station	1	22.7	21.5	5.0
Roanoke River	VA0020451	Town of Altavista-STP	1	21,311.1	662.6	96.9
Roanoke River	VA0083399	Old Dominion Pittsylvania Power Station	1	21.3	35.3	-66.0
Roanoke River	VA0001678	ITG Burlington Ind. LLC Hurt Plant	1	56,270.5	629.5	98.9
Roanoke River Total[c]				**78,305.9**	**1,926.7**	**97.5**
Lower Total				***78,305.9***	***1,926.7***	***97.5***

a. WLA percent reductions differ from TMDL percent reductions because they do not include an MOS load
b. 2008 303(d) segment L12L-01-PCB
c. 2008 303(d) segment L19R-01-PCB

Table 6-5. Permitted stormwater dischargers tPCBs WLAs[a]

Stream	NPDES ID[b]	Stormwater discharger	Baseline (mg/yr)	WLA (mg/yr)	% Reduction[c]
Upper Roanoke River					
North Fork Roanoke River	VAR050204	Wolverine Advanced Materials	12.70	0.12	99.050
North Fork Roanoke River	VAR051352	MRSWA Solid Waste Transfer Station MRF	54.91	0.52	99.050

Stream	NPDES ID[b]	Stormwater discharger	Baseline (mg/yr)	WLA (mg/yr)	% Reduction[c]
North Fork Roanoke River	VAR050251	Federal Mogul Corp - Blacksburg	30.12	0.29	99.050
North Fork Roanoke River	VAR050340	Wolverine Advanced Materials - Blacksburg	7.78	0.07	99.050
North Fork Roanoke River Total			**105.50**	**1.00**	**99.050**
Masons Creek	VAR050174	Carbone of America Corporation	4.09	0.04	99.050
Masons Creek	VAR050762	Novozymes Biologicals, Inc.	1.76	0.02	99.050
Masons Creek Total			**5.85**	**0.06**	**99.050**
Peters Creek	VA0001589	Steel Dynamics	1.44	0.01	99.050
Peters Creek Total[d]			**1.44**	**0.01**	**99.050**
Tinker Creek	VAR050027	Auto Salvage and Sales Incorporated	0.78	0.01	99.050
Tinker Creek	VAR050275	Old Dominion Auto Salvage	3.12	0.03	99.050
Tinker Creek	VAR050436	Norfolk Southern Corp - Roadway Material Yard	0.68	0.01	99.050
Tinker Creek	VAR050520	O'Neal Steel Inc	16.12	0.15	99.050
Tinker Creek	VAR050530	Shenandoah Auto Parts	0.88	0.01	99.050
Tinker Creek	VAR050747	Parts Unlimited	3.43	0.03	99.050
Tinker Creek	VAR051262	Shorewood Packaging Corporation - Roanoke	2.18	0.02	99.050
Tinker Creek	VAR051315	A D Weddle Company Inc	4.04	0.04	99.050
Tinker Creek	VAR051460	Dynax America Corp USA	6.74	0.06	99.050
Tinker Creek	VAR051478	Precision Steel	2.07	0.02	99.050
Tinker Creek	VAR051492	Virginia Transformer Corp	4.49	0.04	99.050
Tinker Creek	VAR051518	East End Shops	41.49	0.39	99.050
Tinker Creek	VAR051570	Altec Industries Inc	13.60	0.13	99.050
Tinker Creek	VAR520005	Vishay Vitramon Inc	15.19	0.14	99.050
Tinker Creek	VAR520156	Freightcar America	12.40	0.12	99.050
Tinker Creek		Advanced Metal Finishing	0.42	0.00	99.050
Tinker Creek		NSW	3.75	0.04	99.050
Tinker Creek		Packaging Corp. of America	3.11	0.03	99.050
Tinker Creek		The Roanoke Times	1.15	0.01	99.050
Tinker Creek Total[d]			**135.62**	**1.29**	**99.050**
Roanoke River	VAR050135	Virginia Scrap Iron & Metal Company Inc	4,896.27	0.23	99.995
Roanoke River	VAR050150	Graham White Manufacturing Company	19.75	0.19	99.050
Roanoke River	VAR050176	John W Hancock Jr LLC dba New Millennium Bldg Syst	1.75	0.02	99.050
Roanoke River	VAR050208	Walker Machine and Foundry Corp	6.82	0.06	99.050
Roanoke River	VAR050273	Ralph Smith Inc	2.77	0.03	99.050
Roanoke River	VAR050515	Yokohama Tire Corp	50.20	0.48	99.050
Roanoke River	VAR050522	Progress Rail Services Corp - Roanoke	6.08	0.06	99.050
Roanoke River	VAR050526	RR Donnelley and Sons Company - Roanoke	94.87	0.90	99.050
Roanoke River	VAR050717	Cycle Systems Incorporated	3.97	0.04	99.050
Roanoke River	VAR050741	Medeco Security Locks Inc	17.64	0.17	99.050
Roanoke River	VAR050775	Star City Auto Parts Inc	0.49	0.00	99.050
Roanoke River	VAR520200	Hancock Rack Syst dba New Millenium Building Syst	3.14	0.03	99.050
Roanoke River		Accellent Cardiology, Inc.-Main Bldg	4.52	0.04	99.050
Roanoke River		Accellent Cardiology, Inc.-West Bldg	3.31	0.03	99.050
Roanoke River		Allied Tool & Machine Co., of Virginia	0.61	0.01	99.050
Roanoke River		Fabricated Metals Ind., Inc.	2.89	0.03	99.050
Roanoke River		Packaging Corp. of America	1,415.49	0.19	99.987

Stream	NPDES ID[b]	Stormwater discharger	Baseline (mg/yr)	WLA (mg/yr)	% Reduction[c]
Roanoke River		Patterson Avenue CDD Landfill - Norfolk Southern Railway	14.44	0.14	99.050
Roanoke River		Roanoke Regional Landfill	0.53	0.01	99.050
Roanoke River		Sanitary Landfill at Mowles Spring Park (closed)	10.70	0.10	99.050
Roanoke River	VA0001589	Steel Dynamics	6.84	0.07	99.050
Roanoke River		Tecton Products, Roanoke VA	15.06	0.14	99.050
Roanoke River		Wise Recycling, LLC	0.86	0.01	99.050
Roanoke River Total[d]			**6,578.99**	**2.95**	**99.955**
Upper Total			***6,827.41***	***5.31***	***99.922***
Lower Roanoke (Staunton) River					
Sycamore Creek	VA0001678	Burlington Industries - Hurt	92,387.54	1.40	99.998
Sycamore Creek Total			**92,387.54**	**1.40**	**99.998**
Lynch Creek	VAR051341	Graham Packaging Plastic Products, Inc.	8.22	0.06	99.326
Lynch Creek Total			**8.22**	**0.06**	**99.326**
Reed Creek	VA0083399	Old Dominion Pittsylvania Power Station	1.82	0.01	99.326
Reed Creek Total			**1.82**	**0.01**	**99.326**
X-trib		BGF Industries	208,892.36	0.12	100.000
X-trib Total			**208,892.36**	**0.12**	**100.000**
Unnamed Trib to Roanoke River	VAR050529	Schrader Bridgeport	3,885.88	0.06	99.999
Unnamed Trib to Roanoke River Total			**3,885.88**	**0.06**	**99.999**
Black Walnut Creek	VA0083097	Old Dominion Clover Power Station	112.13	0.76	99.326
Black Walnut Creek Total			**112.13**	**0.76**	**99.326**
Roanoke River	VAR050525	Abbott Labs	15.37	0.10	99.325
Roanoke River		BGF Industries	81,933.90	0.05	100.000
Roanoke River	VA0083402	Old Dominion Altavista Power Station	7.66	0.05	99.325
Roanoke River	VA0083097	Old Dominion Clover Power Station	725.61	4.89	99.326
Roanoke River	VA0083399	Old Dominion Pittsylvania Power Station	3.21	0.02	99.325
Roanoke River	VAR050529	Schrader Bridgeport	38.47	0.00	99.999
Roanoke River Total[e]			**82,724.24**	**5.12**	**99.994**
Lower Total			***388,012.19***	***7.51***	***99.998***

a. Stormwater loads were assigned to streams based on the spatial orientation of the permitted area within the subbasin network
b. General stormwater permit NPDES IDs were not available for no-exposure sites and other select facilities
c. WLA percent reductions differ from TMDL percent reductions because they do not include an MOS load
d. 2008 303(d) segment L12L-01-PCB
e. 2008 303(d) segment L19R-01-PCB

Table 6-6. MS4 tPCBs WLAs

Stream	MS4	Baseline (mg/yr)	WLA (mg/yr)	% Reduction[a]
Upper Roanoke River				
North Fork Roanoke River	Blacksburg	823.7	7.8	99.050
North Fork Roanoke River	Christianburg	166.8	1.6	99.050
North Fork Roanoke River Total		**990.5**	**9.4**	**99.050**
South Fork Roanoke River	Christianburg	177.4	1.7	99.050
South Fork Roanoke River Total		**177.4**	**1.7**	**99.050**
Masons Creek	City of Salem	923.7	8.8	99.050
Masons Creek	Roanoke City	14.6	0.1	99.050
Masons Creek	Roanoke County	12.4	0.1	99.050
Masons Creek Total		**950.6**	**9.0**	**99.050**

STORET data summary

Station 4APEE001.04

Peters Creek at Shendoah Avenue bridge

Collection Date		Temp.	pH	Total Hardness	
		(C)	(SU)	(mg/L CaCO3)	
26-Jul-1994		23.1	8.2	182	
25-Oct-1994		17.5	8.6	180	
17-Jan-1995	w	10.9	7.8	98	
22-Jun-1995		23.1	8.06	NULL	
10-Oct-1995		18.6	8.1	201	
22-Jan-1996	w	2.5	8.1	127	
8-Apr-1996	w	10.3	8.9	136	
18-Jul-1996		24	8.2	164	
15-Oct-1996		17	8.5	191	
13-Jan-1997	w	5	8.2	173	
7-Apr-1997	w	19.6	8.6	186	
31-Jul-1997		23	8.3	202	
15-Oct-1997		17.6	8.3	184	
29-Jan-1998	w	8.6	7.4	82	
30-Mar-1998	w	20.7	8.9	144	
13-Jul-1998		23.5	8.4	158	
22-Oct-1998		12.3	8.1	192	
25-Jan-1999	w	10.3	8.0	148	
12-Apr-1999	w	13.8	7.8	120	
10-Aug-1999		25.2	8.7	180	
7-Oct-1999		16.2	8.3	186	
20-Dec-1999		10.3	8.4	141	
10-Feb-2000	w	8	8.4	164	
6-Apr-2000	w	19	8.2	151	
20-Jun-2000		23.4	8.6	159	
18-Jul-2000		21.7	8.3	166	
19-Sep-2000		18.3	8.5	67	
9-Nov-2000		13.2	8.8	154	
18-Jan-2001	w	6.8	8.3	194	
19-Mar-2001	w	12.3	8.5	157	
1-May-2001	w	20.7	8.7	149	
15-Jul-2003		21.61	8.22		
15-Sep-2003		19.24	8.01	153.45	< geom. mean
24-Nov-2003		10.6	7.9		
29-Jan-2004	w	2.6	7.67		
24-Mar-2004	w	8.1	8.1		
4-May-2004	w	15.57	8.2		
13-Jul-2004		22.4	7.47		
15-Sep-2004		17.91	7.59		
16-Nov-2004		9.96	7.91		
26-Jan-2005	w	7.25	8.29		
22-Mar-2005	w	12.4	7.57		
9-May-2005	w	15.5	8.09		
13-Jul-2005		20.7	8.0		
19-Sep-2005		17.8	8.0		
28-Nov-2005		8.9	7.3		
10-Jan-2006	w	10.6	8.8		
8-Mar-2006	w	10.4	8.2		
4-May-2006	w	15.3	6.8		
17-Jul-2006		21.5	8.0		
12-Sep-2006		17.3	8.1		
7-Nov-2006		8.9	7.5		
8-Apr-2010	w	16.9	6.9		
19-Apr-2010	w	15.1	8.0		
90th% annual temp>		23.07	8.67	< 90th percentile value	
90th% wet temp>		19.36	7.52	< 10th percentile value	

(w=wet months Jan - May)

VPDES Permit VA0001589
Steel Dynamics, Inc. - Roanoke Bar Division
Reissuance 2021

APPENDIX C – Effluent Limit Development Outfall 005

- 3-year summary of discharge data from Discharge Monitoring Reports
  - Flow, TSS, Oil & Grease, Temperature, and pH including reported excursions as total and individual times
  - Metals Zinc, Copper, Lead and Chlorine
  - Maximum pH, Temperature and Hardness (from WET tests) for MSTRANTI spreadsheet
- Mixing Zone Prediction
- Excerpt from Federal Effluent Guidelines 40 CFR Part 420 Subparts F and G
- Memo on Evaluation of FEG limits and production throughputs and associated calculations page
- Warning Letter November 2020, Notice of Violation letter December 2020, response letters for Copper & TSS
- Anti-degradation Wasteload Allocation (AWLA) spreadsheet 1999 edition updated with 2021 effluent and receiving stream water quality values and effluent flow rate
- Output of statistical evaluation of FEG load based Lead & Zinc concentrations & 2021 updated 1999 AWLAs
- Output of statistical evaluation to confirm water quality standards limits for Chlorine, Copper, Lead & Zinc using 2021 updated 1999 AWLAs and 1999 data
- MSTRANTI version 2b Water Quality Criteria/Waste Load Allocation spreadsheet
- Output of statistical evaluation of Nickel, Ammonia & Alpha-endosulfan
- WETlim spreadsheet page 1 for reasonable potential evaluation of Chronic WET results using acute & chronic WLAs
- Output of statistical evaluation of need for a WET limit using only *C. dubia* results

	Flow		Total Suspeneded Solids				Oil & Grease		Water Temperature		pH		pH, total excursion time	pH, individual excursion time
Due Date	Qty Avg	Qty Max	Qty Avg	Qty Max	Conc Avg	Conc Max	Qty Avg	Qty Max	Conc Max		Conc Min	Conc Max	Qty Max	Qty Max
	(MGD)	(MGD)	(KG/D	(KG/D)	(MG/L)	(MG/L)	(KG/D)	(KG/D)	(C)		(SU)	(SU)	(min.)	(min)
12/10/2017	0.079	0.125	1.46	1.46	5	5	<QL	<QL	26.9		7.1	8.2	0	0
1/10/2018	0.087	0.132	1.74	1.74	4	4	<QL	<QL	27		7	8.1	0	0
2/10/2018	0.061	0.137	0.65	0.65	7	7	<QL	<QL	27.7		6.8	8.2	0	0
3/10/2018	0.080	0.118	2.76	2.76	7	7	<QL	<QL	29.7		6.86	8.14	0	0
4/10/2018	0.082	0.141	1.95	1.95	8	8	<QL	<QL	30		7.1	8.19	0	0
5/10/2018	0.078	0.123	0.97	0.97	5	5	<QL	<QL	30		7.11	8.09	0	0
6/10/2018	0.091	0.161	0.83	0.83	2	2	<QL	<QL	30		6.9	8.2	0	0
7/10/2018	0.105	0.166	3.05	3.05	9	9	<QL	<QL	29.3		7.2	8.4	0	0
8/10/2018	0.125	0.175	2.98	2.98	6	6	<QL	<QL	30.5		7.19	8.37	0	0
9/10/2018	0.118	0.142	3.07	3.07	7	7	<QL	<QL	30.1		7.31	8.44	0	0
10/10/2018	0.106	0.151	2.55	2.55	6	6	<QL	<QL	29.3		7.21	8.43	0	0
11/10/2018	0.093	0.160	2.04	2.04	6	6	<QL	<QL	30.9		7.15	8.44	0	0
12/10/2018	0.098	0.144	<QL	<QL	6	6	<QL	<QL	29.1		7.15	8.63	0	0
1/10/2019	0.118	0.170	1.66	1.66	6	6	<QL	<QL	29.8		7.13	8.83	0	0
2/10/2019	0.111	0.153	1.78	1.78	4	4	<QL	<QL	27.5		7.06	8.29	0	0
3/10/2019	0.117	0.167	4.31	4.31	12	12	<QL	<QL	29.8		6.84	8.35	0	0
4/10/2019	0.113	0.177	2.06	2.06	5	5	<QL	<QL	29.5		7.19	8.26	0	0
5/10/2019	0.143	0.192	4.16	4.16	9	9	<QL	<QL	24.9		6.59	8.66	0	0
6/10/2019	0.064	0.163	1.42	1.42	8	8	<QL	<QL	27.4		6.86	8.55	0	0
7/10/2019	0.133	0.195	2.71	2.71	5	5	<QL	<QL	28.3		6.89	8.32	0	0
8/10/2019	0.136	0.173	3.30	3.30	8	8	<QL	<QL	28.5		7.06	8.53	0	0
9/10/2019	0.161	0.203	4.80	4.80	8	8	<QL	<QL	30.8		6.99	8.72	0	0
10/10/2019	0.178	0.221	5.47	5.47	8.2	8.2	6.5	6.5	32	*	6.84	8.84	0	0
11/10/2019	0.160	0.203	3.99	3.99	6	6	<QL	<QL	28.7		7.16	8.63	0	0
12/10/2019	0.124	0.164	3.92	3.92	6.3	6.3	<QL	<QL	29.6		7.1	8.63	0	0
1/10/2020	0.122	0.161	2.40	2.40	5.7	5.7	<QL	<QL	20.1		6.02	8.87	0	0
2/10/2020	0.123	0.154	6.54	6.54	16.6	16.6	<QL	<QL	28.7		6.63	8.82	0	0
3/10/2020	0.135	0.162	4.11	4.11	6.7	6.7	<QL	<QL	29.9		6.96	8.66	0	0
4/10/2020	0.128	0.160	3.74	3.74	9	9	<QL	<QL	29.9		6.53	8.93	0	0
5/10/2020	0.110	0.142	12.9	12.9	25	25	<QL	<QL	25		7.3	8.73	0	0
6/10/2020	0.111	0.173	3.33	3.33	10	10	<QL	<QL	28		7.12	8.42	0	0
7/10/2020	0.088	0.125	4.50	4.50	20.5	20.5	3.69	3.69	26.8		6.76	8.75	0	0
8/10/2020	0.082	0.096	22.9	22.9	83	83	<QL	<QL	30.1		6.49	8.7	0	0
9/10/2020	0.071	0.088	4.87	12.5	18.5	69	<QL	<QL	30		7.07	8.51	0	0
10/10/2020	0.050	0.081	2.37	2.37	8.6	8.6	<QL	<QL	29.6		6.83	8.67	0	0
11/10/2020	0.052	0.091	0.98	0.98	2.9	2.9	<QL	<QL	22.7		6.13	8.86	0	0
	NL	**NL**	**100**	**280**	**NL**	**NL**	**26.9**	**75.6**	**31**		**6.0**	**9.0**	**446**	**60**

