Pennsylvania Department of Environmental Protection

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0254681**
Facility Type	**Municipal**	APS ID	**1101749**
Major / Minor	**Minor**	Authorization ID	**1463327**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Morris Township Greene County**	Facility Name	**Nineveh STP**
Applicant Address	1317 Browns Creek Road	Facility Address	1694 Browns Creek Road
	Sycamore, PA 15364-1302		Graysville, PA 15337
Applicant Contact	Judy Moniker	Facility Contact	Bianca Simpson
Applicant Phone	(724) 627-9844	Facility Phone	724-627-9728
Client ID	110717	Site ID	770801
Ch 94 Load Status	Not Overloaded	Municipality	Morris Township
Connection Status	No Limitations	County	Greene
Date Application Received	November 29, 2023	EPA Waived?	Yes
Date Application Accepted	November 29, 2023	If No, Reason	

Purpose of Application: NPDES Permit Renewal

Summary of Review

The permittee has applied for a renewal of NPDES Permit No. PA0254681 on November 29, 2023. NPDES Permit No. PA0254681 was previously issued by the PA Department of Environmental Protection (DEP) on June 1, 2019 and expired on March 31, 2024.

Sewage from this facility is treated through flow equalization, aeration, clarifiers, fixed media filters, UV, and post aeration.

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

The applicant has complied with Act 14 Notifications and no comments were received.

Draft Permit issuance is recommended.

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.

Approve	Deny	Signatures	Date
X		Jordan T Coldsmith Jordan Coldsmith / Environmental Engineering Specialist	November 12, 2024
X		Mahbuba Iasmin Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineering Manager	November 21, 2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.036
Latitude	39º 57' 19.96"	Longitude	-80º 18' 24.12"
Quad Name	Rogersville	Quad Code	39080H3
Wastewater Description:	Sewage Effluent		

Receiving Waters	Browns Creek (HQ-WWF)	Stream Code	40492
NHD Com ID	99414950	RMI	8.51
Drainage Area	6.88	Yield (cfs/mi^2)	0.01
Q_{7-10} Flow (cfs)	0.0913	Q_{7-10} Basis	USGS StreamStat
Elevation (ft)	1264	Slope (ft/ft)	-
Watershed No.	19-B	Chapter 93 Class.	HQ-WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	CAUSE UNKNOWN, FLOW REGIME MODIFICATION, SILTATION, SILTATION		
Source(s) of Impairment	CHANNELIZATION, HIGHWAY/ROAD/BRIDGE RUNOFF (NON-CONSTRUCTION RELATED), REMOVAL OF RIPARIAN VEGETATION, STREAMBANK MODIFICATIONS/DESTABILIZATION		
TMDL Status	**none**	Name	

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

Nearest Downstream Public Water Supply Intake	SOUTHWESTERN PA WATER WAYNESBG		
PWS Waters	Browns Creek (HQ-WWF)	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	8.49

Changes Since Last Permit Issuance: None

Other Comments: N/A

Treatment Facility Summary				
Treatment Facility Name: Nineveh STP				
WQM Permit No.	**Issuance Date**			
3013401	10/15/2013			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary With Ammonia Reduction	Activated Sludge	Ultraviolet	0.036
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.036	220	Not Overloaded		

Changes Since Last Permit Issuance: None

Other Comments: The Treatment facility consists of:

- One flow equalization tank
- Six aeration tanks
- Two Clarifiers
- Two fixed media filter tanks
- One UV disinfection tank
- One post aeration tank

Compliance History

Operations Compliance Check Summary Report

Facility: NINEVEH STP

NPDES Permit No.: PA0254681

Compliance Review Period: 11/1/19-11/15/24

Inspection Summary:

INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC
09/30/2021	Compliance Evaluation	PA Dept of Environmental Protection	No Violations Noted

Violation Summary:

No violations noted during review period

Open Violations by Client ID:

No open violations for Client ID 110717

Enforcement Summary:

No enforcements executed during review period

Effluent Violation Summary:

No effluent violations indicated on eDMRs during the review period

Compliance Status: Facility is in compliance with no open violations or pending enforcements.

