Pennsylvania Department of Environmental Protection

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0217387**
Facility Type	**Industrial**	APS ID	**1124067**
Major / Minor	**Minor**	Authorization ID	**1503536**

NPDES PERMIT FACT SHEET INDIVIDUAL INDUSTRIAL WASTE (IW) AND IW STORMWATER

Applicant and Facility Information

Applicant Name	**Messer LLC**	Facility Name	**Braddock Plant**
Applicant Address	200 Somerset Corporate Boulevard Suite 7000 Bridgewater, NJ 08807-2862	Facility Address	1000 Washington Avenue Braddock, PA 15104-2012
Applicant Contact	Philipp Sieber	Facility Contact	Mike Murphy
Applicant Phone	(848) 702-8769	Facility Phone	(412) 351-4580
Client ID	202732	Site ID	460983
SIC Code	2813	Municipality	Braddock Borough
SIC Description	Industrial Gases	County	Allegheny
Date Application Received	October 18, 2024	EPA Waived?	Yes
Date Application Accepted	October 25, 2024	If No, Reason	

Purpose of Application: Renewal of Individual NPDES permit for discharge of NCCW

Summary of Review

The Department received a NPDES permit application for renewal coverage of the Messer LLC Braddock Plant facility on 10/18/2024. The prior NDPES permit for the facility was issued on 10/2/2019 with an effective date of 11/1/2019 and an expiration date of 10/31/2024.

Shown in Figure 1 on page 3, the approximately 6.9-acre facility produces and distributes industrial gases and cryogenic liquids. Low temperature distillation is used to separate air into nitrogen, oxygen, and argon products. Noncontact cooling water (NCCW) for the cooling towers is obtained from two sources: a connection to the intake structure of the nearby US Steel Edgar Thompson Works or the municipal water supply. River water is treated with CL-4898, CL-2156, CL-241, BL-124, and sodium hypochlorite before use and sulfuric acid is used for pH adjustment prior to discharge through Outfall 001 to the Monongahela River. All treatment chemicals are on the DEP-approved list, and NCCW is the only component of discharge from Outfall 001. Stated in the application cover letter, NCCW is generated as needed based on site operations. River water filter backwash, cooling tower side stream filter backwash, and compressor condensate are all discharged to the ALCOSAN sanitary sewer. Figure 2 on Page 4 shows a flow line drawing with estimated flows at the facility. There are no stormwater catch basins; all stormwater either infiltrates in unpaved areas or leaves the site as sheet flow. The Monongahela River has a 25 PA Code Chapter 93 Warm Water Fishes designation and is impaired for polychlorinated biphenyls (PCBs) in the reach adjacent to the facility.

The permittee currently has no open violations. A NPDES compliance evaluation inspection was last performed by Zac Flannigan on 8/5/2021 with no violations noted. The facility has not exceeded its current effluent limitations in at least the past two years.

Approve	Deny	Signatures	Date
X		Jace William Marsh / Environmental Engineering Specialist	February 20, 2025
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	February 21, 2025

Summary of Review

Effluent limits for Outfall 001 in the Draft permit originate from regulatory effluent standards, the Thermal Limits Spreadsheet model, and the Total Residual Chlorine model. No effluent limitations were applied for treatment chemicals, but a Part C condition was added to the Draft permit stating, among other requirements, that DEP may amend the permit to include water quality-based effluent limitations or otherwise control usage rates of chemical additives if there is evidence that usage is adversely affecting receiving waters, producing Whole Effluent Toxicity test failures, or is causing excursions of in-stream water quality standards.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Figure 1. Satellite imagery of Messer LLC Braddock Plant with approximate facility boundary in blue