10/10/2019 * Note, we recorded 1 excursion for temperature during this period. We determined that a cooling tower fan issue caused us to exceed our permit limit of 31 Celsius. This issue has been corrected. The average temperature for September was 30.3 Celcius.

	Zinc, total recoverable				Copper, total recoverable					Lead, total recoverable					Chlorine, total	
Due Date	Qty Avg (KG/D)	Qty Max (KG/D)	Conc Avg (UG/L)	Conc Max (UG/L)	Qty Avg (KG/D)	Qty Max (KG/D)	Conc Avg (UG/L)	Conc Max (UG/L)		Qty Avg (KG/D)	Qty Max (KG/D)	Conc Avg (UG/L)	Conc Max (UG/L)	Due Date	Conc Avg (UG/L)	Conc Max (UG/L)
12/10/2017	<QL	<QL	<QL	<QL	0.0034	0.0034	11.6	11.6		<QL	<QL	<QL	<QL	2/10/2018	<QL	<QL
1/10/2018	<QL	<QL	<QL	<QL	0.0053	0.0053	12.3	12.3		<QL	<QL	<QL	<QL	5/10/2018	<QL	<QL
2/10/2018	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL		<QL	<QL	<QL	<QL	8/10/2018	<QL	<QL
3/10/2018	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL		<QL	<QL	<QL	<QL	11/10/2018	<QL	<QL
4/10/2018	<QL	<QL	<QL	<QL	0.0022	0.0022	9	9		<QL	<QL	<QL	<QL	2/10/2019	<QL	<QL
5/10/2018	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL		<QL	<QL	<QL	<QL	5/10/2019	<QL	<QL
6/10/2018	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL		<QL	<QL	<QL	<QL	8/10/2019	20	20
7/10/2018	<QL	<QL	<QL	<QL	0.0038	0.0038	11.3	11.3		<QL	<QL	<QL	<QL	11/10/2019	0	0
8/10/2018	<QL	<QL	<QL	<QL	0.0066	0.0066	13.3	13.3		<QL	<QL	<QL	<QL	2/10/2020	0	0
9/10/2018	<QL	<QL	<QL	<QL	0.0036	0.0036	8.3	8.3		<QL	<QL	<QL	<QL	5/10/2020	0	0
10/10/2018	<QL	<QL	<QL	<QL	0.0043	0.0043	10.1	10.1		<QL	<QL	<QL	<QL	8/10/2020	0	0
11/10/2018	<QL	<QL	<QL	<QL	0.0028	0.0028	8.1	8.1		<QL	<QL	<QL	<QL	11/10/2020	30	30
12/10/2018	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL		<QL	<QL	<QL	<QL			
1/10/2019	<QL	<QL	<QL	<QL	0.0016	0.0016	5.8	5.8		<QL	<QL	<QL	<QL		**53**	**108**
2/10/2019	<QL	<QL	<QL	<QL	0.0028	0.0028	6.2	6.2		<QL	<QL	<QL	<QL			
3/10/2019	<QL	<QL	<QL	<QL	0.0029	0.0029	8	8		<QL	<QL	<QL	<QL			
4/10/2019	<QL	<QL	<QL	<QL	0.0024	0.0024	5.8	5.8		<QL	<QL	<QL	<QL			
5/10/2019	<QL	<QL	<QL	<QL	0.0063	0.0063	13.7	13.7		<QL	<QL	<QL	<QL			
6/10/2019	<QL	<QL	<QL	<QL	0.0009	0.0009	5.2	5.2		<QL	<QL	<QL	<QL			
7/10/2019	<QL	<QL	<QL	<QL	0.0047	0.0047	8.7	8.7		<QL	<QL	<QL	<QL			
8/10/2019	<QL	<QL	<QL	<QL	0.0046	0.0046	11.1	11.1		<QL	<QL	<QL	<QL			
9/10/2019	<QL	<QL	<QL	<QL	0.0044	0.0044	7.4	7.4		<QL	<QL	<QL	<QL			
10/10/2019	0.0074	0.0074	11.1	11.1	0.0066	0.0066	9.9	9.9		0.0007	0.0007	1	1			
11/10/2019	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL		<QL	<QL	<QL	<QL			
12/10/2019	<QL	<QL	<QL	<QL	0.0112	0.0112	18	18		<QL	<QL	<QL	<QL			
1/10/2020	<QL	<QL	<QL	<QL	0.0076	0.0076	18	18		<QL	<QL	<QL	<QL			
2/10/2020	0.0036	0.0036	9.2	9.2	0.0091	0.0091	23	23		0.0006	0.0006	1.5	1.5			
3/10/2020	<QL	<QL	<QL	<QL	0.0138	0.0138	22.6	22.6		<QL	<QL	<QL	<QL			
4/10/2020	0.0031	0.0031	7.4	7.4	0.0066	0.0066	16	16		<QL	<QL	<QL	<QL			
5/10/2020	0.0257	0.0257	50	50	0.0514	0.0514	100	100	*	0.0036	0.0036	7.1	7.1			
6/10/2020	0.002	0.002	6.1	6.1	0.006	0.006	18	18		0.0003	0.0003	1	1			
7/10/2020	0.0033	0.0033	15	15	0.0108	0.0108	49	49		0.0005	0.0005	2.3	2.3			
8/10/2020	0.0058	0.0096	20.7	35	0.0296	0.0523	106	190	*	0.0018	0.0018	6.5	6.5			
9/10/2020	0.0036	0.0071	13.5	39	0.014	0.0363	53	200	*	0.0006	0.0014	2.3	7.5			
10/10/2020	0.0016	0.0016	5.9	5.9	0.0041	0.0041	15	15		<QL	<QL	<QL	<QL			
11/10/2020	0.0054	0.0054	16	16	0.0025	0.0025	7.5	7.5		<QL	<QL	<QL	<QL			
							* sample tube bracket issue/data not representative									
	NL	**NL**	**325**	**325**	NL	NL	76.1	76.1		NL	NL	70.3	70.3			

	pH, max
12/10/2017	8.2
1/10/2018	8.1
2/10/2018	8.2
3/10/2018	8.14
4/10/2018	8.19
5/10/2018	8.09
6/10/2018	8.2
7/10/2018	8.4
8/10/2018	8.37
9/10/2018	8.44
10/10/2018	8.43
11/10/2018	8.44
12/10/2018	8.63
1/10/2019	8.83
2/10/2019	8.29
3/10/2019	8.35
4/10/2019	8.26
5/10/2019	8.66
6/10/2019	8.55
7/10/2019	8.32
8/10/2019	8.53
9/10/2019	8.72
10/10/2019	8.84
11/10/2019	8.63
12/10/2019	8.63
1/10/2020	8.87
2/10/2020	8.82
3/10/2020	8.66
4/10/2020	8.93
5/10/2020	8.73
6/10/2020	8.42
7/10/2020	8.75
8/10/2020	8.7
9/10/2020	8.51
10/10/2020	8.67
11/10/2020	8.86
90th% max	**8.846**
10th% max	**8.175**

	Temp
12/10/2017	26.9
1/10/2018	27
2/10/2018	27.7
3/10/2018	29.7
4/10/2018	30
5/10/2018	30
6/10/2018	30
7/10/2018	29.3
8/10/2018	30.5
9/10/2018	30.1
10/10/2018	29.3
11/10/2018	30.9
12/10/2018	29.1
1/10/2019	29.8
2/10/2019	27.5
3/10/2019	29.8
4/10/2019	29.5
5/10/2019	24.9
6/10/2019	27.4
7/10/2019	28.3
8/10/2019	28.5
9/10/2019	30.8
11/10/2019	28.7
12/10/2019	29.6
1/10/2020	20.1
2/10/2020	28.7
3/10/2020	29.9
4/10/2020	29.9
5/10/2020	25
6/10/2020	28
7/10/2020	26.8
8/10/2020	30.1
9/10/2020	30
10/10/2020	29.6
11/10/2020	22.7
90th% annual	**30.26**

	Temp
5/10/2017	25.5
6/10/2017	29.4
2/10/2018	27.7
3/10/2018	29.7
4/10/2018	30
5/10/2018	30
6/10/2018	30
2/10/2019	27.5
3/10/2019	29.8
4/10/2019	29.5
5/10/2019	24.9
6/10/2019	27.4
2/10/2020	28.7
3/10/2020	29.9
4/10/2020	29.9
5/10/2020	25
6/10/2020	28
90th% wet	**30.0**
Jan - May	DMR due Feb - June

Hardness from WET Reports

sample date	Hardness (mg/L $CaCO_3$)	
5/2/2017	361	
5/4/2017	445	
5/6/2017	389	
10/10/2017	374	
10/12/2017	285	
10/14/2017	259	
4/10/2018	454	
4/12/2018	498	
4/14/2018	467	
10/29/2018	275	
11/1/2018	331	
11/3/2018	328	
6/11/2019	226	treatment
6/13/2019	275	plant
6/15/2019	325	update
12/31/2019	196	
1/2/2020	232	
1/4/2020	212	
4/28/2020	219	
4/30/2020	281	
5/2/2020	275	
11/3/2020	232	
11/5/2020	223	
11/7/2020	206	241.8
average:	307	

Steel Dynamics Inc.

01 February, 2021

Input Parameters:

Effluent Flow:	0.178 MGD
Stream 1Q10:	0.47 MGD
Stream 7Q10:	0.49 MGD
Stream 30Q10:	0.69 MGD
Stream Width:	16 ft
Stream Slope:	0.005 ft/ft
Bottom Scale:	3
Channel Scale:	1

Mixing Zone Predictions @ 1Q10

Depth:	0.1966 ft
Velocity:	0.3187 ft/sec
Length:	932.73 ft
Residence Time:	0.0339 days

Recommendation: A complete mix assumption is appropriate for this situation and the **entire** 1Q10 may be used.

Mixing Zone Predictions @ 7Q10

Depth:	0.2003 ft
Velocity:	0.3225 ft/sec
Length:	918.25 ft
Residence Time:	0.0330 days

Recommendation: A complete mix assumption is appropriate for this situation and the **entire** 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth:	0.2348 ft
Velocity:	0.3575 ft/sec
Length:	802.17 ft
Residence Time:	0.0260 days

Recommendation: A complete mix assumption is appropriate for this situation and the **entire** 30Q10 may be used.

Title 40: Protection of Environment

PART 420 - IRON AND STEEL MANUFACTURING POINT SOURCE CATEGORY

Subpart D - Steelmaking Subcategory

§ 420.40 Applicability; description of the steelmaking subcategory.

The provisions of this subpart are applicable to discharges and to the introduction of pollutants into publicly owned treatment works resulting from steelmaking operations conducted in basic oxygen and electric arc furnaces.

§ 420.41 Specialized definitions.

(a) The term *basic oxygen furnace steelmaking* means the production of steel from molten iron, steel scrap, fluxes, and various combinations thereof, in refractory lined furnaces by adding oxygen.

(b) [Reserved]

(c) The term *electric arc furnace steelmaking* means the production of steel principally from steel scrap and fluxes in refractory lined furnaces by passing an electric current through the scrap or steel bath.

(d) The term *wet* means those steelmaking air cleaning systems that primarily use water for furnace gas cleaning.

(e) The term *semi-wet* means those steelmaking air cleaning systems that use water for the sole purpose of conditioning the temperature and humidity of furnace gases such that the gases may be cleaned in dry air pollution control systems.

(f) The term *open combustion* means those basic oxygen furnace steelmaking wet air cleaning systems which are designed to allow excess air to enter the air pollution control system for the purpose of combusting the carbon monoxide in furnace gases.

(g) The term *suppressed combustion* means those basic oxygen furnace steelmaking wet air cleaning systems which are designed to limit or suppress the combustion of carbon monoxide in furnace gases by restricting the amount of excess air entering the air pollution control system.

Subpart F - Continuous Casting Subcategory

§ 420.60 Applicability; description of the continuous casting subcategory.

The provisions of this subpart are applicable to discharges and to the introduction of pollutants into publicly owned treatment works resulting from the continuous casting of molten steel into intermediate or semi-finished steel products through water cooled molds.

§ 420.62 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Subpart F

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	Kg/kkg (pounds per 1,000 lb) of product	
TSS	0.0780	0.0260
Oil & Grease	0.0234	0.0078
pH	([1])	([1])

[1]Within the range of 6.0 to 9.0.

§ 420.63 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

Subpart F

Pollutant or pollutant property	BAT effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	Kg/kkg (pounds per 1,000 lb) of product	
Lead	0.0000939	0.0000313
Zinc	0.000141	0.0000469

Subpart G - Hot Forming Subcategory

§ 420.70 Applicability; description of the hot forming subcategory.

The provisions of this subpart are applicable to discharges and to the introduction of pollutants into publicly owned treatment works resulting from hot forming operations conducted in primary, section, flat, and pipe and tube mills.

§ 420.71 Specialized definitions.

(a) The term *hot forming* means those steel operations in which solidified, heated steel is shaped by rolls.

(b) The term *primary mill* means those steel hot forming operations that reduce ingots to blooms or slabs by passing the ingots between rotating steel rolls. The first hot forming operation performed on solidified steel after it is removed from the ingot molds is carried out on a “primary mill”.

(c) The term *section mill* means those steel hot forming operations that produce a variety of finished and semi-finished steel products other than the products of those mills specified below in paragraphs (d), (e), (g), and (h) of this section.

(d) The term *flat mill* means those steel hot forming operations that reduce heated slabs to plates, strip and sheet, or skelp.

(e) The term *pipe and tube mill* means those steel hot forming operations that produce butt welded or seamless tubular steel products.

(f) The term *scarfing* means those steel surface conditioning operations in which flames generated by the combustion of oxygen and fuel are used to remove surface metal imperfections from slabs, billets, or blooms.

(g) The term *plate mill* means those steel hot forming operations that produce flat hot-rolled products which are (1) between 8 and 48 inches wide and over 0.23 inches thick; or (2) greater than 48 inches wide and over 0.18 inches thick.

(h) The term *hot strip and sheet mill* means those steel hot forming operations that produce flat hot-rolled products other than plates.

(i) The term *specialty steel* means those steel products containing alloying elements which are added to enhance the properties of the steel product when individual alloying elements (e.g., aluminum, chromium, cobalt, columbium, molybdenum, nickel, titanium, tungsten, vanadium, zirconium) exceed 3% or the total of all alloying elements exceed 5%.

(j) The term *carbon steel* means those steel products other than specialty steel products.

