pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0096130**
Facility Type	**Non-Municipal**	APS ID	**1090206**
Major / Minor	**Minor**	Authorization ID	**1442878**

Applicant and Facility Information

Applicant Name	**Nemacolin Inc.**	Facility Name	**Nemacolin Inc. STP**
Applicant Address	PO Box 484	Facility Address	803 Pershing Boulevard
	Nemacolin, PA 15351-0484		Nemacolin, PA 15351
Applicant Contact	Linda Shiffbower	Facility Contact	
Applicant Phone		Facility Phone	
Client ID	63784	Site ID	253728
Ch 94 Load Status	Existing hydraulic overload	Municipality	Cumberland Township
Connection Status		County	Greene
Date Application Received	June 2, 2023	EPA Waived?	Yes
Date Application Accepted	06/15/2023	If No, Reason	

Purpose of Application: Renewal NPDES Permit for a facility discharging treated sewage.

Summary of Review

The applicant applied for renewal of NPDES Permit No. PA0096130.

There are no open violations for this facility.

Sewage from this facility is treated in a comminutor, flow diverter, and two parallel treatment trains consisting of an aeration tank, clarifier, and chlorine contact chamber. Additionally, there are sludge holding tanks for waste activated sludge. The site has been an approved sewage facility since 1918. The existing facility was approved for construction in 1985.

The applicant is currently enrolled in and will continue to use eDMR.

The Act 14-PL 834 Municipal Notification was provided by the February 1, 2023 letter provided to Cumberland Township and the February 1, 2023 letter provided to Green County. No comments were received.

This facility is in an existing hydraulic overload. A Compliance Action Plan (CAP) is included in the permit and will be discussed in detail below.

Sludge use and disposal description and location(s): Sludge is hauled off site by a permitted sludge hauler.

Public Participation

Approve	Deny	Signatures	Date
x		John Price Jack Price / Environmental Engineering Specialist	August 12, 2024
x		Mahbuba Iasmin Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineer Manager	August 21, 2024

Summary of Review
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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.10
Latitude	39º 52' 51.25"	Longitude	-79º 54' 57.35"
Quad Name	Carmichaels	Quad Code	1906
Wastewater Description:	Sewage Effluent		
Receiving Waters	Monongahela River (WWF)	Stream Code	37185
NHD Com ID	134839929	RMI	76.68
Drainage Area	4550 mi^2	Yield (cfs/mi^2)	0.002
Q_{7-10} Flow (cfs)	530	Q_{7-10} Basis	US Army Corps of Engineers, Mon River @ Maxwell L&D
Elevation (ft)		Slope (ft/ft)	
Watershed No.	19-B	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status	Final	Name	Monongahela River TMDL

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake	Southwestern PA Water Auth		
PWS Waters	Monongahela River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	4.84 Linear Miles

Changes Since Last Permit Issuance: There have been no changes to the receiving waters or water supply information since the previous permit. A new model for the discharge was performed.

This facility is in an existing hydraulic overload. The hydraulic capacity of this facility is 0.1 MGD and has experienced flows greater than this in 11 months of 2023. A chapter 94 spreadsheet was generated to identify the hydraulic overload. The permit includes a schedule for the facility to submit a corrective action plan.

Treatment Facility Summary

Treatment Facility Name: Nemacolin STP

This is an existing facility. The original facility was approved in 1918 as the Buckeye Coal Company STP. The facility was replaced in 1985 with a new system due to malfunction of the facility that existed at that time. The facility was transferred in 1991.

The current treatment system consists of:

- One Comminutor
- One Diverter
- Two 50,000-gallon aeration tanks
- Two 8,800-gallon clarifiers with 144 SF surface area each.
- Two 3' x 12' x 2' chlorine contact chambers with erosion-feed chlorinators.
- One sludge holding tank.

WQM Permit No.	Issuance Date
3085401 T-1	03/12/1991
3085401	05/08/1985

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Aeration	Erosion-fed chlorination	0.118 (year 2022)

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.1		Not Overloaded	Hauled off-site	Landfilled

Changes Since Last Permit Issuance: The facility discharge to the receiving stream was modeled for this new permit. Modelling was performed as per the SOP BCW-PMT-002 Section IV.L.5.