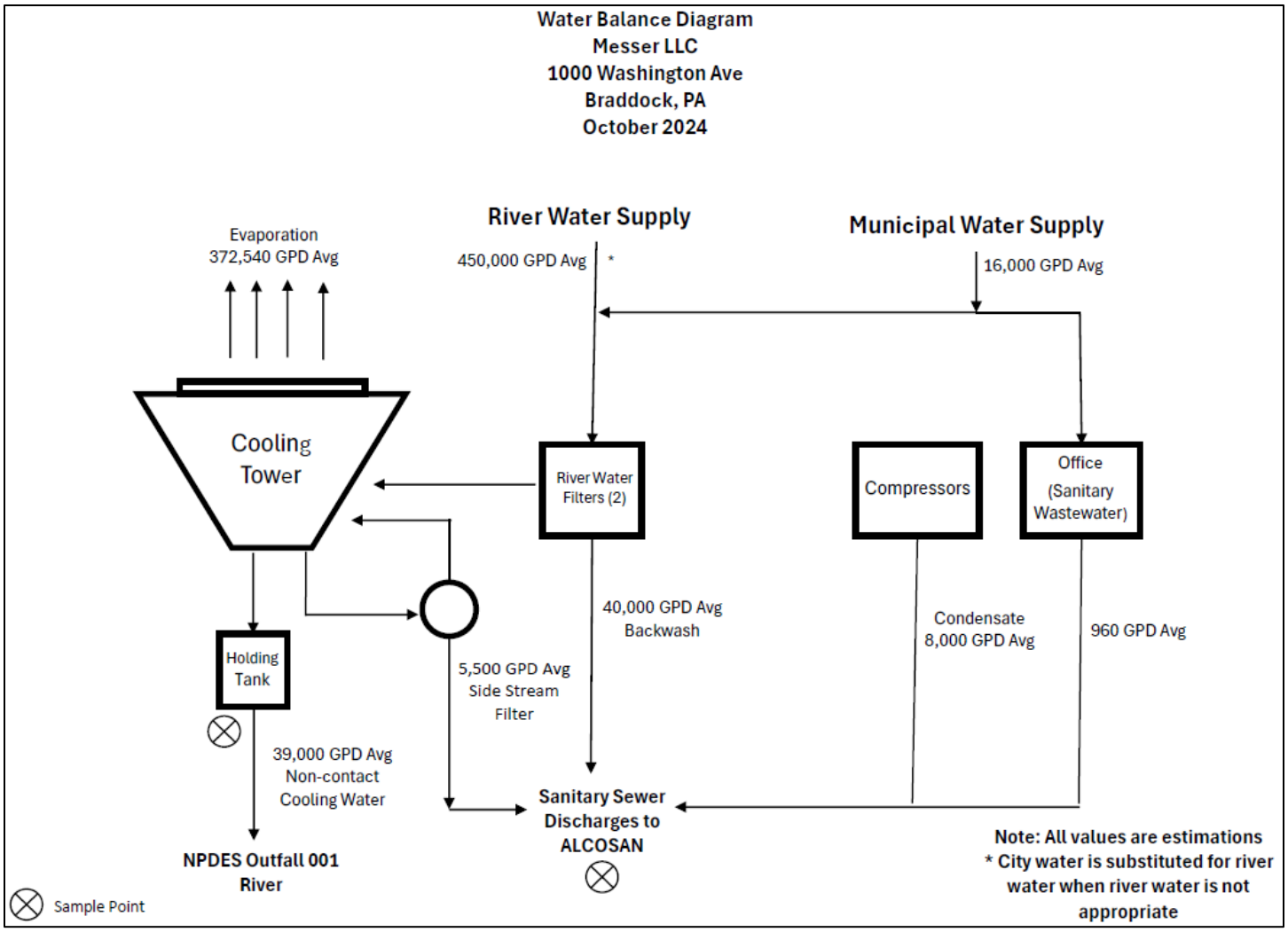

Figure 2. Flow line drawing for Messer LLC Braddock Plant

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.042
Latitude	40º 23' 48"	Longitude	-79º 52' 07"
Quad Name	Braddock	Quad Code	1507
Wastewater Description:	Noncontact cooling water (NCCW)		
Receiving Waters	Monongahela River (WWF)	Stream Code	37185
NHD Com ID	99407722	RMI	7.78
Drainage Area	7340 mi^2	Yield (cfs/mi^2)	0.168
Q_{7-10} Flow (cfs)	1,230	Q_{7-10} Basis	USACE Q_{7-10} Flows of Major Rivers
Elevation (ft)	713	Slope (ft/ft)	0.19
Watershed No.	19-A	Chapter 93 Class.	WWF
Existing Use	n/a	Existing Use Qualifier	n/a
Exceptions to Use	n/a	Exceptions to Criteria	n/a
Assessment Status	Impaired		
Cause(s) of Impairment	Pathogens, Polychlorinated Biphenyls (PCBs)		
Source(s) of Impairment	Source Unknown, Source Unknown		
TMDL Status	Final	Name	Monongahela River TMDL
Nearest Downstream Public Water Supply Intake	PA American Water Co—Pittsburgh		
PWS Waters	Monongahela River	Flow at Intake (cfs)	1,230
PWS RMI	4.6	Distance from Outfall (mi)	~6

Changes Since Last Permit Issuance: no significant changes

Other Comments:

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.042
Latitude 40º 23' 48" **Longitude** -79º 52' 07"
Wastewater Description: Noncontact cooling water (NCCW)

Technology-Based Limitations (TBEL)

Federal Effluent Limitation Guidelines (ELGs)

While process wastewater from the facility would be under 40 CFR Part 415 Subpart AW—Oxygen and Nitrogen Production Subcategory, NCCW is considered a non-process wastewater and is not specifically mentioned in the ELG. ELGs from 40 CFR Part 415 Subpart AW are not applicable for the Draft permit.