(k) The term *carbon hot forming operation* (or “carbon”) means those hot forming operations which produce a majority, on a tonnage basis, of carbon steel products.

(l) The term *specialty hot forming operation* (or “specialty”) applies to all hot forming operations other than “carbon hot forming operations.”

§ 420.72 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

(a) *Primary mills, carbon and specialty* — (1) *Without scarfing.*

Subpart G

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	Kg/kkg (pounds per 1,000 lb) of product	
TSS	0.150	0.0561
O&G	0.0374	
pH	([1])	([1])

[1]Within the range of 6.0 to 9.0.

§ 420.73 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).

The Agency has determined that there are not significant quantities of toxic pollutants in hot forming wastewaters after compliance with applicable BPT limitations. Accordingly, since the BPT level of treatment provides adequate control, the Agency is not promulgating more stringent BAT limitations.

`

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Blue Ridge Regional Office, Salem - Water Division

901 Russell Drive Salem, VA 24153

Subject: Evaluation of Federal Effluent Guideline based limits, Outfall **005**
Steel Dynamics Roanoke Bar Division, Roanoke; VPDES permit VA0001589

To: VPDES Permit Fact Sheet for 2021 reissuance

From: Susan Edwards, Environmental Engineer Senior

The Federal Effluent Guidelines (FEG) of 40 CFR 420 Iron and Steel Manufacturing Point Source Category applies to the discharge of the Roanoke Electric Steel plant. The plant is a non-integrated steel making mill. The applicable FEGs have not changed since the last reissuance. There was a revision to some portions of this Point Source Category on Oct. 17, 2002.

Subpart D - *Steelmaking* does not apply because there is no contact process wastewater discharge associated with the steel making furnace area of the facility.

Subpart F *Continuous Casting* (420.62 and .63) and Subpart G *Hot Forming Primary* mills without scarfing (420.72(a)(1)) do apply to the facility. FEG limits are based on average daily throughputs of each part of the mill, in terms of kilograms per thousand kilograms of production. There are best practicable control technology currently available (BPT) and best available technology economically achievable (BAT) limit rates that apply within Subpart F and BPT limit rates in Subpart G.

Daily average throughputs change a bit in each 5-year permit cycle of operation:

	2006-2010	2011-2015	2016-2020
Subpart F (tons/day / kkg/day)	1,445 / 1,311	1,617 / 1,467	1,518 / 1,377
Subpart G (tons/day / kkg/day)	1,353 / 1,227	1,217 / 1,104	1,147 / 1,040

Limit calculations:

Section 420.62 gives BPT effluent limitation rates for Subpart F:

	Limitation multiplier (kg/kkg)		Effluent limit (kg/day)	
	Daily	Monthly	Daily	Monthly
Parameter	Max.	Average	Max.	Average
TSS	0.078	0.026	107	35.8
Oil & Grease	0.0234	0.0078	32.2	10.7
pH	6.0 – 9.0 (S.U.)		6.0 – 9.0 (S.U.)	

Section 420.63 gives BAT effluent limitation rates for Subpart F:

	Limitation multiplier (kg/kkg)		Effluent limit (kg/day)	
	Daily	Monthly	Daily	Monthly
Parameter	Max.	Average	Max.	Average
Lead	0.0000939	0.0000313	0.129	0.0431
Zinc	0.000141	0.0000469	0.194	0.0646

Section 420.72(a)(1) gives BPT effluent limitation rates for Subpart G *Hot Forming* at primary mills without scarfing:

	Limitation multiplier (kg/kkg)		Effluent limit (kg/day)	
	Daily	Monthly	Daily	Monthly
Parameter	Max.	Average	Max.	Average
TSS	0.15	0.0561	156	58.37
Oil & Grease	0.0374	0.0125*	38.9	14.55
pH	6.0 – 9.0 (S.U.)		6.0 – 9.0 (S.U.)	

* Monthly average multiplier calculated from daily max using daily max. to monthly average ratio of TSS.

The limitations that are calculated above are added for the total FEG based limits for the plant's wastewater effluent:

	Effluent limit (kg/day)	
	Daily	Monthly
Parameter	Max.	Average
TSS	263	94.2
Oil & Grease	71.1	25.3
pH	6.0 – 9.0 (S.U.)	
Lead*	0.129	0.0431
Zinc*	0.194	0.0646

* Lead and zinc are total recoverable limitations

The lead and zinc FEG load limits are then converted to concentrations for the permit as a better indication of on-going treatment plant performance using the application 5-year average discharge by the treatment plant during the term, 0.097 MGD:

	Effluent limit (mg/L)	
	Daily	Monthly
Parameter	Max.	Average
Lead*	0.35	0.117
Zinc*	0.53	0.176

* Lead and zinc are total recoverable limitations

Steel Dynamics Inc. **VA00001589**
Federal Effluent Guideline based limit calculations
2021 reissuance

FEG Effluent Limits

Subpart F - Continuous Casting

Throughput	1,377,099	kg/day	(2016-2020)			
	daily max	monthly avg		daily max	monthly avg	
TSS	0.078	0.026	(kg/kkg)	107.414	35.805	(kg/day)
Oil & Grease	0.0234	0.0078	(kg/kkg)	32.224	10.741	(kg/day)
pH (S.U.)	6.0 - 9.0			6.0 - 9.0		
Lead	0.0000939	0.0000313	(kg/kkg)	0.1293	0.0431	(kg/day)
Zinc	0.000141	0.0000469	(kg/kkg)	0.1942	0.0646	(kg/day)

Subpart G - Hot Forming

Throughput	1,040,535	kg/day	(2016-2020)			
	daily max	monthly avg		daily max	monthly avg	
TSS	0.15	0.0561	(kg/kkg)	156.080	58.374	(kg/day)
Oil & Grease	0.0374	0.0139876	(kg/kkg)	38.916	14.555	(kg/day)
pH	6.0 - 9.0			6.0 - 9.0		

* monthly avg. oil & grease BPT multiplier based on ratio daily max to monthly avg of TSS

Combined Effluent Limitations

	daily max	monthly avg	
TSS	263.5	94.2	(kg/day)
Oil & Grease	71.1	25.3	(kg/day)
pH (S.U.)	6.0 - 9.0		
Lead	0.1293	0.0431	(kg/day)
Zinc	0.1942	0.0646	(kg/day)

Convert load to concentration at design flow of treatment plant

Design flow	0.15	(MGD)(appl max avg flow)		0.178	(MGD) *****	
	daily max	monthly avg		daily max	monthly avg	
Lead load	0.1293	0.0431	(kg/day)	0.1293	0.0431	(kg/day)
Zinc load	0.1942	0.0646	(kg/day)	0.1942	0.0646	(kg/day)
Lead conc.	**0.228**	**0.076**	(mg/l)	0.192	0.064	(mg/l)
Zinc conc.	**0.342**	**0.114**	(mg/l)	0.288	0.096	(mg/l)

***** = DMR highest monthly avg in 3-yrs

Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

BLUE RIDGE REGIONAL OFFICE
901 Russell Drive, Salem, Virginia 24153
(540) 562-6700 FAX (804) 698-4178
www.deq.virginia.gov

Matthew J. Strickler
Secretary of Natural Resources

David K. Paylor
Director
(804) 698-4000

Robert J. Weld
Regional Director

NOV 2 0 2020

WARNING LETTER

Mr. Thomas Stinson
Environmental Engineer
Steel Dynamics Inc., Roanoke Bar Division
P. O. Box 13948
Roanoke. VA 24038-3948

RE: Warning Letter No. W2020-10-B-1002
RES dba Steel Dynamics, Inc. – Roanoke Bar Division
VPDES Permit No. VA0001589

Dear Mr. Stinson:

The Department of Environmental Quality ("Department" or "DEQ") has reason to believe that **Steel Dynamics, Inc. - Roanoke Bar Division** may be in violation of the State Water Control Law and Regulations.

This letter addresses conditions at the facility named above and also recites compliance requirements of the State Water Control Law and the Regulations as well as **VPDES Permit No. VA0001589**. Pursuant to Virginia Code §62.1-44.15(8a), this letter is not a case decision under the Virginia Administrative Process Act, Virginia Code §2.2-4000 *et seq.*

OBSERVATIONS AND LEGAL REQUIREMENTS

Discharge monitoring reports (DMRs) containing the following relevant data results were submitted to DEQ. The following describe the staff's factual observations and identify the applicable legal requirements.

Parameter	Observations - DMR Monitoring Period February 1, 2020 – July 31, 2020 and Relevant Reported Monitoring Results for Outfall 001								Legal Req.*
								07/20	
TSS maximum concentration (Mg/l)								225	**100**

Parameter	Observations - DMR Monitoring Period July 1, 2020 – July 31, 2020 and Relevant Reported Monitoring Results for Outfall 005								Legal Req.*
								07/20	
Copper average concentration (Ug/l)								106	**76.1**

Parameter	Observations - DMR Monitoring Period July 1, 2020 – July 31, 2020 and Relevant Reported Monitoring Results for Outfall 005								Legal Req.*
								07/20	
Copper maximum concentration (Ug/l)								190	**76.1**

Parameter	Observations - DMR Monitoring Period February 1, 2020 – July 31, 2020 and Relevant Reported Monitoring Results for Outfall 007								Legal Req.*
								07/20	
TSS maximum concentration (Mg/l)								344	**100**

The currently effective VPDES permit for this facility contains conditions that enumerate the effluent limitations in this column. Va. Code § 62.1-44.5 prohibits waste discharges or other quality alterations of state waters except as authorized by permit. 9 VAC 25-31-50 provides that "except in compliance with a VPDES permit, or another permit, issued by the board, it shall be unlawful for any person to discharge into state waters sewage, industrial wastes, other wastes, or any noxious or deleterious substances."

ENFORCEMENT AUTHORITY

Va. Code § 62.1-44.23 of the State Water Control Law provides for an injunction for any violation of the State Water Control Law, any State Water Control Board rule or regulation, an order, permit condition, standard, or any certificate requirement or provision. Va. Code §§ 62.1-44.15 and 62.1-44.32 provide for a civil penalty up to $32,500 per day of each violation of the same. In addition, Va. Code § 62.1-44.15 authorizes the State Water Control Board to issue orders to any person to comply with the State Water Control Law and regulations, including the imposition of a civil penalty for violations of up to $100,000. Also, Va. Code § 10.1-1186 authorizes the Director of DEQ to issue special orders to any person to comply with the State

Water Control Law and regulations, and to impose a civil penalty. Va. Code §§ 62.1-44.32 (b) and 62.1-44.32 (c) provide for other additional penalties.

FUTURE ACTIONS

After reviewing this letter, **please respond in writing to DEQ within 30 days of the date of this letter** detailing actions you have taken or will be taking to ensure compliance with state law and regulations. If corrective action will take longer than 90 days to complete, you may be asked to formalize the plan and schedule. *It is DEQ policy that appropriate, timely, corrective action undertaken in response to a Warning Letter will avoid adversarial enforcement proceedings and the assessment of civil charges or penalties.*

Please advise us if you dispute any of the observations recited herein or if there is other information of which DEQ should be aware. In the event that discussions with staff do not lead to a satisfactory conclusion concerning the contents of this letter, you may elect to participate in DEQ's Process for Early Dispute Resolution. If you complete the Process for Early Dispute Resolution and are not satisfied with the resolution, you may request in writing that DEQ take all necessary steps to issue a case decision where appropriate. For further information on the Process for Early Dispute Resolution, please see Agency Policy Statement No. 8-2005 posted on the Department's website under "Programs," "Enforcement," and "Laws, Regulations, & Guidance"(http://www.deq.virginia.gov/Programs/Enforcement/LawsRegulationsGuidance.aspx) or ask the DEQ contact listed below.

Please review the information listed and if you have any questions about the content of this letter or need additional guidance in achieving or maintaining compliance, please contact Mr. Jim Scott, Environmental Specialist, at 540-562-6827 or james.scott@deq.virginia.gov.

Sincerely,

Samuel C. Hale
Water Compliance Manager

cc: Cathy Kibler, Compliance Auditor
Jim Scott, Water Compliance
Compliance File

Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

BLUE RIDGE REGIONAL OFFICE

901 Russell Drive, Salem, Virginia 24153

(540) 562-6700 FAX (804) 698-4178

www.deq.virginia.gov

Matthew J. Strickler
Secretary of Natural Resources

David K. Paylor
Director
(804) 698-4000

Robert J. Weld
Regional Director

NOTICE OF VIOLATION

December 10, 2020

Mr. Thomas Stinson
Environmental Engineer
Steel Dynamics Inc., Roanoke Bar Division
P. O. Box 13948
Roanoke. VA 24038-3948

RE: Notice of Violation No. W2020-11-B-0001
RES dba Steel Dynamics, Inc.
VPDES Permit No. VA0001589

Dear Mr. Stinson:

This letter notifies you of information upon which the Department of Environmental Quality ("Department" or "DEQ") may rely in order to institute an administrative or judicial enforcement action. Based on this information, DEQ has reason to believe that **RES dba Steel Dynamics, Inc.** may be in violation of the State Water Control Law and Regulations.

This letter addresses conditions at the abovementioned facility, and also cites compliance requirements of the Law and the Regulations. Pursuant to Virginia Code §62.1-44.15(8a), this letter is not a case decision under the Virginia Administrative Process Act, Virginia Code §2.2-4000 *et seq.* The Department requests that you respond **within 30 days of the date of this letter**.

OBSERVATIONS AND LEGAL REQUIREMENTS

Discharge monitoring reports (DMRs) containing the following relevant data results were submitted to DEQ. The following describe the staff's factual observations and identify the applicable legal requirements.

Parameter	Observations - DMR Monitoring Period August 1, 2020 – August 31, 2020 and Relevant Reported Monitoring Results for Outfall 005									Legal Req.*
									08/20	
Copper maximum concentration (Ug/L)									200.0	**76.1**

The VPDES permit for this facility, effective August 1, 2016 contains conditions that enumerate the effluent limitations in this column. Va. Code § 62.1-44.5 prohibits waste discharges or other quality alterations of state waters except as authorized by permit. 9 VAC 25-31-50 provides that "except in compliance with a VPDES permit, or another permit, issued by the board, it shall be unlawful for any person to discharge into state waters sewage, industrial wastes, other wastes, or any noxious or deleterious substances."

ENFORCEMENT AUTHORITY

Va. Code Section § 62.1-44.23 of the Law provides for an injunction for any violation of the Law, any State Water Control Board rule or regulation, an order, permit condition, standard, or any certificate requirement or provision. The Virginia Code §§ 62.1-44.15 and 62.1-44.32 provide for a civil penalty of up to $32,500 per day for each violation of the Law and the Regulation that exists. In addition, Virginia Code § 62.1-44.15 authorizes the Board to issue orders to any person to comply with the Law and the Regulation including the imposition of a civil penalty for violations of up to $100,000. Also, Virginia Code §10.1-1186 authorizes the Director of the Department to issue special orders to any person to comply with the Law and Regulations and to impose a civil penalty of not more than $10,000. Virginia Code §§ 62.1-44.32(b) and 62.1-44.32(c) provide for other additional penalties. The Court has the inherent authority to enforce its injunctions and is authorized to award the Commonwealth its attorney's fees and costs in seeking such remedies.

FUTURE ACTIONS

DEQ staff wishes to discuss all aspects of their observations with you, including any actions needed to ensure compliance with state law and regulations, any relevant or related measures you plan to take or have taken, and a schedule, as needed, for further activities. In addition, please advise us if you dispute any of the observations recited herein or if there is other information of which DEQ should be aware. In order to avoid adversarial enforcement proceedings, **RES dba Steel Dynamics, Inc.** may be

asked to enter into a Consent Order with the Department to formalize a plan and schedule of corrective action and to settle any outstanding issues regarding this matter, including the assessment of civil charges.

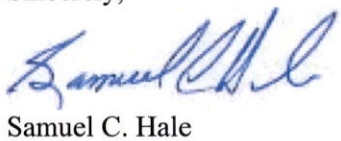
In the event that discussions with staff do not lead to a satisfactory conclusion concerning the contents of this letter, you may elect to participate in DEQ's Process for Early Dispute Resolution. If you complete the Process for Early Dispute Resolution and are not satisfied with the resolution, you may request in writing that DEQ take all necessary steps to issue a case decision where appropriate. For further information on the Process for Early Dispute Resolution, please see Agency Policy Statement No. 8-2005 posted on the Department's website under "Programs," "Enforcement," and "Laws, Regulations, & Guidance" (http://www.deq.virginia.gov/Programs/Enforcement/LawsRegulationsGuidance.aspx) or ask the DEQ contact listed below.