Other Comments:

Compliance History

DMR Data for Outfall 001 (from July 1, 2023 to June 30, 2024)

Parameter	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23
Flow (MGD) Average Monthly	0.094	0.124	0.232	0.227	0.188	0.237	0.117	0.153	0.122	0.075	0.146	0.116
Flow (MGD) Daily Maximum	0.172	0.238	0.556	0.653	0.624	0.822	0.468	0.537	0.4	0.113	0.353	0.271
pH (S.U.) Minimum	6.7	6.7	6.7	6.3	6.7	6.6	6.7	6.8	6.7	6.6	6.7	6.7
pH (S.U.) Maximum	7.0	7.0	7.0	7.0	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.2
DO (mg/L) Minimum	6.3	6.3	6.3	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.2
TRC (mg/L) Average Monthly	0.5	0.5	0.5	0.4	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5
TRC (mg/L) Instantaneous Maximum	0.6	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5
CBOD5 (mg/L) Average Monthly	< 4.5	< 4.4	5.6	< 2.2	< 2.2	< 2.0	< 2.1	< 2.4	< 5.0	< 2.3	< 5.5	< 9.0
TSS (mg/L) Average Monthly	< 5.0	< 5.0	8.8	5.5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 8.0
Fecal Coliform (No./100 ml) Geometric Mean	< 2	< 1	< 4	6	< 1	< 1	< 1	< 1	< 2	< 2	1	< 3
Fecal Coliform (No./100 ml) Instantaneous Maximum	3	1	308	1553	< 1	1	1	< 1	10	15	5	12
Total Nitrogen (mg/L) Daily Maximum							4.95					
Ammonia (mg/L) Average Monthly	< 3.07	4.40	< 3.43	< 0.4	< 0.569	< 5.29	< 2.16	< 0.42	< 1.558	< 0.4	< 1.15	< 2.005
Total Phosphorus (mg/L) Daily Maximum							0.78					

Compliance History

Facility: Nemacolin Inc. STP.
NPDES Permit No.: PA0096130
Compliance Review Period: July 2019-July 2024

Inspection Summary:

INSP ID	INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC
3247381	09/09/2021	Administrative/File Review	PA Dept of Environmental Protection	No Violations Noted
3637885	10/31/2023	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted
3057660	07/21/2020	Administrative/File Review	PA Dept of Environmental Protection	No Violations Noted
3247382	09/09/2021	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted

Violation Summary:
None.

Open Violations by Client ID:
None.

Enforcement Summary:
None

DMR Violation Summary:
No DMR data found
Compliance Status:
To be determined

Other Comments: The Compliance Status of the facility will be determined prior to the issuance of the final permit. At that time a fact sheet addendum will be issued with the compliance status determination.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.10
Latitude 39º 52' 51.00" **Longitude** -79º 55' 0.00"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Comments: The proposed discharge was evaluated using WQM 7.0 to evaluate CBOD5, ammonia nitrogen, and Dissolved Oxygen Parameters. The modeling results show technology based effluent limitations for CBOD5, ammonia nitrogen, Dissolved Oxygen, and Total Residual Chlorine are appropriate.

Water Quality-Based Limitations

The following limitations were determined through water quality modeling (output files attached):

Parameter	Limit (mg/l)	SBC	Model
Ammonia Nitrogen	25	Average Monthly	WQM 7.0 Version 1.1
Dissolved Oxygen	4 (min)	Average Monthly	WQM 7.0 Version 1.1
Total Residual Chlorine	0.5	Average Monthly	TRC_CALC

Comments: The WQM model shows that the TBEL limits are sufficient for summertime and wintertime discharges. The TRC_Calc model shows that the TBEL limits are sufficient.