Regulatory Effluent Standards and Monitoring Requirements

Flow monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(1) as indicated in Table 1 below.

The pH effluent range for all industrial waste process and non-process discharges pursuant to 25 Pa. Code § 92a.48(a)(2) and 25 Pa. Code § 95.2 is indicated in Table 1 below.

Temperature monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(2) as indicated in Table 1 below.

Pursuant to 25 Pa. Code § 92a.48(b) the imposition of technology-based Total Residual Chlorine (TRC) limits for facilities that use chlorination and that are not already subject to TRC limits based on applicable federal ELG's or a facility specific BPJ evaluation as indicated in Table 1 below.

Table 1. Regulatory Effluent Standards

Parameter	Monthly Average	Daily Max	Instantaneous Max
Flow (MGD)	Monitor	Monitor	—
pH (S.U.)	Wastes must have a pH of not less than 6.0 nor greater than 9.0		
Temperature	—	—	Monitor
TRC (mg/L)	0.5	—	1.6

Total Dissolved Solids (TDS)

This facility is exempt from 25 Pa. Code § 95.10 which outlines treatment requirements for new and expanding mass loadings of TDS and clarifies which facilities are exempt. The relevant section qualifying the exemption states:

> *(a) The following are not considered new and expanding mass loadings of TDS and are exempt from the treatment requirements in this section:*
>
> *(1) Maximum daily discharge loads of TDS or specific conductivity levels that were authorized by the Department prior to August 21, 2010. These discharge loads will be considered existing mass loadings by the Department.*

Water Quality-Based Effluent Limitations (WQBEL)

Chemical Additives

River water for NCCW is treated with CL-4898, CL-2156, CL-241, BL-124, and sodium hypochlorite before use and sulfuric acid is used for pH adjustment prior to discharge through Outfall 001. DEP had been notified of these treatments and had approved them prior to this renewal. As such, no effluent limitations were applied for treatment chemicals, but a Part C condition was added to the Draft permit stating, among other requirements, that DEP may amend the permit to include water quality-based effluent limitations or otherwise control usage rates of chemical additives if there is evidence that usage is adversely affecting receiving waters, producing Whole Effluent Toxicity test failures, or is causing excursions of in-stream water quality standards

Table 3. Chemical additives from application

Chemical Additive Name	Outfall / IMP No.	Purpose	Usage Frequency	Max Usage Rate	Units
CL-4898	001	Cooling water treatment	Daily	42	lbs/day
CL-2156	001	Microbiocide	Once per Month	160	lbs/day
CL-241	001	Defoamer	Monthly	8.3	lbs/month
BL-124	001	Reducing agent	Daily	20	lbs/day
Sodium Hypochlorite	001	Microbiocide	Daily	188	lbs/day
Sulfuric Acid	001	pH control	Daily	90	lbs/day

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and discharge chlorine demands for the receiving stream, the number of samples taken per month, coefficients of TRC variability, partial mix factors, and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria that are then converted to long term averages using calculated multipliers. The multipliers are functions of the number of samples taken per month and the TRC variability coefficients (normally kept at default values unless site specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/L from 25 Pa. Code § 92a.48(b)(2). The more stringent of these average monthly TRC limitations is then proposed. The results of the modeling, included in Attachment C, indicate that average monthly limits of 0.5 mg/L and instantaneous maximum limits of 1.17 mg/L are required for TRC.

Table 3. TRC limits from TRC_CALC

Parameter	Monthly Average (mg/L)	Instantaneous Max (mg/L)
Total Residual Chlorine	0.5	1.17

Thermal WQBELs for Heated Discharges (Noncontact Cooling Water)

Thermal WQBELs are evaluated using the Department's program called Thermal Limits Spreadsheet (TLS) created with Microsoft Excel for Windows. The program calculates temperature WLAs through the application of a heat transfer equation, which takes two forms in the program depending on the source of the facility's cooling water. In Case 1, intake water to a facility is from the receiving stream. In Case 2, intake water is from a source other than the receiving stream (e.g., municipal water supply). The determination of which case applies to a given discharge is determined by the input data which includes the receiving stream flow rate ($Q_{7\text{-}10}$ or the minimum regulated flow for large rivers), the stream intake flow rate, external source intake flow rates, consumptive flow rates and site-specific ambient stream temperatures. Case 1 limits are generally expressed as heat rejection rates while Case 2 limits are usually expressed as temperatures.