On behalf of the Department it is requested that you please contact Mr. Marvin Booth, Enforcement Specialist Senior, at 540-598-1200 or marvin.booth@deq.virginia.gov within 30 days to the date of this letter (no later than **January 10, 2021**) to arrange a meeting to discuss this matter. All correspondence must reference the VPDES Permit and Notice of Violation numbers.

.

.

Sincerely,



Samuel C. Hale
Water Compliance Manager
sam.hale@deq.virginia.gov

cc: Marvin Booth, Enforcement
Cathy Kibler, Compliance Auditor
Compliance File

Roanoke Bar Division
P.O. Box 13948
Roanoke, Virginia 24038-3948
(540) 342-1831
(800) 765-6567 toll-free
(540) 342-9437 fax
www.steeldynamics.com

December 2, 2020

Mr. Samuel Hale
Department of Environmental Quality
Blue Ridge Regional Office
901 Russell Drive
Salem, VA 24153

Re: Warning Letter No. W2020-10-B-1002
VPDES Permit No. VA0001589
TSS Exceedances

Mr. Hale,

Steel Dynamics received Warning Letter No. W2020-10-B-1002 dated November 20, 2020 for a Copper permit limit exceedance at Outfall 005 for the monitoring period July 1, 2020 through July 31, 2020.

For July, we received a copper result of 190 ug/L and immediately resampled and received a result of 22 ug/L. This is very erratic for us, so we launched an investigation of our individual upstream process contributors and found nothing out of the ordinary. The Mill Pond, which the treatment plant draws from, had copper results of <10 ug/L.

In August, we received a copper result of 200 ug/L. At this time, we also noticed our TSS results had been running higher than is normal (69 mg/L). This led to the discovery that the bracket holding the sampling tube had corroded and had allowed the tube to fall to the bottom of the sampling weir and into some solids trapped behind the weir wall (which we do periodically clean out). Once corrected, three additional samples were collected yielding our typical consistent copper results of: 4.7, 3.5, and 3.9 ug/L. TSS results also returned to normal: 1.3, 2.4, and 1.3 mg/L.

Please do not hesitate to contact me at 540-983-7240 should you have any questions, comments, or concerns.

Sincerely,

Thomas Stinson

Tom Stinson

Cc: James Scott, Environmental Specialist

Roanoke Bar Division
P.O. Box 13948
Roanoke, Virginia 24038-3948
(540) 342-1831
(800) 765-6567 toll-free
(540) 342-9437 fax
www.steeldynamics.com

November 30, 2020

Mr. Samuel Hale
Department of Environmental Quality
Blue Ridge Regional Office
901 Russell Drive
Salem, VA 24153

Re: Warning Letter No. W2020-10-B-1002
VPDES Permit No. VA0001589
TSS Exceedances

Mr. Hale,

Steel Dynamics received Warning Letter No. W2020-10-B-1002 dated November 20, 2020 for a Total Suspended Solids (TSS) permit limit exceedance at Outfalls 001 and 007 for the monitoring period January 1, 2020 through June 30, 2020.

The exceedance of TSS is continually being addressed by Steel Dynamics and their consultant Apex Companies, LLC. A consistent reduction in TSS across all site Outfalls has been achieved and SDI is fully committed to achieving additional reductions in TSS concentrations. As documented in our annual February 6, 2020 submittal and to date, SDI has taken the following actions to reduce the effluent load at the facility:

SDI Engagement, Including Management, Training, Site Personnel, and Contractors

- Continued full engagement by the Environmental Engineer and upper management at SDI;
- Continued engagement of outside counsel and contractors to review and implement Best Management Practices (BMPs);
- Continued implementation and adherence to the November 2016 SWPPP and updated February 2018 SWPPP;
- Continual review of materials handling/storage practices and updating location mapping;
- Continued major housekeeping initiative and assignment of every area on property to a manager and his/her division to instill the sense of ownership;
- Continued employee training;
- Multiple qualifying sampling events to measure progress of the BMPs;
- Twice monthly inspections of all BMPs to include filter inserts and linear feature;
- Monthly facility inspections documented and submitted to all area managers;
- Quarterly visual inspections of stormwater quality;
- Coordination with Phoenix Services regarding their impact to SDI stormwater;
- Continued preparation/updating of the PCB Pollution Minimization Plan;
- Permanent closure of Outfall 008 in February 2017.

Roanoke Bar Division
P.O. Box 13948
Roanoke, Virginia 24038-3948
(540) 342-1831
(800) 765-6567 toll-free
(540) 342-9437 fax
www.steeldynamics.com

Manufactured BMPs

- Maintenance of all stormwater control units in accordance with City of Roanoke Maintenance Agreements;
- Semi-annual inspection and cleaning of the underground detention system and Con-Tech filter system at shipping;
- Semi-annual inspection and cleaning of the Contech CDS system at Administration Building;
- Contech system inspections and maintenance performed by Contech certified maintenance provider;
- Vacuum extraction of material from manholes, drop inlets, and trench grates across the site.

Non-Manufactured BMPs

- Additional use of vegetated swales as stormwater detention devices;
- Continued maintenance of curb/drop inlet filters in all inlets affected by industrial processes at the facility;
- Continued upgrade of multiple drop inlet filters to FlexStorms;
- Maintenance of access walkways to several outfall sample locations;
- Completed construction of a new universal hazardous waste storage building, eliminating outdoor storage;
- Excavation of accumulated sediments from stormwater detention features;
- Additional containment measures installed and maintained at base of Phoenix Services slope to grouted rip-rap location feeding Outfall 007;
- Installation of a rip-rap berm at the baghouse pond, as well as, removal of debris and vegetation from the perimeter of the pond that could impact stormwater;
- Grouting of select gravel areas, specifically at railroad switch locations, to reduce suspended solids infiltration to drop inlets;
- Use of additional Filtrex socks around new and existing drop inlets coupled with Flex Storm filter inserts;
- Upgrade/Repair of silt fence installations during expansion project;
- Implemented the designed stormwater flow upgrade at Engineering building up to connection with Cherry Hill;
- Additional slope stabilization design and implementation at new warehouse construction to prevent sediment loading to concrete ditch;
- Excavated and regraded drainage ditch for Outfall 006, including the addition of check dams and other stormwater retention engineered devices;
- Scheduled jetting of subgrade laterals for Outfall 007 in early December 2020.

Current and historical laboratory analytical data indicate that the BMPs and Good Housekeeping initiatives are having a positive effect at the facility. During the next permit cycle, SDI will continue to expand on the housekeeping initiative and assessment of BMPs.

Roanoke Bar Division
P.O. Box 13948
Roanoke, Virginia 24038-3948
(540) 342-1831
(800) 765-6567 toll-free
(540) 342-9437 fax
www.steeldynamics.com

Please do not hesitate to contact me at 540-983-7240 should you have any questions, comments, or concerns.

Sincerely,

Tom Stinson

Cc: James Scott, Environmental Specialist

WLA Analysis For: Steel Dynamics, Outfall 005 ANTIDEGRADATION Date: 01/30/21 Spreadsheet for Chronic and Human Health AWLAs

Stream:	Peters Creek	Effluent Information		Hardness:			
Mean Hardness (mg/L) =	153.45	Mean Hardness=	241.8	acute	170	Mix Hardness= acute	170
Stream NH3 (mg/L)	0	NH3 (mg/L)=	0	chronic	169	chronic	169
90% Temperature	23.07	90% Temp.=	30.1	7Q10 Ratio	5.62	* WLAa	
90% pH	8.67	90% pH=	8.86	1Q10 Ratio	5.43	Coefficient =	0.368
Fractional 7Q10-MGD	0.49 100% of 7Q10	Flow, MGD=	0.1060			Acute IWC =	0.184
Fractional 1Q10-MGD	0.470 100% of 1Q10			Harmonic ratio:	24.30	Chronic IWC =	0.178
Harmonic mean (carcinogen):	2.47			30Q5 ratio:	8.45		
30Q5 Flow (Non-carcinogen):	0.79						
R(iver),L(ake) or S(torm):	R			**NOTE:** 90th percentile pH and temperature for effluent			
Trout Present? (Y/N)	n	Aquatic Protection	Human Health	based on DMR reported daily maximums.			
Public Water Supply(Y/N):	n	Freshwater Criteria		Hardness data from 005 WET reports			

Parameter and Form	Carcinogen?	Sort? (Y/N)	Acute Criteria	Existing Quality at 1Q10	Chronic Criteria	Existing Quality at 7Q10	All Other Surface Water Criteria	Existing Quality for HH	Back-ground concentration	Acute Baseline	Chronic Baseline	Human Health Baseline	Acute AWLA	Chronic A WLA	Human Health A WLA
Ammonia (mg/l as N)		Y	1.351	0.062	0.308	0.058	None		0.00	0.384	0.121	0.00	2.09	0.68	N/A
Arsenic		Y	None		None		50		0.00	0.000	0.000	5.00	N/A	N/A	42.26
Cadmium		Y	7.12		1.71		None		0.00	1.781	0.428	0.00	9.68	2.41	N/A
Chlorine		Y	19	11.60	11	10.90	None		0.00	13.450	10.925	0.00	73.09	61.43	N/A
Chloroform	C	Y	None		None		47000		0.00	0.000	0.000	4700.00	N/A	N/A	114218.87
Copper		Y	29.18	7.93	18.53	7.49	None		0.87	13.241	10.250	0.00	68.10	53.61	N/A
Cr III		Y	2677.97		318.36		None		0.00	669.493	79.590	0.00	3638.00	447.50	N/A
Cr-hex		Y	16		11		None		0.00	4.000	2.750	0.00	21.74	15.46	N/A
Lead		Y	233.15	1.85	26.38	1.78	None		0.77	59.675	7.930	0.00	320.86	41.03	N/A
Mercury		Y	2.4		0.012		0.053		0.00	0.600	0.0030	0.01	3.26	0.02	0.04
Nickel		Y	285.84		31.71		4600		0.00	71.460	7.928	460.00	388.31	44.58	3888.30
Selenium		Y	20		5		11000		0.00	5.000	1.250	1100.00	27.17	7.03	9298.11
Silver		Y	10.08		None		None		N/A	2.520	0.000	0.00	13.69	N/A	N/A
Xylenes, Total		Y	740		74				N/A	185.000	18.500	0.00	1005.28	104.02	N/A
Zinc		Y	183.19	11.78	165.47	11.19	None		2.32	54.632	49.760	0.00	286.60	269.08	N/A
1,1-dichloroethylene		n	None		None		17000		N/A	0.000	0.000	1700.00	N/A	N/A	41313.21
1,2-dichlorobenzene		n	None		None		17000		N/A	0.000	0.000	1700.00	N/A	N/A	14369.81
1,2-dichloroethane	C	n	None		None		990		N/A	0.000	0.000	99.00	N/A	N/A	2405.89
1,2,4-trichlorobenzene		n	None		None		950		N/A	0.000	0.000	95.00	N/A	N/A	2308.68
1,3-dichlorobenzene		n	None		None		2600		N/A	0.000	0.000	260.00	N/A	N/A	2197.74
1,4-dichlorobenzene		n	None		None		2600		N/A	0.000	0.000	260.00	N/A	N/A	2197.74
2-Chlorophenol		n	None		None		400		N/A	0.000	0.000	40.00	N/A	N/A	972.08
2,4-dichlorophenol		n	None		None		790		N/A	0.000	0.000	79.00	N/A	N/A	1919.85
2,4-dichlorophenoxy acetic acid		n	None		None		None		N/A	0.000	0.000	0.00	N/A	N/A	N/A
2,4-dimethylphenol		n	None		None		2300		N/A	0.000	0.000	230.00	N/A	N/A	5589.43
2,4-dinitrotoluene	C	n	None		None		91		N/A	0.000	0.000	9.10	N/A	N/A	221.15
2,4,6-Trichlorophenol	C	n	None		None		65		N/A	0.000	0.000	6.50	N/A	N/A	157.96
Acenaphthene		n	None		None		2700		N/A	0.000	0.000	270.00	N/A	N/A	6561.51
Aldrin	C	n	3		0.3		0.0014		N/A	0.750	0.075	0.00	4.08	0.42	0.00
Anthracene		n	None		None		110000		N/A	0.000	0.000	11000.00	N/A	N/A	92981.13
Antimony		n	None		None		4300		N/A	0.000	0.000	430.00	N/A	N/A	10449.81
Arsenic-3		n	360		190		None		N/A	90.000	47.500	0.00	489.06	267.08	N/A
Barium		n	None		None		None		N/A	0.000	0.000	0.00	N/A	N/A	N/A
Benzene	C	n	530		53		710		N/A	132.500	13.250	71.00	720.00	74.50	1725.43
Benzo(a)anthracene	C	n	None		None		0.049		N/A	0.000	0.000	0.0049	N/A	N/A	0.12
Benzo(a)pyrene	C	n	None		None		0.049		N/A	0.000	0.000	0.0049	N/A	N/A	0.12
Benzo(b)fluoranthene	C	n	None		None		0.049		N/A	0.000	0.000	0.0049	N/A	N/A	0.12
Benzo(k)fluoranthene	C	n	None		None		0.049		N/A	0.000	0.000	0.0049	N/A	N/A	0.12
Bromoform	C	n	None		None		3600		N/A	0.000	0.000	360.00	N/A	N/A	8748.68
Butyl benzyl phthalate		n	None		None		5200		N/A	0.000	0.000	520.00	N/A	N/A	12636.98
Carbon Tetrachloride	C	n	None		None		45		N/A	0.000	0.000	4.50	N/A	N/A	109.36
Chlordane	C	n	2.4		0.0043		0.0059		N/A	0.600	0.001	0.00	3.26	0.01	0.01
Chloride		n	860000		230000		None		N/A	215000.000	57500.000	0.00	1168301.89	323301.89	N/A
Chlorodibromomethane		n	None		None		57000		N/A	0.000	0.000	5700.00	N/A	N/A	48181.13
Chlorpyrifos		n	0.083		0.041		None		N/A	0.021	0.010	0.00	0.11	0.06	N/A