Best Professional Judgment (BPJ) Limitations

Comments: N/A

Anti-Backsliding

Section 402(o) of the Clean Water Act (CWA), enacted in the Water Quality Act of 1987, establishes anti-backsliding rules governing two situations. The first situation occurs when a permittee seeks to revise a Technology-Based effluent limitation based on BPJ to reflect a subsequently promulgated effluent guideline which is less stringent. The second situation addressed by Section 402(o) arises when a permittee seeks relaxation of an effluent limitation which is based upon a State treatment standard of water quality standard.

Previous limits can be used pursuant to EPA's anti-backsliding regulation 40 CFR 122.44 **(l) Reissued permits. (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued. Interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under §122.62). (2) In the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.**

No backsliding of the existing permit effluent limitations and/or monitoring requirements have been applied in the renewed Draft Permit.

Disinfection

Disinfection at this facility is provided by erosion feed chlorination equipment and a chlorine contact tank. Per the SOP for effluent limitations, a monthly limit of 0.5 mg/L is established with an IMAX of 1.6 mg/L.

(*Section I.A, Note 3, SOP for Clean Water Program, Establishing Effluent Limitations for Individual Sewage Permits, Final November 9, 2012, Revised March 24, 2021, Version 1.9* and *25 PA Code 92a.61(b)*.)

Additional Considerations

Nutrient monitoring is required to establish the nutrient load from the wastewater treatment facility and the impacts that load may have on the quality of the receiving stream(s). A 1/year monitoring requirement for Total Nitrogen and Total Phosphorus has been added to the permit. *Section I.A, Note 7 & 8, SOP for Clean Water Program, Establishing Effluent Limitations for Individual Sewage Permits, Final November 9, 2012, Revised March 24, 2021, Version 1.9* and *25 PA Code 92a.61(b)*.

Sewage discharges will include monitoring, at a minimum, for *E. Coli*, in new and reissued permits, with a monitoring frequency of 1/year for design flows between 0.002 and 0.05 MGD. *Note 12 SOP-Establishing Effluent Limitations for Individual Sewage Permits Final November 9, 2012, Revised March 24, 2021, Version 1.9.* and *25 PA Code 92a.61(b).*

Monitoring frequency for the proposed effluent limits are based upon Table 6-3, Self-Monitoring Requirements for Sewage Dischargers. *Department Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits (Document No. 362-0400-001*

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	50.0	1/week	8-Hr Composite
TSS	XXX	XXX	XXX	30.0	XXX	60.0	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

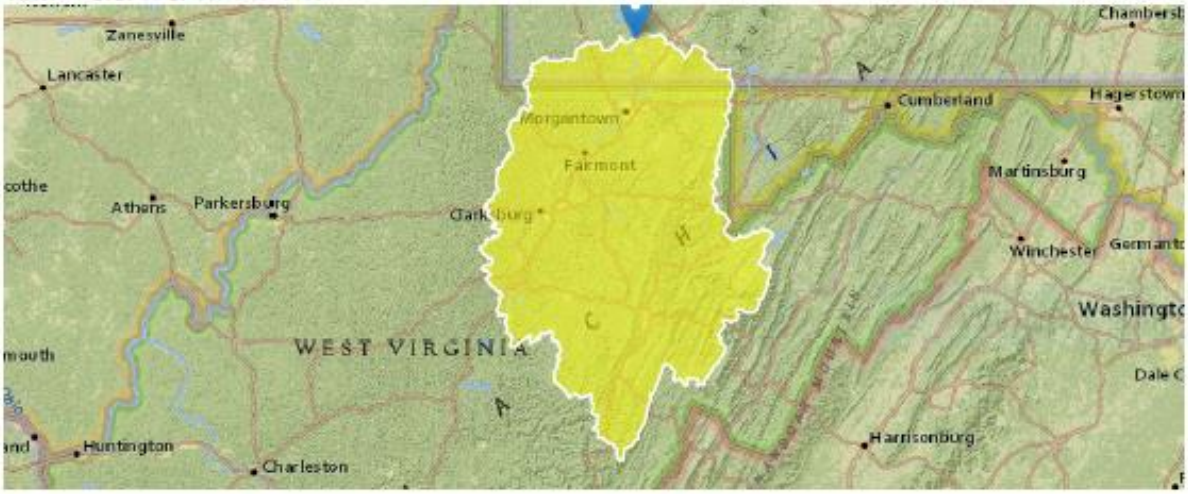
Compliance Sampling Location: Outfall 001