Since the temperature criteria from 25 Pa. Code Chapter 93.7(a) are expressed on monthly and semi-monthly bases for three different aquatic life-uses—cold water fishes, warm water fishes and trout stocking—the program generates monthly and semi-monthly limits for each use. The Department selects the output that corresponds to the aquatic life-use of the receiving stream and consequently which limits apply to the discharge. Temperature WLAs are bounded by an upper limit of 110°F for the safety of sampling personnel and anyone who may come into contact with the heated discharge where it enters the receiving water. If no WLAs below 110°F are calculated, an instantaneous maximum limit of 110°F is recommended by the program.

The Department's *Implementation Guidance for Temperature Criteria* directs permit writers to assume instantaneous complete mixing of the discharge with the receiving stream when calculating thermal effluent limits unless adverse factors exist. While it is true that the Monongahela River is wide and impounded, two factors considered adverse, this discharge does not have a consequential flow relative to river flow, so the standard partial mix factor of 1 will be maintained.

Discharge from Outfall 001 is classified as Case 2 because the facility's water is at least partially obtained from an offsite source. Previously, the thermal discharge limits for this permit were based on the design flow of 0.042 MGD provided in the application, but since the highest daily maximum flow over the past two years of eDMR data is 0.114 MGD, more than twice the design and average flows provided in the application, that daily maximum flow is used. Since no accurate measurements

of stream intake, external intake, or consumptive loss were provided, only estimations, these inputs are not considered for the TLS at this discharge.

The results of the thermal analysis, included in Attachment C, indicate that only a baseline 110°F limit is applicable to protect public safety in the Commonwealth. The output from the TLS is shown in Table 4.

Table 4. Thermal discharge limits for Outfall 001

Semi-Monthly Increment	WWF Target Max Instream Temperature (°F)	Daily Temperature Limit (°F)
Jan 1-31	40	110.0
Feb 1-29	40	110.0
Mar 1-31	46	110.0
Apr 1-15	52	110.0
Apr 16-30	58	110.0
May 1-15	64	110.0
May 16-31	72	110.0
Jun 1-15	80	110.0
Jun 16-30	84	110.0
Jul 1-31	87	110.0
Aug 1-15	87	110.0
Aug 16-31	87	110.0
Sep 1-15	84	110.0
Sep 16-30	78	110.0
Oct 1-15	72	110.0
Oct 16-31	66	110.0
Nov 1-15	58	110.0
Nov 16-30	50	110.0
Dec 1-31	42	110.0

Anti-Backsliding

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l), and are displayed below in Table 5.

Table 5. Previous limits for Outfall 001

Parameter	Mass (pounds)		Concentration (mg/L)		Samples	
	Average Monthly	Daily Maximum	Average Monthly	Instantaneous Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	—	—	1/day	Measured
pH (S.U.)	—	—	6.0-9.0 at all times		2/month	Grab
TRC			0.5	1.25	2/month	Grab
Temperature (°F)	—	—	—	110.0	2/month	I-S

Proposed Effluent Limitations and Monitoring Requirements

Effluent limits applicable at Outfall 001 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements as summarized in Table 6. Effluent limits remain mostly the same with the exception of a slightly lower TRC limit.

Table 6. Effluent limits and monitoring requirements for Outfall 001

Parameter	Mass (pounds)		Concentration (mg/L)		Samples	
	Average Monthly	Daily Maximum	Average Monthly	Instantaneous Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	—	—	1/day	Measured
pH (S.U.)	—	—	6.0-9.0 at all times		2/month	Grab
TRC	—	—	0.5	1.17	2/month	Grab
Temperature (°F)	—	—	—	110.0	2/month	I-S

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment **B**)
☒	Temperature Model Spreadsheet (see Attachment C)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 386-2000-010, 3/1999.
☐	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: Establishing Effluent Limits for Individual Industrial Permits (BCW-PMT-032)
☒	Other: USGS StreamStats (see Attachment A)

Attachment A:
USGS StreamStats

PA0217387 StreamStats Report

Region ID: PA
Workspace ID: PA20250214181651587000
Clicked Point (Latitude, Longitude): 40.39761, -79.87221
Time: 2025-02-14 13:17:36 -0500