2010 AWLA - 1999 spreadsheet updated with 2021 flows

Chrysene	C	n	None		None		0.049		N/A	0.000	0.000	0.0049	N/A	N/A	0.12
Cyanide		n	22		5.2		215000		N/A	5.500	1.300	21500.00	29.89	7.31	181735.85
DDD	*C*	n	None		None		0.0084		N/A	0.000	0.000	0.0008	N/A	N/A	0.01
DDE	*C*	n	None		None		0.0059		N/A	0.000	0.000	0.0006	N/A	N/A	0.00
DDT	C	n	1.1		0.001		0.0059		N/A	0.275	0.000	0.0006	1.49	0.00	0.01
Demeton		n	None		0.1		None		N/A	0.000	0.025	0.0000	N/A	0.14	N/A
Di-2-ethylhexyl Phthalate	C	n	None		None		59		N/A	0.000	0.000	5.9000	N/A	N/A	143.38
Dibenz(a,h)anthracene	C	n	None		None		0.049		N/A	0.000	0.000	0.0049	N/A	N/A	0.12
Dibutyl phthalate		n	None		None		12000		N/A	0.000	0.000	1200.00	N/A	N/A	29162.26
Dichlorobromomethane	C	n	None		None		460		N/A	0.000	0.000	46.00	N/A	N/A	1117.89
Dichloromethane	C	n	None		None		16000		N/A	0.000	0.000	1600.00	N/A	N/A	38883.02
Dieldrin		n	2.5		0.0019		0.00014		N/A	0.625	0.000	0.00	3.40	0.00	0.00
Diethyl phthalate		n	None		None		120000		N/A	0.000	0.000	12000.00	N/A	N/A	291622.64
Dioxin		n	None		None		None		N/A	0.000	0.000	0.00	N/A	N/A	N/A
Dissolved Oxygen		n	4		5		None		N/A	1.000	1.250	0.00	5.43	7.03	N/A
Endosulfan		n	0.22		0.056		240		N/A	0.055	0.014	24.00	0.30	0.08	202.87
Endrin		n	0.18		0.0023		0.81		N/A	0.045	0.001	0.08	0.24	0.00	0.68
Ethylbenzene		n	3200		320		29000		N/A	800.000	80.000	2900.00	4347.17	449.81	24513.21
Fluoranthene		n	None		None		370		N/A	0.000	0.000	37.00	N/A	N/A	312.75
Fluorene		n	None		None		14000		N/A	0.000	0.000	1400.00	N/A	N/A	11833.96
Foaming Agents (MBAS)		n	None		None		None		N/A	0.000	0.000	0.00	N/A	N/A	N/A
Guthion		n	None		0.01		None		N/A	0.000	0.003	0.00	N/A	0.01	N/A
Heptachlor	C	n	0.52		0.0038		0.0021		N/A	0.130	0.001	0.0002	0.71	0.01	0.01
Hexachlorocyclohexane		n	2		0.08		25		N/A	0.500	0.020	2.50	2.72	0.11	60.75
Hydrogen Sulfide		n	None		2		None		N/A	0.000	0.500	0.00	N/A	2.81	N/A
Indeno(1,2,3-cd)pyrene	C	n	None		None		0.049		N/A	0.000	0.000	0.0049	N/A	N/A	0.12
Iron		n	None		None		None		N/A	0.000	0.000	0.0000	N/A	N/A	N/A
Isophorone		n	None		None		490000		N/A	0.000	0.000	49000.00	N/A	N/A	414188.68
Kepone		n	None		None		None		N/A	0.000	0.000	0.00	N/A	N/A	N/A
Lindane		n	2		0.08		25		N/A	0.500	0.020	2.50	2.72	0.11	21.13
Malathion		n	None		0.1		None		N/A	0.000	0.025	0.00	N/A	0.14	N/A
Manganese		n	None		None		None		N/A	0.000	0.000	0.00	N/A	N/A	N/A
Methoxychlor		n	None		0.03		None		N/A	0.000	0.008	0.00	N/A	0.04	N/A
Mirex		n	None		None		None		N/A	0.000	0.000	0.00	N/A	N/A	N/A
Monochlorobenzene		n	None		None		21000		N/A	0.000	0.000	2100.00	N/A	N/A	17750.94
Nitrate(as N)		n	None		None		None		N/A	0.000	0.000	0.00	N/A	N/A	N/A
Nitrobenzene		n	None		None		1900		N/A	0.000	0.000	190.00	N/A	N/A	4617.36
Parathion		n	0.065		0.013		None		N/A	0.016	0.003	0.00	0.09	0.02	N/A
PCBs(7 species)	C	n	None		None		0.00045		N/A	0.000	0.000	0.00	N/A	N/A	0.00
Pentachlorophenol		n	0.07		0.04		82		N/A	0.017	0.011	8.20	0.10	0.06	69.31
pH		n	None		None		None		N/A	0.000	0.000	0.00	N/A	N/A	N/A
Phenol		n	None		None		4600000		N/A	0.000	0.000	460000.00	N/A	N/A	3888301.89
Phosphorus(elemental)		n	None		None		None		N/A	0.000	0.000	0.00	N/A	N/A	N/A
Pyrene		n	None		None		11000		N/A	0.000	0.000	1100.00	N/A	N/A	9298.11
Radioactivity		n	None		None		None		N/A	0.000	0.000	0.00	N/A	N/A	N/A
Silvex		n	None		None		None		N/A	0.000	0.000	0.00	N/A	N/A	N/A
Sulfate		n	None		None		None		N/A	0.000	0.000	0.00	N/A	N/A	N/A
Temperature		n	31		31		None		N/A	31.000	31.000	0.00	168.45	174.30	N/A
Tetrachloroethylene		n	None		None		3500		N/A	0.000	0.000	350.00	N/A	N/A	2958.49
Toluene		n	1750		175		200000		N/A	437.500	43.750	20000.00	2377.36	245.99	169056.60
Total dissolved solids		n	None		None		None		N/A	0.000	0.000	0.00	N/A	N/A	N/A
Toxaphene	C	n	0.73		0.0002		0.0075		N/A	0.183	0.000	0.00	0.99	0.00	0.02
Tributyltin		n	0.46		0.026		None		N/A	0.115	0.007	0.00	0.62	0.04	N/A
Trichloroethylene	C	n	None		None		810		N/A	0.000	0.000	81.00	N/A	N/A	1968.45
Vinyl Chloride		n	None		None		5300		N/A	0.000	0.000	530.00	N/A	N/A	12880.00

Footnotes:

1. All concentrations expressed as micrograms per liter (ug/L),except Ammonia.
2. Ammonia (as mg/L) selected from separate tables,based on pH and temprature.
3. Acute-1 hour avg. concentration not to be exceeded more than 1/3years
4. Chronic-4 day avg.concentration not to be exceeded more than 1/3years.
5. Complete mix-mass balances employ 30Q5 for Non-carcinogens, and Harmonic Mean for Carcinogens
6. All flow values are expressed as Million Gallons per Day.
8. Metals measured as Dissolved, unless specified otherwise.
9. (c)-indicates carcinogenic parameter.
10. Public Water Supply-protects for fish and water consumption.
11. Other Waters-protects for fish consumption only.
12. Hardness expressed as CaCO3 (mg/L).
13. All limitations are based on EPA's TSD Statistical approach.

2010 AWLA - 1999 spreadsheet updated with 2021 flows

Steel Dynamics Inc.

09 February, 2021

Input Parameters:

Parameter Analyzed:	Lead FEG update
Chronic Averaging Period:	4 day
WLA_a:	321 ug/L
WLA_c:	41 ug/L
Q.L.:	1 ug/L
# Samples/Mo.:	1
# Samples/Wk.:	1

Statistical Results

# Observations:	2
Expected Value:	152.0000 ug/L
Variance:	8317.4400 ug^2/L^2
C.V.:	0.6000
97^{th} percentile daily values:	369.8371 ug/L
97^{th} percentile 4 day average:	252.8808 ug/L
97^{th} percentile 30 day average:	183.3167 ug/L
# Observations < Q.L.:	0

Limit Results

Model Used:	BPJ Assumptions, Type 2 data
Limit Needed?:	YES
Basis for Limit?:	Chronic Toxicity
Maximum Daily Limit:	59.9623 ug/L
Weekly Average Limit:	59.9623 ug/L
Monthly Average Limit:	59.9623 ug/L

Input Data 228 76 ug/L

Steel Dynamics Inc.

09 February, 2021

Input Parameters:

Parameter Analyzed:	Zinc FEG update
Chronic Averaging Period:	4 day
WLA_a:	286 ug/L
WLA_c:	269 ug/L
Q.L.:	1 ug/L
# Samples/Mo.:	1
# Samples/Wk.:	1

Statistical Results

# Observations:	2
Expected Value:	228.0000 ug/L
Variance:	18714.2400 ug^2/L^2
C.V.:	0.6000
97^{th} percentile daily values:	554.7557 ug/L
97^{th} percentile 4 day average:	379.3212 ug/L
97^{th} percentile 30 day average:	274.9750 ug/L
# Observations < Q.L.:	0

Limit Results

Model Used:	BPJ Assumptions, Type 2 data
Limit Needed?:	YES
Basis for Limit?:	Acute Toxicity
Maximum Daily Limit:	286.0000 ug/L
Weekly Average Limit:	286.0000 ug/L
Monthly Average Limit:	286.0000 ug/L

Input Data 342 114 ug/L

Steel Dynamics Inc.

01 February, 2021

Input Parameters:

Parameter Analyzed:	TRC update
Chronic Averaging Period:	4 day
WLA_a:	73.1 mg/L
WLA_c:	61.4 mg/L
Q.L.:	1 mg/L
# Samples/Mo.:	1
# Samples/Wk.:	1

Statistical Results

# Observations:	3
Expected Value:	1.4808 mg/L
Variance:	0.7894 mg^2/L^2
C.V.:	0.6000
97^{th} percentile daily values:	3.6031 mg/L
97^{th} percentile 4 day average:	2.4636 mg/L
97^{th} percentile 30 day average:	1.7859 mg/L
# Observations < Q.L.:	1

Limit Results

Model Used:	BPJ Assumptions, Type 1 data
Limit Needed?:	NO
Basis for Limit?:	NA
Maximum Daily Limit:	NA
Weekly Average Limit:	NA
Monthly Average Limit:	NA

Input Data 60 350 <1 mg/L

Steel Dynamics Inc.

01 February, 2021

Input Parameters:

Parameter Analyzed:	TRC update
Chronic Averaging Period:	4 day
WLA_a:	68.1 ug/L
WLA_c:	53.6 ug/L
Q.L.:	1 ug/L
# Samples/Mo.:	1
# Samples/Wk.:	1

Statistical Results

# Observations:	1
Expected Value:	57.4000 ug/L
Variance:	1186.1136 ug^2/L^2
C.V.:	0.6000
97^{th} percentile daily values:	139.6622 ug/L
97^{th} percentile 4 day average:	95.4958 ug/L
97^{th} percentile 30 day average:	69.2262 ug/L
# Observations < Q.L.:	0

Limit Results

Model Used:	BPJ Assumptions, Type 2 data
Limit Needed?:	YES
Basis for Limit?:	Acute Toxicity
Maximum Daily Limit:	68.1000 ug/L
Weekly Average Limit:	68.1000 ug/L
Monthly Average Limit:	68.1000 ug/L

Input Data 57.4 ug/L

Steel Dynamics Inc.

13 February, 2021

Input Parameters:

Parameter Analyzed:	Lead - 1999 value
Chronic Averaging Period:	4 day
WLA_a:	321 ug/L
WLA_c:	41 ug/L
Q.L.:	1 ug/L
# Samples/Mo.:	1
# Samples/Wk.:	1

Statistical Results

# Observations:	1
Expected Value:	9.4000 ug/L
Variance:	31.8096 ug^2/L^2
C.V.:	0.6000
97^{th} percentile daily values:	22.8715 ug/L
97^{th} percentile 4 day average:	15.6387 ug/L
97^{th} percentile 30 day average:	11.3367 ug/L
# Observations < Q.L.:	0

Limit Results

Model Used:	BPJ Assumptions, Type 2 data
Limit Needed?:	NO
Basis for Limit?:	NA
Maximum Daily Limit:	NA
Weekly Average Limit:	NA
Monthly Average Limit:	NA

Input Data 9.4 ug/L

Steel Dynamics Inc.

13 February, 2021

Input Parameters:

Parameter Analyzed:	Zinc - 1999 value
Chronic Averaging Period:	4 day
WLA_a:	286 ug/L
WLA_c:	269 ug/L
Q.L.:	1 ug/L
# Samples/Mo.:	1
# Samples/Wk.:	1

Statistical Results

# Observations:	1
Expected Value:	78.0000 ug/L
Variance:	2190.2400 ug^2/L^2
C.V.:	0.6000
97^{th} percentile daily values:	189.7848 ug/L
97^{th} percentile 4 day average:	129.7678 ug/L
97^{th} percentile 30 day average:	94.0704 ug/L
# Observations < Q.L.:	0

Limit Results

Model Used:	BPJ Assumptions, Type 2 data
Limit Needed?:	NO
Basis for Limit?:	NA
Maximum Daily Limit:	NA
Weekly Average Limit:	NA
Monthly Average Limit:	NA

Input Data 78 ug/L

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Steel Dynamics Inc. Permit No.: VA0001589

Receiving Stream: Peters Creek Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information			Stream Flows			Mixing Information			Effluent Information		
Mean Hardness (as CaCO3) =	153	mg/L	1Q10 (Annual) =	0.47	MGD	Annual - 1Q10 Mix =	100	%	Mean Hardness (as CaCO3) =	241.8	mg/L
90% Temperature (Annual) =	23.07	deg C	7Q10 (Annual) =	0.49	MGD	- 7Q10 Mix =	100	%	90% Temp (Annual) =	30.1	deg C
90% Temperature (Wet season) =	19.36	deg C	30Q10 (Annual) =	0.69	MGD	- 30Q10 Mix =	100	%	90% Temp (Wet season) =	30	deg C
90% Maximum pH =	8.67	SU	1Q10 (Wet season) =	1.13	MGD	Wet Season - 1Q10 Mix =	100	%	90% Maximum pH =	8.86	SU
10% Maximum pH =	7.52	SU	30Q10 (Wet season) =	2.54	MGD	- 30Q10 Mix =	100	%	10% Maximum pH =	8.14	SU
Tier Designation (1 or 2) =	2		30Q5 =	0.79	MGD				Discharge Flow =	0.178	MGD
Public Water Supply (PWS) Y/N? =	n		Harmonic Mean =	2.47	MGD						
Trout Present Y/N? =	n										
Early Life Stages Present Y/N? =	y										

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations				Method
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Target Value
METALS																						
Antimony	0	--	--	na	6.4E+02	--	--	na	3.5E+03	--	--	na	6.4E+01	--	--	na	3.5E+02	--	--	na	3.5E+02	3.5E+02
Arsenic	0	3.4E+02	1.5E+02	na	--	1.2E+03	5.6E+02	na	--	8.5E+01	3.8E+01	na	--	3.1E+02	1.4E+02	na	--	3.1E+02	1.4E+02	na	--	8.4E+01
Barium	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	0.0E+00
Cadmium	0	3.1E+00	1.1E+00	na	--	1.1E+01	4.1E+00	na	--	7.7E-01	2.8E-01	na	--	2.8E+00	1.0E+00	na	--	2.8E+00	1.0E+00	na	--	6.2E-01
Chromium III	0	9.1E+02	1.2E+02	na	--	3.3E+03	4.4E+02	na	--	2.3E+02	3.0E+01	na	--	8.3E+02	1.1E+02	na	--	8.3E+02	1.1E+02	na	--	6.6E+01
Chromium VI	0	1.6E+01	1.1E+01	na	--	5.8E+01	4.1E+01	na	--	4.0E+00	2.8E+00	na	--	1.5E+01	1.0E+01	na	--	1.5E+01	1.0E+01	na	--	5.8E+00
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	1.0E+01	--	--	--	5.4E+01	--	--	--	na	--	0.0E+00
Copper	0	2.3E+01	1.5E+01	na	--	8.4E+01	5.5E+01	na	--	5.8E+00	3.6E+00	na	--	2.1E+01	1.4E+01	na	--	2.1E+01	1.4E+01	na	--	8.2E+00
Iron	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	0.0E+00
Lead	0	1.7E+02	2.0E+01	na	--	6.4E+02	7.4E+01	na	--	4.4E+01	4.9E+00	na	--	1.6E+02	1.9E+01	na	--	1.6E+02	1.9E+01	na	--	1.1E+01
Mercury	0	1.4E+00	7.7E-01	- -	- -	5.1E+00	2.9E+00	- -	- -	3.5E-01	1.9E-01	- -	--	1.3E+00	7.2E-01	- -	--	1.3E+00	7.2E-01	- -	- -	4.3E-01
Nickel	0	3.0E+02	3.3E+01	na	4.6E+03	1.1E+03	1.2E+02	na	2.5E+04	7.4E+01	8.2E+00	na	4.6E+02	2.7E+02	3.1E+01	na	2.5E+03	2.7E+02	3.1E+01	na	2.5E+03	1.8E+01
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	7.3E+01	1.9E+01	na	2.3E+04	5.0E+00	1.3E+00	na	4.2E+02	1.8E+01	4.7E+00	na	2.3E+03	1.8E+01	4.7E+00	na	2.3E+03	2.8E+00
Silver	0	9.2E+00	--	na	--	3.4E+01	--	na	--	2.3E+00	--	na	--	8.4E+00	--	na	--	8.4E+00	--	na	--	3.4E+00
Thallium	0	--	--	na	4.7E-01	--	--	na	2.6E+00	--	--	na	4.7E-02	--	--	na	2.6E-01	--	--	na	2.6E-01	2.6E-01
Zinc	0	1.9E+02	1.9E+02	na	2.6E+04	6.9E+02	7.2E+02	na	1.4E+05	4.8E+01	4.8E+01	na	2.6E+03	1.7E+02	1.8E+02	na	1.4E+04	1.7E+02	1.8E+02	na	1.4E+04	6.9E+01
PESTICIDES/PCBS																						
Aldrin [C]	0	3.0E+00	--	na	7.7E-06	1.1E+01	--	na	1.1E-04	7.5E-01	--	na	7.7E-07	2.7E+00	--	na	1.1E-05	2.7E+00	--	na	1.1E-05	1.1E-05
Carbaryl		2.1E+00	2.1E+00	na	--	7.6E+00	7.9E+00	na	--	5.3E-01	5.3E-01	na	--	1.9E+00	2.0E+00	na	--	1.9E+00	2.0E+00	na	--	7.6E-01
Chlordane [C]	0	2.4E+00	4.3E-03	na	3.2E-03	8.7E+00	1.6E-02	na	4.8E-02	6.0E-01	1.1E-03	na	3.2E-04	2.2E+00	4.0E-03	na	4.8E-03	2.2E+00	4.0E-03	na	4.8E-03	2.4E-03
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	3.0E-01	1.5E-01	na	--	2.1E-02	1.0E-02	na	--	7.6E-02	3.8E-02	na	--	7.6E-02	3.8E-02	na	--	2.3E-02
DDD [C]	0	--	--	na	1.2E-03	--	--	na	1.8E-02	--	--	na	1.2E-04	--	--	na	1.8E-03	--	--	na	1.8E-03	1.8E-03
DDE [C]	0	--	--	na	1.8E-04	--	--	na	2.7E-03	--	--	na	1.8E-05	--	--	na	2.7E-04	--	--	na	2.7E-04	2.7E-04
DDT [C]	0	1.1E+00	1.0E-03	na	3.0E-04	4.0E+00	3.8E-03	na	4.5E-03	2.8E-01	2.5E-04	na	3.0E-05	1.0E+00	9.4E-04	na	4.5E-04	1.0E+00	9.4E-04	na	4.5E-04	4.5E-04
Demeton	0	--	1.0E-01	na	--	--	3.8E-01	na	--	--	2.5E-02	na	--	--	9.4E-02	na	--	--	9.4E-02	na	--	9.4E-02
Diazinon	0	1.7E-01	1.7E-01	na	--	6.2E-01	6.4E-01	na	--	4.3E-02	4.3E-02	na	--	1.5E-01	1.6E-01	na	--	1.5E-01	1.6E-01	na	--	6.2E-02
Dieldrin [C]	0	2.4E-01	5.6E-02	na	1.2E-05	8.7E-01	2.1E-01	na	1.8E-04	6.0E-02	1.4E-02	na	1.2E-06	2.2E-01	5.3E-02	na	1.8E-05	2.2E-01	5.3E-02	na	1.8E-05	1.8E-05
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	3.0E+01	8.0E-01	2.1E-01	na	1.6E+02	5.5E-02	1.4E-02	na	3.0E+00	2.0E-01	5.3E-02	na	1.6E+01	2.0E-01	5.3E-02	na	1.6E+01	3.2E-02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	4.0E+01	8.0E-01	2.1E-01	na	2.2E+02	5.5E-02	1.4E-02	na	4.0E+00	2.0E-01	5.3E-02	na	2.2E+01	2.0E-01	5.3E-02	na	2.2E+01	3.2E-02
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	8.0E-01	2.1E-01	--	--	5.5E-02	1.4E-02	--	--	2.0E-01	5.3E-02	--	--	2.0E-01	5.3E-02	--	--	3.2E-02
Endosulfan Sulfate	0	--	--	na	4.0E+01	--	--	na	2.2E+02	--	--	na	4.0E+00	--	--	na	2.2E+01	--	--	na	2.2E+01	2.2E+01
Endrin	0	8.6E-02	3.6E-02	na	3.0E-02	3.1E-01	1.4E-01	na	1.6E-01	2.2E-02	9.0E-03	na	3.0E-03	7.8E-02	3.4E-02	na	1.6E-02	7.8E-02	3.4E-02	na	1.6E-02	1.6E-02
Endrin Aldehyde	0	--	--	na	1.0E+00	--	--	na	5.4E+00	--	--	na	1.0E-01	--	--	na	5.4E-01	--	--	na	5.4E-01	5.4E-01
Guthion	0	--	1.0E-02	na	--	--	3.8E-02	na	--	--	2.5E-03	na	--	--	9.4E-03	na	--	--	9.4E-03	na	--	9.4E-03
Heptachlor [C]	0	5.2E-01	3.8E-03	na	5.9E-05	1.9E+00	1.4E-02	na	8.8E-04	1.3E-01	9.5E-04	na	5.9E-06	4.7E-01	3.6E-03	na	8.8E-05	4.7E-01	3.6E-03	na	8.8E-05	8.8E-05
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	na	3.2E-04	1.9E+00	1.4E-02	na	4.8E-03	1.3E-01	9.5E-04	na	3.2E-05	4.7E-01	3.6E-03	na	4.8E-04	4.7E-01	3.6E-03	na	4.8E-04	4.8E-04
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	na	3.9E-03	--	--	na	5.8E-02	--	--	na	3.9E-04	--	--	na	5.8E-03	--	--	na	5.8E-03	5.8E-03
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	na	1.4E-01	--	--	na	2.1E+00	--	--	na	1.4E-02	--	--	na	2.1E-01	--	--	na	2.1E-01	2.1E-01
Hexachlorocyclohexane Gamma-BHC (Lindane)	0	9.5E-01	na	na	4.4E+00	3.5E+00	--	na	2.4E+01	2.4E-01	--	na	4.4E-01	8.6E-01	--	na	6.5E+00	8.6E-01	--	na	6.5E+00	3.5E-01
Hexachlorocyclohexane (HCH) - Technical [C]	0	--	--	na	1.0E-01	--	--	na	1.5E+00	--	--	na	1.0E-02	--	--	na	1.5E-01	--	--	na	1.5E-01	1.5E-01