Other Comments: None

Attachment 1-USGS StreamStats Report-Upstream

StreamStats Report

Region ID: PA
Workspace ID: PA20230629124434197000
Clicked Point (Latitude, Longitude): 39.88144, -79.91597
Time: 2023-06-29 08:44:57 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	4550	square miles
ELEV	Mean Basin Elevation	1942	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [99.9 Percent (4550 square miles) Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4550	square miles	2.26	1400
ELEV	Mean Basin Elevation	1942	feet	1050	2580

Low-Flow Statistics Disclaimers [99.9 Percent (4550 square miles) 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 [99.9 Percent (4550 square miles) Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	617	ft^3/s
30 Day 2 Year Low Flow	827	ft^3/s
7 Day 10 Year Low Flow	350	ft^3/s

Statistic	Value	Unit
30 Day 10 Year Low Flow	416	ft^3/s
90 Day 10 Year Low Flow	629	ft^3/s

Low-Flow Statistics Citations

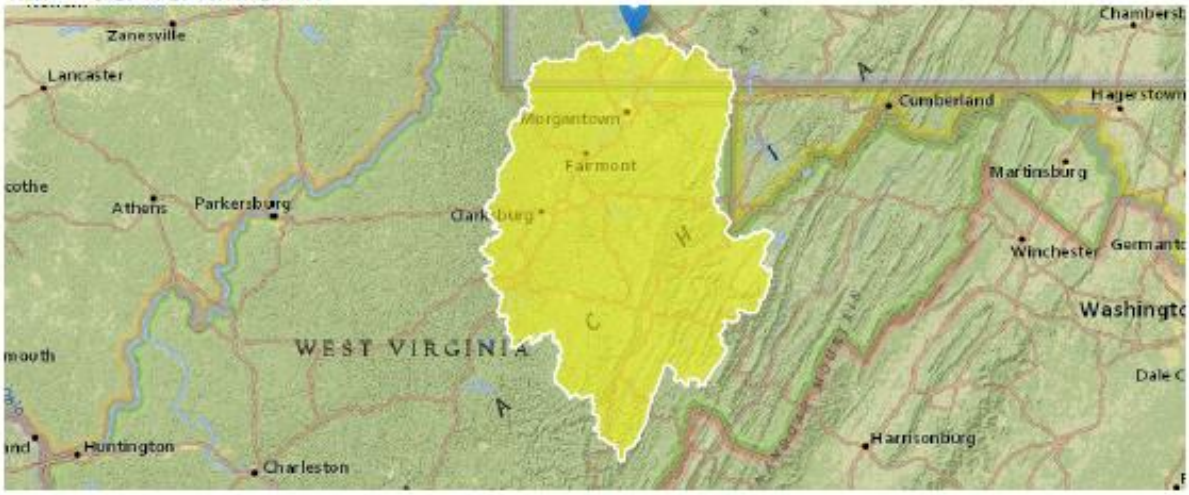
Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

Application Version: 4.16.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Attachment 2-USGS StreamStats Report-Downstream

StreamStats Report

Region ID: PA
Workspace ID: PA20230629125009235000
Clicked Point (Latitude, Longitude): 39.88638, -79.91891
Time: 2023-06-29 08:50:32 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	4550	square miles
ELEV	Mean Basin Elevation	1942	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [99.9 Percent (4550 square miles) Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4550	square miles	2.26	1400
ELEV	Mean Basin Elevation	1942	feet	1050	2580

Low-Flow Statistics Disclaimers [99.9 Percent (4550 square miles) 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 [99.9 Percent (4550 square miles) Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	617	ft^3/s
30 Day 2 Year Low Flow	827	ft^3/s
7 Day 10 Year Low Flow	350	ft^3/s

Statistic	Value	Unit
30 Day 10 Year Low Flow	416	ft^3/s
90 Day 10 Year Low Flow	629	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/)