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	10.741	degrees
DRNAREA	Area that drains to a point on a stream	7340	square miles
ELEV	Mean Basin Elevation	1841	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	7340	square miles	2.26	1400
ELEV	Mean Basin Elevation	1841	feet	1050	2580

Low-Flow Statistics Disclaimers [Low Flow Region 4]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	1020	ft^3/s
30 Day 2 Year Low Flow	1330	ft^3/s
7 Day 10 Year Low Flow	612	ft^3/s
30 Day 10 Year Low Flow	698	ft^3/s
90 Day 10 Year Low Flow	1020	ft^3/s

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

Attachment B:
TRC Model Spreadsheet

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

1230	= Q stream (cfs)	0.5	= CV Daily
0.114	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 2224.868	1.3.2.iii	WLA cfc = 2169.065
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 829.039	5.1d	LTA_cfc = 1260.993

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.170	

WLA afc	**(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...**
	...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	**(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...**
	...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	**1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)**

Attachment C:
Thermal Limits Spreadsheet

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Instructions | *Inputs*

Facility: **Messer LLC Braddock Plant**

Permit No.: **PA0217387**

Stream Name: **Monongahela River**

Analyst/Engineer: **Jace Marsh**

Stream Q7-10 (cfs)*: **1,230.0**

Outfall No.: **001**

Analysis Type*: **WWF**

Facility Flows

Semi-Monthly Increment	Intake (Stream) (MGD)*	Intake (External) (MGD)*	Consumptive Loss (MGD)*	Discharge Flow (MGD)
Jan 1-31		0.114		0.114
Feb 1-29		0.114		0.114
Mar 1-31		0.114		0.114
Apr 1-15		0.114		0.114
Apr 16-30		0.114		0.114
May 1-15		0.114		0.114
May 16-31		0.114		0.114
Jun 1-15		0.114		0.114
Jun 16-30		0.114		0.114
Jul 1-31		0.114		0.114
Aug 1-15		0.114		0.114
Aug 16-31		0.114		0.114
Sep 1-15		0.114		0.114
Sep 16-30		0.114		0.114
Oct 1-15		0.114		0.114
Oct 16-31		0.114		0.114
Nov 1-15		0.114		0.114
Nov 16-30		0.114		0.114
Dec 1-31		0.114		0.114

Stream Flows

Q7-10 Multipliers (Default Shown)	PMF	Seasonal Stream Flow (cfs)	Downstream Stream Flow (cfs)
3.2	1.00	3936.00	3936.18
3.5	1.00	4305.00	4305.18
7	1.00	8610.00	8610.18
9.3	1.00	11439.00	11439.18
9.3	1.00	11439.00	11439.18
5.1	1.00	6273.00	6273.18
5.1	1.00	6273.00	6273.18
3	1.00	3690.00	3690.18
3	1.00	3690.00	3690.18
1.7	1.00	2091.00	2091.18
1.4	1.00	1722.00	1722.18
1.4	1.00	1722.00	1722.18
1.1	1.00	1353.00	1353.18
1.1	1.00	1353.00	1353.18
1.2	1.00	1476.00	1476.18
1.2	1.00	1476.00	1476.18
1.6	1.00	1968.00	1968.18
1.6	1.00	1968.00	1968.18
2.4	1.00	2952.00	2952.18

Instructions | *WWF Results*

Recommended Limits for Case 1 or Case 2

Semi-Monthly Increment	**WWF** Target Maximum Stream Temp. (ºF)	**Case 1** Daily WLA (Million BTUs/day)	**Case 2** Daily WLA (ºF)
Jan 1-31	40	N/A -- Case 2	110.0
Feb 1-29	40	N/A -- Case 2	110.0
Mar 1-31	46	N/A -- Case 2	110.0
Apr 1-15	52	N/A -- Case 2	110.0
Apr 16-30	58	N/A -- Case 2	110.0
May 1-15	64	N/A -- Case 2	110.0
May 16-31	72	N/A -- Case 2	110.0
Jun 1-15	80	N/A -- Case 2	110.0
Jun 16-30	84	N/A -- Case 2	110.0
Jul 1-31	87	N/A -- Case 2	110.0
Aug 1-15	87	N/A -- Case 2	110.0
Aug 16-31	87	N/A -- Case 2	110.0
Sep 1-15	84	N/A -- Case 2	110.0
Sep 16-30	78	N/A -- Case 2	110.0
Oct 1-15	72	N/A -- Case 2	110.0
Oct 16-31	66	N/A -- Case 2	110.0
Nov 1-15	58	N/A -- Case 2	110.0
Nov 16-30	50	N/A -- Case 2	110.0
Dec 1-31	42	N/A -- Case 2	110.0