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations				Method
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Target Value
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	0.0E+00
Malathion	0	--	1.0E-01	na	--	--	3.8E-01	na	--	--	2.5E-02	na	--	--	9.4E-02	na	--	--	9.4E-02	na	--	9.4E-02
Methoxychlor	0	--	3.0E-02	na	2.0E-02	--	1.1E-01	na	--	--	7.5E-03	na	2.0E-03	--	2.8E-02	na	1.1E-02	--	2.8E-02	na	--	1.7E-02
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	0.0E+00
Parathion	0	6.5E-02	1.3E-02	na	--	2.4E-01	4.9E-02	na	--	1.6E-02	3.3E-03	na	--	5.9E-02	1.2E-02	na	--	5.9E-02	1.2E-02	na	--	7.3E-03
PCB Total [C]	0	--	1.4E-02	na	6.4E-04	--	5.3E-02	na	9.5E-03	--	3.5E-03	na	6.4E-05	--	1.3E-02	na	9.5E-04	--	1.3E-02	na	9.5E-04	9.5E-04
Toxaphene [C]	0	7.3E-01	2.0E-04	na	7.1E-03	2.7E+00	7.5E-04	na	1.1E-01	1.8E-01	5.0E-05	na	7.1E-04	6.6E-01	1.9E-04	na	1.1E-02	6.6E-01	1.9E-04	na	1.1E-02	1.1E-04
BASE NEUTRAL EXTRACTABLES																						
Acenapthene	0	--	--	na	9.0E+01	--	--	na	4.9E+02	--	--	na	9.0E+00	--	--	na	4.9E+01	--	--	na	4.9E+01	4.9E+01
Anthracene	0	--	--	na	4.0E+02	--	--	na	2.2E+03	--	--	na	4.0E+01	--	--	na	2.2E+02	--	--	na	2.2E+02	2.2E+02
Benzidine [C]	0	--	--	na	1.1E-01	--	--	na	1.6E+00	--	--	na	1.1E-02	--	--	na	1.6E-01	--	--	na	1.6E-01	1.6E-01
Benzo (a) anthracene [C]	0	--	--	na	1.3E-02	--	--	na	1.9E-01	--	--	na	1.3E-03	--	--	na	1.9E-02	--	--	na	1.9E-02	1.9E-02
Benzo (b) fluoranthene [C]	0	--	--	na	1.3E-02	--	--	na	1.9E-01	--	--	na	1.3E-03	--	--	na	1.9E-02	--	--	na	1.9E-02	1.9E-02
Benzo (k) fluoranthene [C]	0	--	--	na	1.3E-01	--	--	na	1.9E+00	--	--	na	1.3E-02	--	--	na	1.9E-01	--	--	na	1.9E-01	1.9E-01
Benzo (a) pyrene [C]	0	--	--	na	1.3E-03	--	--	na	1.9E-02	--	--	na	1.3E-04	--	--	na	1.9E-03	--	--	na	1.9E-03	1.9E-03
Bis (chloromethyl) Ether [C]	0	--	--	na	1.7E-01	--	--	na	2.5E+00	--	--	na	1.7E-02	--	--	na	2.5E-01	--	--	na	2.5E-01	2.5E-01
Bis2-Chloroethyl Ether [C]	0	--	--	na	2.2E+01	--	--	na	3.3E+02	--	--	na	2.2E+00	--	--	na	3.3E+01	--	--	na	3.3E+01	3.3E+01
Bis2-Chloroisopropyl Ether	0	--	--	na	4.0E+03	--	--	na	2.2E+04	--	--	na	4.0E+02	--	--	na	2.2E+03	--	--	na	2.2E+03	2.2E+03
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	3.7E+00	--	--	na	5.5E+01	--	--	na	3.7E-01	--	--	na	5.5E+00	--	--	na	5.5E+00	5.5E+00
Butylbenzylphthalate	0	--	--	na	1.0E+00	--	--	na	5.4E+00	--	--	na	1.0E-01	--	--	na	5.4E-01	--	--	na	5.4E-01	5.4E-01
2-Chloronaphthalene	0	--	--	na	1.0E+03	--	--	na	5.4E+03	--	--	na	1.0E+02	--	--	na	5.4E+02	--	--	na	5.4E+02	5.4E+02
Chrysene [C]	0	--	--	1.2E+00	1.3E+00	--	--	na	1.9E+01	--	--	1.2E-01	1.3E-01	--	--	1.8E+00	1.9E+00	--	--	na	1.9E+00	1.9E+00
Dibenz(a,h)anthracene [C]	0	--	--	na	1.3E-03	--	--	na	1.9E-02	--	--	na	1.3E-04	--	--	na	1.9E-03	--	--	na	1.9E-03	1.9E-03
1,2-Dichlorobenzene	0	--	--	na	3.0E+03	--	--	na	1.6E+04	--	--	na	3.0E+02	--	--	na	1.6E+03	--	--	na	1.6E+03	1.6E+03
1,3-Dichlorobenzene	0	--	--	na	1.0E+01	--	--	na	5.4E+01	--	--	na	1.0E+00	--	--	na	5.4E+00	--	--	na	5.4E+00	5.4E+00
1,4-Dichlorobenzene	0	--	--	na	9.0E+02	--	--	na	4.9E+03	--	--	na	9.0E+01	--	--	na	4.9E+02	--	--	na	4.9E+02	4.9E+02
3,3-Dichlorobenzidine [C]	0	--	--	na	1.5E+00	--	--	na	2.2E+01	--	--	na	1.5E-01	--	--	na	2.2E+00	--	--	na	2.2E+00	2.2E+00
Diethyl Phthalate	0	--	--	na	6.0E+02	--	--	na	3.3E+03	--	--	na	6.0E+01	--	--	na	3.3E+02	--	--	na	3.3E+02	3.3E+02
Dimethyl Phthalate	0	--	--	na	2.0E+03	--	--	na	1.1E+04	--	--	na	2.0E+02	--	--	na	1.1E+03	--	--	na	1.1E+03	1.1E+03
Di-n-Butyl Phthalate	0	--	--	na	3.0E+01	--	--	na	1.6E+02	--	--	na	3.0E+00	--	--	na	1.6E+01	--	--	na	1.6E+01	1.6E+01
2,4-Dinitrotoluene [C]	0	--	--	na	1.7E+01	--	--	na	2.5E+02	--	--	na	1.7E+00	--	--	na	2.5E+01	--	--	na	2.5E+01	2.5E+01
1,2-Diphenylhydrazine [C]	0	--	--	na	2.0E+00	--	--	na	3.0E+01	--	--	na	2.0E-01	--	--	na	3.0E+00	--	--	na	3.0E+00	3.0E+00
Fluoranthene	0	--	--	na	2.0E+01	--	--	na	1.1E+02	--	--	na	2.0E+00	--	--	na	1.1E+01	--	--	na	1.1E+01	1.1E+01
Fluorene	0	--	--	na	7.0E+01	--	--	na	3.8E+02	--	--	na	7.0E+00	--	--	na	3.8E+01	--	--	na	3.8E+01	3.8E+01
Hexachlorobenzene [C]	0	--	--	na	7.9E-04	--	--	na	1.2E-02	--	--	na	7.9E-05	--	--	na	1.2E-03	--	--	na	1.2E-03	1.2E-03
Hexachlorobutadiene [C]	0	--	--	na	1.0E-01	--	--	na	1.5E+00	--	--	na	1.0E-02	--	--	na	1.5E-01	--	--	na	1.5E-01	1.5E-01
Hexachlorocyclopentadiene	0	--	--	na	4.0E+00	--	--	na	2.2E+01	--	--	na	4.0E-01	--	--	na	2.2E+00	--	--	na	2.2E+00	2.2E+00
Hexachloroethane [C]	0	--	--	na	1.0E+00	--	--	na	1.5E+01	--	--	na	1.0E-01	--	--	na	1.5E+00	--	--	na	1.5E+00	1.5E+00
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.3E-02	--	--	na	1.9E-01	--	--	na	1.3E-03	--	--	na	1.9E-02	--	--	na	1.9E-02	1.9E-02
Isophorone [C]	0	--	--	na	1.8E+04	--	--	na	2.7E+05	--	--	na	1.8E+03	--	--	na	2.7E+04	--	--	na	2.7E+04	2.7E+04
Nitrobenzene	0	--	--	na	6.0E+02	--	--	na	3.3E+03	--	--	na	6.0E+01	--	--	na	3.3E+02	--	--	na	3.3E+02	3.3E+02
N-Nitrosodimethylamine [C]	0	--	--	na	3.0E+01	--	--	na	4.5E+02	--	--	na	3.0E+00	--	--	na	4.5E+01	--	--	na	4.5E+01	4.5E+01
N-Nitrosodiphenylamine [C]	0	--	--	na	6.0E+01	--	--	na	8.9E+02	--	--	na	6.0E+00	--	--	na	8.9E+01	--	--	na	8.9E+01	8.9E+01
N-Nitrosodi-n-propylamine [C]	0	--	--	na	5.1E+00	--	--	na	7.6E+01	--	--	na	5.1E-01	--	--	na	7.6E+00	--	--	na	7.6E+00	7.6E+00
Pentachlorobenzene	0	--	--	na	1.0E-01	--	--	na	5.4E-01	--	--	na	1.0E-02	--	--	na	5.4E-02	--	--	na	5.4E-02	5.4E-02
Pyrene	0	--	--	na	3.0E+01	--	--	na	1.6E+02	--	--	na	3.0E+00	--	--	na	1.6E+01	--	--	na	1.6E+01	1.6E+01
1,2,4,5-Tetrachlorobenzene	0	--	--	na	3.0E-02	--	--	na	1.6E-01	--	--	na	3.0E-03	--	--	na	1.6E-02	--	--	na	1.6E-02	1.6E-02
1,2,4-Trichlorobenzene [C]	0	--	--	na	7.6E-01	--	--	na	1.1E+01	--	--	na	7.6E-02	--	--	na	1.1E+00	--	--	na	1.1E+00	1.1E+00
VOLATILES																						
Acrolein	0	3.0E+00	3.0E+00	na	4.0E+02	1.1E+01	1.1E+01	na	6.0E+03	7.5E-01	7.5E-01	na	4.0E+01	2.7E+00	2.8E+00	na	6.0E+02	2.7E+00	2.8E+00	na	6.0E+02	1.1E+00
Acrylonitrile [C]	0	--	--	na	7.0E+01	--	--	na	1.0E+03	--	--	na	7.0E+00	--	--	na	1.0E+02	--	--	na	1.0E+02	1.0E+02
Benzene [C]	0	--	--	na	1.6E+02	--	--	na	2.4E+03	--	--	na	1.6E+01	--	--	na	2.4E+02	--	--	na	2.4E+02	2.4E+02
Bromoform [C]	0	--	--	na	1.2E+03	--	--	na	1.8E+04	--	--	na	1.2E+02	--	--	na	1.8E+03	--	--	na	1.8E+03	1.8E+03
Carbon Tetrachloride [C]	0	--	--	na	5.0E+01	--	--	na	7.4E+02	--	--	na	5.0E+00	--	--	na	7.4E+01	--	--	na	7.4E+01	7.4E+01
Chlorobenzene	0	--	--	na	8.0E+02	--	--	na	4.4E+03	--	--	na	8.0E+01	--	--	na	4.4E+02	--	--	na	4.4E+02	4.4E+02
Chlorodibromomethane [C]	0	--	--	na	2.1E+02	--	--	na	3.1E+03	--	--	na	2.1E+01	--	--	na	3.1E+02	--	--	na	3.1E+02	3.1E+02
Chloroform	0	--	--	na	2.0E+03	--	--	na	1.1E+04	--	--	na	2.0E+02	--	--	na	1.1E+03	--	--	na	1.1E+03	1.1E+03
Dichlorobromomethane [C]	0	--	--	na	2.7E+02	--	--	na	4.0E+03	--	--	na	2.7E+01	--	--	na	4.0E+02	--	--	na	4.0E+02	4.0E+02
1,2-Dichloroethane [C]	0	--	--	na	6.5E+03	--	--	na	9.7E+04	--	--	na	6.5E+02	--	--	na	9.7E+03	--	--	na	9.7E+03	9.7E+03
1,1-Dichloroethylene	0	--	--	na	2.0E+04	--	--	na	1.1E+05	--	--	na	2.0E+03	--	--	na	1.1E+04	--	--	na	1.1E+04	1.1E+04
1,2-trans-dichloroethylene	0	--	--	na	4.0E+03	--	--	na	2.2E+04	--	--	na	4.0E+02	--	--	na	2.2E+03	--	--	na	2.2E+03	2.2E+03
1,2-Dichloropropane [C]	0	--	--	na	3.1E+02	--	--	na	4.6E+03	--	--	na	3.1E+01	--	--	na	4.6E+02	--	--	na	4.6E+02	4.6E+02
1,3-Dichloropropene [C]	0	--	--	na	1.2E+02	--	--	na	1.8E+03	--	--	na	1.2E+01	--	--	na	1.8E+02	--	--	na	1.8E+02	1.8E+02