Application Version: 4.16.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Attachment 3-WQM Model Output-Summer

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
19A	37185	MONONGAHELA RIVER	**76.680**	763.30	4550.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.116	0.00	0.00	0.000	0.000	10.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
NemacolinIncSTP	PA0096130	0.1000	0.0000	0.0000	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
19A	37185	MONONGAHELA RIVER	**76.300**	763.29	4550.10	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.116	0.00	0.00	0.000	0.000	10.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☑
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA RIVER

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
76.680	527.80	0.00	527.80	.1547	0.00000	8.247	82.47	10	0.78	0.030	25.00	7.00
Q1-10 Flow												
76.680	337.79	0.00	337.79	.1547	0.00000	NA	NA	NA	0.60	0.038	25.00	7.00
Q30-10 Flow												
76.680	717.81	0.00	717.81	.1547	0.00000	NA	NA	NA	0.92	0.025	25.00	7.00

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA RIVER

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
76.680	NemacolinIncST	6.77	50	6.77	50	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
76.680	NemacolinIncST	1.34	25	1.34	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
76.68	NemacolinIncSTP	25	25	25	25	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
76.680	0.100	24.999	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
82.465	8.247	10.000	0.776
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.01	0.005	0.01	1.028
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.242	0.540	O'Connor	5
Reach Travel Time (days)			
0.030			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.003	2.01	0.01	7.54
0.006	2.01	0.01	7.54
0.009	2.01	0.01	7.54
0.012	2.01	0.01	7.54
0.015	2.01	0.01	7.54
0.018	2.01	0.01	7.54
0.021	2.01	0.01	7.54
0.024	2.01	0.01	7.54
0.027	2.01	0.01	7.54
0.030	2.01	0.01	7.54

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA RIVER

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
76.680	NemacolinIncSTP	PA0096130	0.100	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

Attachment 4-WQM Model Output-Winter

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
19A	37185	MONONGAHELA RIVER	**76.680**	763.30	4550.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.232	0.00	0.00	0.000	0.000	10.0	0.00	0.00	5.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
NemacolinIncSTP	PA0096130	0.1000	0.0000	0.0000	0.000	15.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	12.51	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
19A	37185	MONONGAHELA RIVER	**76.300**	763.29	4550.10	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.232	0.00	0.00	0.000	0.000	10.0	0.00	0.00	5.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA RIVER

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
76.680	NemacolinIncSTP	PA0096130	0.100	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
76.680	0.100	5.001	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
96.047	9.605	10.000	1.144
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.00	0.003	0.00	0.221
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
12.509	0.325	O'Connor	5
Reach Travel Time (days)			
0.020			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.002	2.00	0.00	11.45
0.004	2.00	0.00	11.45
0.006	2.00	0.00	11.45
0.008	2.00	0.00	11.45
0.010	2.00	0.00	11.45
0.012	2.00	0.00	11.45
0.014	2.00	0.00	11.45
0.016	2.00	0.00	11.45
0.018	2.00	0.00	11.45
0.020	2.00	0.00	11.45

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA RIVER

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
76.680	NemacolinIncST	20.59	50	20.59	50	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
76.680	NemacolinIncST	4.08	25	4.08	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
76.68	NemacolinIncSTP	25	25	25	25	4	4	0	0

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
19A	37185	MONONGAHELA RIVER

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
76.680	1055.60	0.00	1055.60	.1547	0.00000	9.605	96.05	10	1.14	0.020	5.00	7.00
Q1-10 Flow												
76.680	675.58	0.00	675.58	.1547	0.00000	NA	NA	NA	0.89	0.026	5.00	7.00
Q30-10 Flow												
76.680	1435.62	0.00	1435.62	.1547	0.00000	NA	NA	NA	1.36	0.017	5.00	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☑
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

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Attachment 5-TRC_Calc Model Output

TRC_CALC1.xlsx

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

530	= **Q stream (cfs)**	**0.5**	= **CV Daily**
0.1	= **Q discharge (MGD)**	**0.5**	= **CV Hourly**
30	= **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 =	1092.908	**1.3.2.iii**	WLA cfc =	1065.493
PENTOXSD TRG	**5.1a**	LTAMULT afc =	0.373	**5.1c**	LTAMULT cfc =	0.581
PENTOXSD TRG	**5.1b**	LTA_afc=	407.244	**5.1d**	LTA_cfc =	619.427

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) =	1.635	

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 6-Chapter 94 Spreadsheet Output

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PADEP Chapter 94 Spreadsheet
Sewage Treatment Plants

Reporting Year: 2023

Facility Name: Nemacolin Inc. STP | **Permit No.:** PA0096130 | **Persons/EDU:** 3.5

Existing Hydraulic Design Capacity: 0.1 MGD
Upgrade Planned in Next 5 Years? | **Year:**
Future Hydraulic Design Capacity: MGD

Existing Organic Design Capacity: lbs BOD5/day
Upgrade Planned in Next 5 Years? | **Year:**
Future Organic Design Capacity: lbs BOD5/day

Monthly Average Flows for Past Five Years (MGD)

Month	2019	2020	2021	2022	2023
January	0.155	0.147	0.099	0.127	0.187
February	0.219	0.198	0.138	0.214	0.16
March	0.142	0.157	0.14	0.16	0.276
April	0.095	0.212	0.092	0.165	0.184
May	0.111	0.251	0.111	0.134	0.183
June	0.084	0.184	0.054	0.114	0.129
July	0.083	0.184	0.087	0.07	0.116
August	0.08	0.039	0.044	0.076	0.146
September	0.061	0.046	0.049	0.074	0.075
October	0.069	0.057	0.059	0.089	0.122
November	0.078	0.077	0.042	0.084	0.153
December	0.167	0.147	0.077	0.107	0.117
Annual Avg	0.112	0.142	0.081	0.118	0.154
Max 3-Mo Avg	0.172	0.216	0.128	0.18	0.214
Max : Avg Ratio	1.54	1.52	1.58	1.53	1.39
Existing EDUs					
Flow/EDU (GPD)					
Flow/Capita (GPD)					
Exist. Overload?	YES	YES	NO	YES	YES

Monthly Average BOD5 Loads for Past Five Years (lbs/day)

Month	2019	2020	2021	2022	2023
January					
February					
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					
Annual Avg					
Max Mo Avg					
Max : Avg Ratio					
Existing EDUs					
Load/EDU					
Load/Capita					
Exist. Overload?					

Projected Flows for Next Five Years (MGD)

	2024	2025	2026	2027	2028
New EDUs	0.0	0.0	0.0	0.0	0.0
New EDU Flow	0	0	0	0	0
Proj. Annual Avg	0.121	0.121	0.121	0.121	0.121
Proj. Max 3-Mo Avg	0.183	0.183	0.183	0.183	0.183
Proj. Overload?	YES	YES	YES	YES	YES