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations				Method
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Target Value
Ethylbenzene	0	--	--	na	1.3E+02	--	--	na	7.1E+02	--	--	na	1.3E+01	--	--	na	7.1E+01	--	--	na	7.1E+01	7.1E+01
Methyl Bromide	0	--	--	na	1.0E+04	--	--	na	5.4E+04	--	--	na	1.0E+03	--	--	na	5.4E+03	--	--	na	5.4E+03	5.4E+03
Methylene Chloride [C]	0	--	--	na	1.0E+03	--	--	na	1.5E+04	--	--	na	1.0E+02	--	--	na	1.5E+03	--	--	na	1.5E+03	1.5E+03
1,1,2,2-Tetrachloroethane [C]	0	--	--	na	3.0E+01	--	--	na	4.5E+02	--	--	na	3.0E+00	--	--	na	4.5E+01	--	--	na	4.5E+01	4.5E+01
Tetrachloroethylene [C]	0	--	--	na	2.9E+02	--	--	na	4.3E+03	--	--	na	2.9E+01	--	--	na	4.3E+02	--	--	na	4.3E+02	4.3E+02
Toluene	0	--	--	na	5.2E+02	--	--	na	2.8E+03	--	--	na	5.2E+01	--	--	na	2.8E+02	--	--	na	2.8E+02	2.8E+02
1,1,1-Trichloroethane	0	--	--	na	2.0E+05	--	--	na	1.1E+06	--	--	na	2.0E+04	--	--	na	1.1E+05	--	--	na	1.1E+05	1.1E+05
1,1,2-Trichloroethane [C]	0	--	--	na	8.9E+01	--	--	na	1.3E+03	--	--	na	8.9E+00	--	--	na	1.3E+02	--	--	na	1.3E+02	1.3E+02
Trichloroethylene [C]	0	--	--	na	7.0E+01	--	--	na	1.0E+03	--	--	na	7.0E+00	--	--	na	1.0E+02	--	--	na	1.0E+02	1.0E+02
Vinyl Chloride [C]	0	--	--	na	1.6E+01	--	--	na	2.4E+02	--	--	na	1.6E+00	--	--	na	2.4E+01	--	--	na	2.4E+01	2.4E+01
RADIONUCLIDES																						
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	0.0E+00
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	0.0E+00
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	0.0E+00
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	0.0E+00
ACID EXTRACTABLES																						
2-Chlorophenol	0	--	--	na	8.0E+02	--	--	na	4.4E+03	--	--	na	8.0E+01	--	--	na	4.4E+02	--	--	na	4.4E+02	4.4E+02
2,4-Dichlorophenol	0	--	--	na	6.0E+01	--	--	na	3.3E+02	--	--	na	6.0E+00	--	--	na	3.3E+01	--	--	na	3.3E+01	3.3E+01
2,4-Dimethylphenol	0	--	--	na	3.0E+03	--	--	na	1.6E+04	--	--	na	3.0E+02	--	--	na	1.6E+03	--	--	na	1.6E+03	1.6E+03
2,4 Dinitrophenol	0	--	--	na	3.0E+02	--	--	na	1.6E+03	--	--	na	3.0E+01	--	--	na	1.6E+02	--	--	na	1.6E+02	1.6E+02
Dinitrophenols	0	--	--	na	1.0E+03	--	--	na	5.4E+03	--	--	na	1.0E+02	--	--	na	5.4E+02	--	--	na	5.4E+02	5.4E+02
2-Methyl-4,6-Dinitrophenol	0	--	--	na	3.0E+01	--	--	na	1.6E+02	--	--	na	3.0E+00	--	--	na	1.6E+01	--	--	na	1.6E+01	1.6E+01
3-Methyl-4-Chlorophenol	0	--	--	na	2.0E+03	--	--	na	1.1E+04	--	--	na	2.0E+02	--	--	na	1.1E+03	--	--	na	1.1E+03	1.1E+03
Nonylphenol	0	2.8E+01	6.6E+00	--	--	1.0E+02	2.5E+01	na	--	7.0E+00	1.7E+00	--	--	2.5E+01	6.2E+00	--	--	2.5E+01	6.2E+00	na	--	3.7E+00
Pentachlorophenol [C]	0	1.6E+01	1.2E+01	na	4.0E-01	5.9E+01	4.7E+01	na	6.0E+00	4.1E+00	3.1E+00	na	4.0E-02	1.5E+01	1.2E+01	na	6.0E-01	1.5E+01	1.2E+01	na	6.0E-01	6.0E-01
Phenol	0	--	--	na	3.0E+05	--	--	na	1.6E+06	--	--	na	3.0E+04	--	--	na	1.6E+05	--	--	na	1.6E+05	1.6E+05
2,4,5-Trichlorophenol	0	--	--	na	6.0E+02	--	--	na	3.3E+03	--	--	na	6.0E+01	--	--	na	3.3E+02	--	--	na	3.3E+02	3.3E+02
2,4,6-Trichlorophenol [C]	0	--	--	na	2.8E+01	--	--	na	4.2E+02	--	--	na	2.8E+00	--	--	na	4.2E+01	--	--	na	4.2E+01	4.2E+01
MISCELLANEOUS																						
Ammonia-N (mg/L) (Yearly)	0	2.15E+00	4.07E-01	na	--	7.82E+00	1.98E+00	na	--	5.37E-01	1.02E-01	na	--	1.95E+00	4.96E-01	na	--	1.95E+00	4.96E-01	na	--	3.0E-01
Ammonia-N (mg/L) (High Flow)	0	2.24E+00	5.63E-01	na	--	1.65E+01	8.59E+00	na	--	5.60E-01	1.41E-01	na	--	4.11E+00	2.15E+00	na	--	4.11E+00	2.15E+00	na	--	1.3E+00
Chloride	0	8.6E+05	2.3E+05	na	--	3.1E+06	8.6E+05	na	--	2.2E+05	5.8E+04	na	--	7.8E+05	2.2E+05	na	--	7.8E+05	2.2E+05	na	--	1.3E+05
TRC (mg/L)	0	1.9E-02	1.1E-02	na	--	6.9E-02	4.1E-02	na	--	4.8E-03	2.8E-03	na	--	1.7E-02	1.0E-02	na	--	1.7E-02	1.0E-02	na	--	6.2E-03
Cyanide, Free	0	2.2E+01	5.2E+00	na	4.0E+02	8.0E+01	2.0E+01	na	2.2E+03	5.5E+00	1.3E+00	na	4.0E+01	2.0E+01	4.9E+00	na	2.2E+02	2.0E+01	4.9E+00	na	2.2E+02	2.9E+00
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	1.2E+04	--	--	na	--	--	--	na	1.2E+03	--	--	na	6.5E+03	--	--	na	--	0.0E+00
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	2.8E-07	--	--	na	5.1E-09	--	--	na	2.8E-08	--	--	na	2.8E-08	2.8E-08
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	0.0E+00
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	7.5E+00	na	--	--	5.0E-01	na	--	--	1.9E+00	na	--	--	1.9E+00	na	--	1.9E+00
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	0.0E+00
Sulfate	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	0.0E+00
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	0.0E+00
Tributyltin	0	4.6E-01	7.2E-02	na	--	1.7E+00	2.7E-01	na	--	1.2E-01	1.8E-02	na	--	4.2E-01	6.8E-02	na	--	4.2E-01	6.8E-02	na	--	4.1E-02
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	4.0E+02	--	--	na	--	--	--	na	4.0E+01	--	--	na	2.2E+02	--	--	na	--	0.0E+00

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and
   Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Steel Dynamics Inc.

02 February, 2021

Input Parameters:

Parameter Analyzed:	Nickel, dissolved
Chronic Averaging Period:	4 day
WLA_a:	270 ug/L
WLA_c:	31 ug/L
Q.L.:	30 ug/L
# Samples/Mo.:	1
# Samples/Wk.:	1

Statistical Results

# Observations:	1
Expected Value:	52.9000 ug/L
Variance:	1007.4276 ug^2/L^2
C.V.:	0.6000
97^{th} percentile daily values:	128.7131 ug/L
97^{th} percentile 4 day average:	88.0092 ug/L
97^{th} percentile 30 day average:	63.7990 ug/L
# Observations < Q.L.:	0

Limit Results

Model Used:	BPJ Assumptions, Type 2 data
Limit Needed?:	YES
Basis for Limit?:	Chronic Toxicity
Maximum Daily Limit:	45.3374 ug/L
Weekly Average Limit:	45.3374 ug/L
Monthly Average Limit:	45.3374 ug/L

Input Data 52.9 ug/L

Steel Dynamics In.c

02 February, 2021

Input Parameters:

Parameter Analyzed:	Ammonia
Chronic Averaging Period:	30 day
WLA_a:	1.95 mg/L
WLA_c:	0.496 mg/L
Q.L.:	0.2 mg/L
# Samples/Mo.:	1
# Samples/Wk.:	1

Statistical Results

# Observations:	2
Expected Value:	0.2332 mg/L
Variance:	0.0196 mg^2/L^2
C.V.:	0.6000
97^{th} percentile daily values:	0.5675 mg/L
97^{th} percentile 4 day average:	0.3880 mg/L
97^{th} percentile 30 day average:	0.2813 mg/L
# Observations < Q.L.:	1

Limit Results

Model Used:	BPJ Assumptions, Type 1 data
Limit Needed?:	NO
Basis for Limit?:	NA
Maximum Daily Limit:	NA
Weekly Average Limit:	NA
Monthly Average Limit:	NA

Input Data 0.117 1.01 mg/L

Steel Dynamics Inc.

02 February, 2021

Input Parameters:

Parameter Analyzed:	Alpha-Endosulfan
Chronic Averaging Period:	4 day
WLA_a:	0.2 ug/L
WLA_c:	0.053 ug/L
Q.L.:	0.1 ug/L
# Samples/Mo.:	1
# Samples/Wk.:	1

Statistical Results

# Observations:	1
Expected Value:	0.1200 ug/L
Variance:	0.0052 ug^2/L^2
C.V.:	0.6000
97^{th} percentile daily values:	0.2920 ug/L
97^{th} percentile 4 day average:	0.1996 ug/L
97^{th} percentile 30 day average:	0.1447 ug/L
# Observations < Q.L.:	0

Limit Results

Model Used:	BPJ Assumptions, Type 2 data
Limit Needed?:	YES
Basis for Limit?:	Chronic Toxicity
Maximum Daily Limit:	0.0775 ug/L
Weekly Average Limit:	0.0775 ug/L
Monthly Average Limit:	0.0775 ug/L

Input Data 0.12 ug/L

Spreadsheet for determination of WET test endpoints or WET limits

Excel 97
Revision Date: 12/13/13
File: WETLIM10.xls
(MIX.EXE required also)

Acute Endpoint/Permit Limit — **Use as LC_{50} in Special Condition, as TUa on DMR**

ACUTE 100% = **NOAEC** LC_{50} = **NA** % Use as **NA** **TUa**

ACUTE WLAa **1.2375**

Note: Inform the permittee that if the mean of the data exceeds this TUa: **1.0** a limit may result using STATS.EXE

Chronic Endpoint/Permit Limit — **Use as NOEC in Special Condition, as TUc on DMR**

CHRONIC	**6.215942407**	**TU_c**	**NOEC =**	**17**	% Use as **5.88**	**TU_c**
BOTH*	**12.3750003**	**TU_c**	**NOEC =**	**9**	% Use as **11.11**	**TU_c**
AML	**6.215942407**	**TU_c**	**NOEC =**	**17**	% Use as **5.88**	**TU_c**

ACUTE WLAa,c **12.375**
CHRONIC WLAc **4.25**
* Both means acute expressed as chronic

Note: Inform the permittee that if the mean of the data exceeds this TUc: **2.55440841** a limit may result using STATS.EXE

Enter data in the cells with blue type:

Entry Date:	02/03/21		
Facility Name:	Steel Dynamics Inc.		
VPDES Number:	**VA0001589**		
Outfall Number:	**005**		
		% Flow to be used from MIX.EXE	**Diffuser /modeling study?**
Plant Flow:	**0.152** MGD		Enter Y/N **n**
Acute 1Q10:	**0.475** MGD	**100** %	Acute **1** :1
Chronic 7Q10:	**0.494** MGD	**100** %	Chronic **1** :1

Are data available to calculate CV? (Y/N) **N** (Minimum of 10 data points, same species, needed) Go to Page 2
Are data available to calculate ACR? (Y/N) **N** (NOEC<LC50, do not use greater/less than data) Go to Page 3

IWC_a	24.24242424 %	Plant flow/plant flow + 1Q10	**NOTE: If the IWCa is >33%, specify the NOAEC = 100% test/endpoint for use**
IWC_c	23.52941176 %	Plant flow/plant flow + 7Q10	
Dilution, acute	4.125	100/IWCa	
Dilution, chronic	4.25	100/IWCc	
WLA_a	1.2375	Instream criterion (0.3 TUa) X's Dilution, acute	
WLA_c	4.25	Instream criterion (1.0 TUc) X's Dilution, chronic	
$WLA_{a,c}$	12.375	ACR X's WLA_a - converts acute WLA to chronic units	
ACR -acute/chronic ratio	10	LC50/NOEC (Default is 10 - if data are available, use tables Page 3)	
CV-Coefficient of variation	0.6	Default of 0.6 - if data are available, use tables Page 2)	
Constants eA	0.4109447	Default = 0.41	
eB	0.6010373	Default = 0.60	
eC	2.4334175	Default = 2.43	
eD	2.4334175	Default = 2.43 (1 samp) No. of samples 1	****The Maximum Daily Limit is calculated from the lowest LTA, X's eC. The LTAa,c and MDL using it are driven by the ACR.**
$LTA_{a,c}$	5.085440663	WLAa,c X's eA	
LTA_c	2.554408525	WLAc X's eB	

MDL** with $LTA_{a,c}$	12.3750003	TU_c	NOEC =	8.080808	(Protects from acute/chronic toxicity)		Rounded NOEC's		%
MDL** with LTA_c	6.215942407	TU_c	NOEC =	16.087665	(Protects from chronic toxicity)		NOEC =	9	%
AML with lowest LTA	6.215942407	TU_c	NOEC =	16.087665	Lowest LTA X's eD		NOEC =	17	%

IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_c to TU_a

							Rounded LC50's		%
MDL with $LTA_{a,c}$	1.23750003	TU_a	LC50 =	80.808079	%		LC50 =	81	%
MDL with LTA_c	0.621594241	TU_a	LC50 =	160.876651	%	Use NOAEC=100%	LC50 =	NA	

Steel Dynamics Inc.

13 February, 2021

Input Parameters:

Parameter Analyzed:	WET reasonale potential
Chronic Averaging Period:	4 day
WLA_a:	12.375 mg/L
WLA_c:	4.25 mg/L
Q.L.:	1 mg/L
# Samples/Mo.:	1
# Samples/Wk.:	1

Statistical Results

# Observations:	10
Expected Value:	2.2775 mg/L
Variance:	1.9834 mg^2/L^2
C.V.:	0.6184
97^{th} percentile daily values:	5.6486 mg/L
97^{th} percentile 4 day average:	3.8409 mg/L
97^{th} percentile 30 day average:	2.7611 mg/L
# Observations < Q.L.:	0

Limit Results

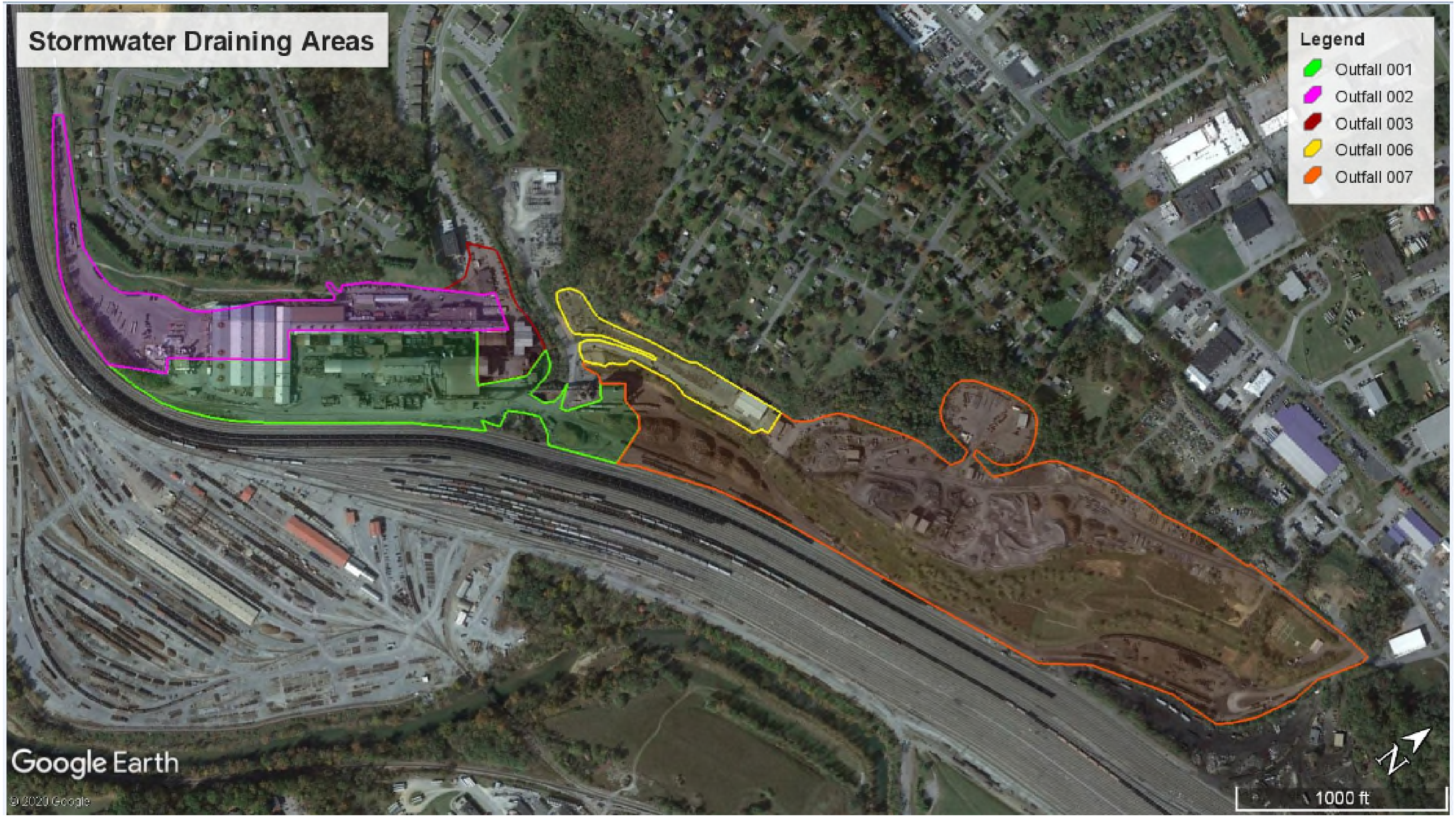
Model Used:	lognormal
Limit Needed?:	NO
Basis for Limit?:	NA
Maximum Daily Limit:	NA
Weekly Average Limit:	NA
Monthly Average Limit:	NA

Input Data 3.01 1 3.01 3.01 3.01 1 1 1 3.01 3.01 mg/L

VPDES Permit VA0001589
Steel Dynamics, Inc. - Roanoke Bar Division
Reissuance 2021

APPENDIX D - Stormwater Associated with Industrial Activity

- Aerial map of stormwater drainage areas and outfalls
- DMR Summary of stormwater discharge data
  Outfalls 001, 002, 003, 006 & 007: Flow, pH, TSS, Aluminum & Zinc
- Summary of Application 2F Stormwater data and comparison to criteria



Stormwater Draining Areas

Outfall 001

DMR Due Date	Flow Precip Estimate (MG)	pH (s.u.)	Solids total suspended (mg/L)	Aluminum total recov. (ug/L)	Zinc total recov. (ug/L)
2/10/2017	0.4631	8.99	308	5560	1650
8/10/2017	0.0386	8.19	34	<QL	5620
2/10/2018	0.1965	8.7	125	1480	552
8/10/2018	0.1052	9.29	48	554	427
2/10/2019	0.1754	8.61	282	2430	781
8/10/2019	0.1579	9.58	93	958	942
2/10/2020	0.2947	8.71	326	2700	2500
8/10/2020	0.2982	9.52	225	1300	560
Benchmark	none	6.0 - 9.0	100	750	120

Outfall 002

DMR Due Date	Flow Precip Estimate (MG)	pH (s.u.)	Solids total suspended (mg/L)	Aluminum total recov. (ug/L)	Zinc total recov. (ug/L)
2/10/2017	0.4661	8.2	26	455	139
8/10/2017	0.0388	8.66	98	833	337
2/10/2018	0.1977	9.2	89	2790	294
8/10/2018*	0.1059	8.53	23	343	157
2/10/2019	0.1766	6.74	8	297	274
8/10/2019	0.1589	8.45	69	765	740
2/10/2020	0.2966	8.76	162	1720	566
8/10/2020	0.3001	8.92	9.5	270	210
Benchmark	none	6.0 - 9.0	100	750	120

Outfall 003

DMR Due Date	Flow Precip Estimate (MG)	pH (s.u.)	Solids total suspended (mg/L)	Aluminum total recov. (ug/L)	Zinc total recov. (ug/L)
2/10/2017	0.1097	8.5	63	1880	31
8/10/2017	0.0091	8.48	244	<QL	186
2/10/2018	0.0465	8.5	155	1560	334
8/10/2018	0.0249	8.4	57	536	160
2/10/2019	0.0415	8.95	21	563	120
8/10/2019	0.0374	8.39	32	740	283
2/10/2020	0.0698	8.61	102	1770	332
8/10/2020	0.0706	8.77	68	520	200
Benchmark	none	6.0 - 9.0	100	750	120

Outfall 006

DMR Due Date	Flow Precip Estimate (MG)	pH (s.u.)	Solids total suspended (mg/L)	Aluminum total recov. (ug/L)	Zinc total recov. (ug/L)
2/10/2017	0.1188	9.1	183	3050	265
8/10/2017	0.0099	9.2	90	2370	294
2/10/2018	0.0504	8.5	47	2540	259
8/10/2018	0.027	9.45	62	484	88
2/10/2019	0.045	9.1	71	3080	335
8/10/2019	0.0405	10.36	816	26100	3210
2/10/2020	0.0756	9.88	666	21700	2490
8/10/2020	0.0765	9.52	45	970	71
Benchmark	none	6.0 - 9.0	100	750	120

Outfall 007

DMR Due Date	Flow Precip Estimate (MG)	pH (s.u.)	Solids total suspended (mg/L)	Aluminum total recov. (ug/L)	Zinc total recov. (ug/L)
2/10/2017	0.326	9.5	582	14800	1570
8/10/2017	0.0272	9.09	1	<QL	<QL
2/10/2018	0.1383	8.7	196	11800	723
8/10/2018	0.0741	8.53	290	5030	470
2/10/2019	0.1235	8.97	86	2000	169
8/10/2019	0.1111	10.29	410	7740	693
2/10/2020	0.2074	10.37	362	9540	1180
8/10/2020	0.2099	9.85	344	4900	450
Benchmark	none	6.0 - 9.0	100	750	120

8/10/2018	SDI-RBD had an unplanned discharge or approximately 1000 gallons of process water to stormwater **outfall 002**. This was reported by telephone call to the DEQ Blue Ridge Regional office Pollution Response, Allen Linkenhoker, with a detailed email the following day.

EPA Application 2F Data Summary **VA0001589**
Steel Dynamics Roanoke Bar Division

Storm event: August 31, 2020
Approx. 7 hours duration, >1.0 inches accumulation
> 72 hours since last measurable event

	Outfall number					Screening
Parameter Description (mg/l unless noted)	**001**	**002**	**003**	**006**	**007**	**Criteria**
Flow, Precipitation event (estimate) (gal)	>42,000	21,000	8,400	21,000	21,000	na
Oil & Grease	<5.3	<5.5	<5.6	6.3	<5.9	15
Biological Oxygen Demand, 5-day (BOD5)	4.0	3.4	<2.0	3.6	14.4	30
Chemical Oxygen Demand, 5-day (COD)	87.4	23.8	14.4	238	134	120
Total Suspended Solids (TSS)	334	23.3	9.2	522	404	100
pH (standard units)	9.94	9.62	9.6	9.11	9.45	6.0 - 9.0
Total Nitrogen	1.6	0.62	<0,50	1.4	2.0	2.2
Total Kjeldahl Nitrogen	1.4	<0.50	<0.50	1.2	1.7	1.5
Nitrate + Nitrite	0.17	0.24	<0.10	0.25	0.37	na
Total Phosphorus	0.28	0.093	0.051	0.12	0.15	2
Aluminum, total recoverable	3.9	0.48	0.11	7.0	12.8	0.75
Copper, total recoverable	0.13	0.012	0.012	0.29	0.48	0.018
Lead, total recoverable	0.086	<0.010	<0.010	0.062	0.072	0.12
Zinc, total recoverable	1.1	0.16	0.049	0.76	1.0	0.12

ND = not detected at the quanitifiction level

Shading indicates result higher than screening value

VPDES Permit VA0001589
Steel Dynamics, Inc. - Roanoke Bar Division
Reissuance 2021

APPENDIX E - NPDES Permit Rating Work Sheet

NPDES PERMIT RATING WORK SHEET

☐ Regular Addition
☐ DiscretionaryAddition
☐ Score change, but no status change
☐ Deletion

NPDES No. VA0001589

Facility Name: **Steel Dynamics Roanoke Bar Division** (formerly known as Roanoke Electric Steel)

City: Roanoke, Virginia

Receiving Water: Peters Creek, Roanoke River watershed

Reach Number: _____

Is this facility a steam electric power plant (SIC=4911) with one or more of the following characteristics?

1. Power output 500 MW or greater (not using a cooling pond/lake)
2. A nuclear power plant
3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rate

☐ YES; score is 600 (stop here) ☑ NO (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

☐ YES; score is 700 (stop here)

☑ NO (continue)

FACTOR 1: Toxic Pollutant Potential

PCS SIC Code: 3312 Primary SIC Code: 3312 (Steel Making, Continuous Casting & Hot Forming 40 CFR 420, Subparts (D no discharge), F & G)

Other SIC Codes: _____

Industrial Subcategory Code: 007 & 003 (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
☐ No process waste streams	0	0	☑ 3.	3	15	☑ 7.	7	35
☐ 1.	1	5	☐ 4.	4	20	☐ 8.	8	40
☐ 2.	2	10	☐ 5.	5	25	☐ 9.	9	45
			☐ 6.	6	30	☐ 10.	10	50

Code Number Checked: 3 & 7

Total Points Factor 1: **35**

FACTOR 2: Flow/Stream Flow Volume (*Complete either Section A or Section B; check only one)*

Section A ☐ Wastewater Flow Only Considered

Wastewater Type (See Instructions)		Code	Points
Type I: Flow < 5 MGD	☐	11	0
Flow 5 to 10 MGD	☐	12	10
Flow > 10 to 50 MGD	☐	13	20
Flow > 50 MGD	☐	14	30
Type II: Flow < 1 MGD	☐	21	10
Flow 1 to 5 MGD	☐	22	20
Flow > 5 to 10 MGD	☐	23	30
Flow > 10 MGD	☐	24	50
Type III: Flow < 1 MGD	☐	31	0
Flow 1 to 5 MGD	☐	32	10
Flow > 5 to 10 MGD	☐	33	20
Flow > 10 MGD	☐	34	30

Section B ☐ Wastewater and Stream Flow Considered

Wastewater Type (See Instructions)	Percent of instream Wastewater Concentration at Receiving Stream Low Flow		Code	Points
Type I/III:	< 10 %	☐	41	0
	10 % to < 50 %	☐	42	10
	> 50 %	☐	43	20
Type II:	< 10 %	☐	51	0
	10 % to <50 %	☑	52	20
	> 50 %	☐	53	30

Code Checked from Section A or B: 52

Total Points Factor 2: 20

NPDES PERMIT RATING WORK SHEET

FACTOR 3: Conventional Pollutants

NPDES NO: VA0001589

(only when limited by the permit)

A. Oxygen Demanding Pollutant: (check one) ☐ BOD ☐ COD ☐ Other: NA

			Code	*Points*
Permit Limits: (check one)	☐	< 100 lbs/day	1	0
	☐	100 to 1000 lbs/day	2	5
	☐	> 1000 to 3000 lbs/day	3	15
	☐	> 3000 lbs/day	4	20

Code Checked: _____

Points Scored: **0**

B. Total Suspended Solids (TSS): NA

			Code	*Points*
Permit Limits: (check one)	☐	< 100 lbs/day	1	0
	☐	100 to 1000 lbs/day	2	5
	☑	> 1000 to 5000 lbs/day	3	15
	☐	> 5000 lbs/day	4	20

Code Checked: 3

Points Scored: **15**

C. Nitrogen Pollutant: (check one) ☐ Ammonia ☐ Other: NA

		Nitrogen Equivalent	*Code*	*Points*
Permit Limits: (check one)	☐	< 300 lbs/day	1	0
	☐	300 to 1000 lbs/day	2	5
	☐	> 1000 to 3000 lbs/day	3	15
	☐	> 3000 lbs/day	4	20

Code Checked: _____

Points Scored: **0**

Total Points Factor 3: **15**

FACTOR 4: Public Health Impact

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this includes any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above referenced supply.

☐ YES (If yes, check toxicity potential number below)

☑ NO (If no, go to Factor 5)

Determine the *human health* toxicity potential from Appendix A. Use the same SIC code and subcategory reference as in Factor 1. (Be sure to use the human health toxicity group column check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
☐ No process waste streams	0	0	☐ 3.	3	0	☐ 7.	7	15
☐ 1.	1	0	☐ 4.	4	0	☐ 8.	8	20
☐ 2.	2	0	☐ 5.	5	5	☐ 9.	9	25
			☐ 6.	6	10	☐ 10.	10	30

Code Number Checked: _____

Total Points Factor 4: **0**

NPDES PERMIT RATING WORK SHEET

FACTOR 5: Water Quality Factors

NPDES NO: VA0001589

A. Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-based federal effluent guidelines, or technology-based state effluent guidelines), or has a wasteload allocation been assigned to the discharge:

		Code	Points
☑	Yes	1	10
☐	No	2	0

B. Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?

		Code	Points
☑	Yes	1	0
☐	No	2	5

C. Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?

		Code	Points
☑	Yes	1	10
☐	No	2	0

Code Number Checked: A **1** B **1** C **1**

Points Factor 5: A **10** + B **0** + C **10** = **20** TOTAL

FACTOR 6: Proximity to Near Coastal Waters

A. Base Score: Enter flow code here (from Factor 2): **NA**

Enter the multiplication factor that corresponds to the flow code: **-**

Check appropriate facility HPRI Code (from PCS):

	HPRI#	*Code*	*HPRI Score*
☐	1	1	20
☐	2	2	0
☐	3	3	30
☐	4	4	0
☐	5	5	20

HPRI code checked: ___

Flow Code	*Multiplication Factor*
11, 31, or 41	0.00
12, 32, or 42	0.05
13, 33, or 43	0.10
14 or 34	0.15
21 or 51	0.10
22 or 52	0.30
23 or 53	0.60
24	1.00

Base Score: (HPRI Score) ____ X (Multiplication Factor) ____ = **0** (TOTAL POINTS)

B. Additional Points ☐ *NEP Program*
For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

	Code	Points
☐ Yes	1	10
☐ No	2	0

C. Additional Points ☐ *Great Lakes Area of Concern*
For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 areas of concern (see Instructions)

	Code	Points
☐ Yes	1	10
☐ No	2	0

Code Number Checked: A __ B __ C __

Points Factor 6: A __ + B __ + C __ = **0** TOTAL

NPDES PERMIT RATING WORK SHEET

SCORE SUMMARY: NPDES NO: VA0001589

Factor	Description	Total Points
1	Toxic Pollutant Potential	35
2	Flows/Streamflow Volume	20
3	Conventional Pollutants	15
4	Public Health Impacts	0
5	Water Quality Factors	20
6	Proximity to Near Coastal Waters	0
	TOTAL (Factors 1 through 6)	**90**

S1. Is the total score equal to or greater than 80? ☑ Yes (Facility is a major) ☐ No

S2. If the answer to the above questions is no, would you like this facility to be discretionary major?

☐ No

☐ Yes (Add 500 points to the above score and provide reason below:

Reason:_____

NEW SCORE: **90**

OLD SCORE: **90**

Susan Edwards
Permit Reviewer's Name

(540) 562-6764
Phone Number

February 19, 2021
Date