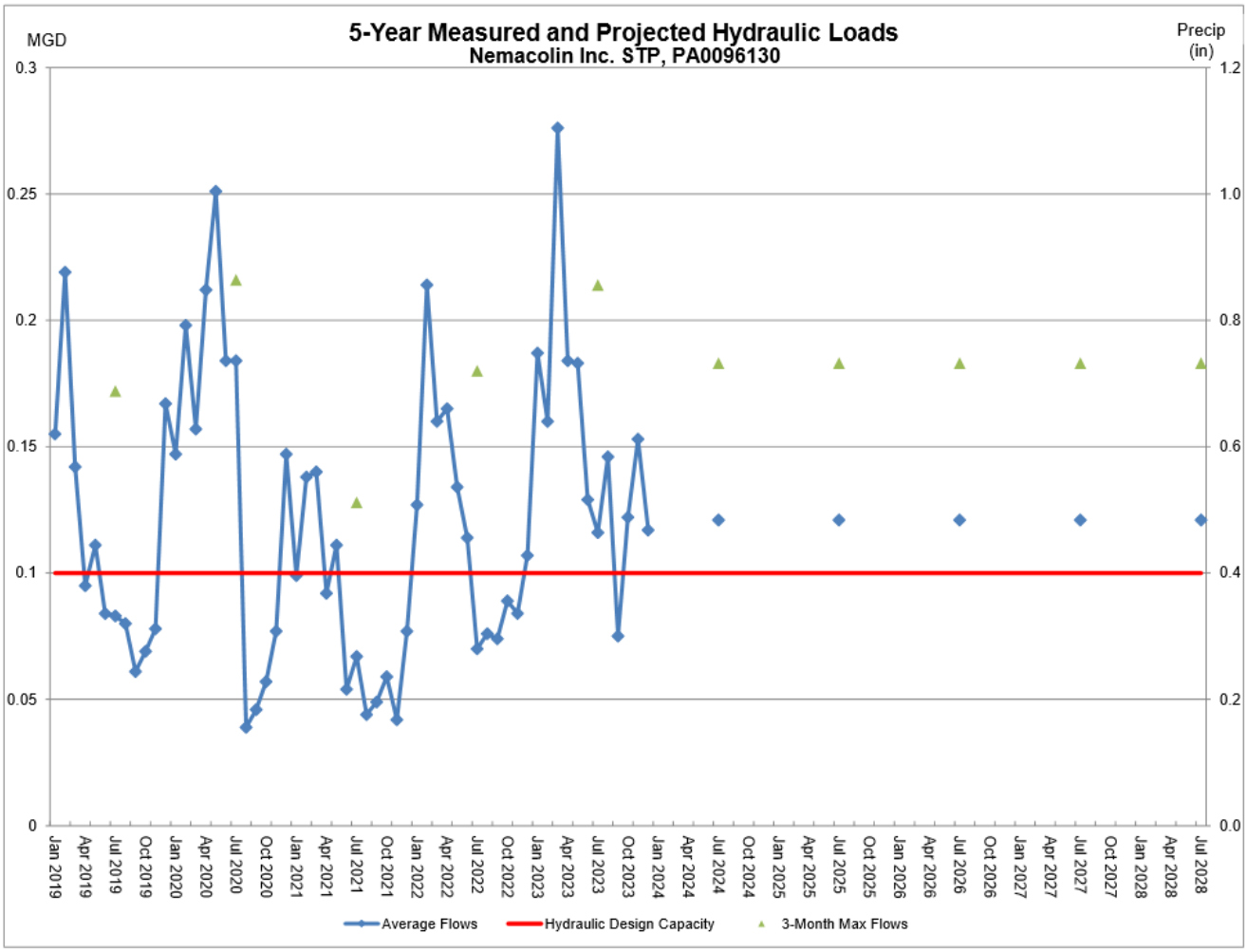
Projected BOD5 Loads for Next Five Years (lbs/day)

	2024	2025	2026	2027	2028
New EDUs	0	0	0	0	0
New EDU Load	0.000	0.000	0.000	0.000	0.000
Proj. Annual Avg	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Proj. Max Avg	#DIV/0!				
Proj. Overload?	#DIV/0!				

Show Precipitation Data on Hydraulic Graph?

Total Monthly Precipitation for Past Five Years (Inches)

Month	2019	2020	2021	2022	2023
January					
February					
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					


5-Year Measured and Projected Hydraulic Loads
Nemacolin Inc. STP, PA0096130
MGD
Precip (in)
0.3
0.25
0.2
0.15
0.1
0.05
0
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Jan 2019
Apr 2019
Jul 2019
Oct 2019
Jan 2020
Apr 2020
Jul 2020
Oct 2020
Jan 2021
Apr 2021
Jul 2021
Oct 2021
Jan 2022
Apr 2022
Jul 2022
Oct 2022
Jan 2023
Apr 2023
Jul 2023
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Apr 2024
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Jan 2025
Apr 2025
Jul 2025
Oct 2025
Jan 2026
Apr 2026
Jul 2026
Oct 2026
Jan 2027
Apr 2027
Jul 2027
Oct 2027
Jan 2028
Apr 2028
Jul 2028
Average Flows
Hydraulic Design Capacity
3-Month Max Flows