Completed by: Amanda Illar **Completed date:** 11/15/24

Compliance History

DMR Data for Outfall 001 (from October 1, 2023 to September 30, 2024)

Parameter	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23
Flow (MGD) Average Monthly	0.0158	0.0145	0.0121	0.0127	0.0187	0.0368	0.0316	0.0297	0.03238	0.0184	0.0187	0.023
Flow (MGD) Daily Maximum	0.0197	0.0205	0.032	0.0226	0.0232	0.0786	0.0442	0.0359	0.0715	0.0292	0.0388	0.129
pH (S.U.) Instantaneous Minimum	8.1	8.3	8.3	8.4	8.1	8.0	7.4	7.5	7.8	8.0	7.8	7.9
pH (S.U.) Instantaneous Maximum	8.1	8.3	8.3	8.5	8.1	8.0	7.9	7.6	8	8.4	7.9	7.9
DO (mg/L) Instantaneous Minimum	8.5	8.5	8.6	8.4	8.7	8.9	8.9	8.8	8.9	8.9	8.6	8.9
CBOD5 (lbs/day) Average Monthly	0.92	0.25	0.27	0.56	0.67	1.78	0.87	1	< 0.54	0.48	< 0.43	0.59
CBOD5 (mg/L) Average Monthly	7.0	2.1	2.68	5.3	4.3	5.8	3.3	4.6	< 2.0	3.1	< 2.75	3.1
CBOD5 (mg/L) Instantaneous Maximum	7.0	2.1	2.95	6.5	5.7	5.9	3.5	5.5	< 2.0	3.2	3.5	3.3
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	9	9	5	10	< 48.0	18	22	27	18	13	13	11
BOD5 (mg/L) Raw Sewage Influent Average Monthly	75	75	75	75	278	75	77	107	75	79	97	86
TSS (lbs/day) Average Monthly	0.38	0.54	0.6	0.55	1.0	2.85	2.3	2	2.16	1.38	1.25	1.32
TSS (lbs/day) Raw Sewage Influent Average Monthly	6	24	3	7	13	10	12	12	18	10	11	10
TSS (mg/L) Average Monthly	2.9	4.5	5.9	5.2	6.4	9.3	8.8	9.3	8.0	9.0	8.0	6.8

TSS (mg/L) Raw Sewage Influent Average Monthly	51	174	43	56	82	44	44	46	75	58	79	85
TSS (mg/L) Instantaneous Maximum	3.5	5.5	6.8	6.5	9.0	10.0	10.0	10.0	8.0	9.0	8.5	7.0
Fecal Coliform (No./100 ml) Geometric Mean	30	11	27	< 25	< 2	76	73	189	< 3.7	1.0	366.03	11.8
Fecal Coliform (No./100 ml) Instantaneous Maximum	178	118.6	114.6	195.6	5.2	195.6	143.9	198.9	6.3	1.0	411	14.6
UV Transmittance (%) Daily Minimum	82.6	64.9	73.5	69.5	72.4	62.9	70	71.5	66.2	70.8	71	66.2
Total Nitrogen (mg/L) Daily Maximum										16		
Ammonia (lbs/day) Average Monthly	0.1	0.1	0.12	0.16	0.31	2.5	0.13	0.08	< 0.1	< 0.03	< 0.08	0.04
Ammonia (mg/L) Average Monthly	0.79	0.78	1.23	< 1.5	< 2.0	8.18	0.51	0.31	< 0.38	< 0.2	< 0.5	< 2.0
Ammonia (mg/L) Instantaneous Maximum	0.82	0.9	1.97	2.1	< 3.8	9.13	0.77	0.33	0.56	< 0.2	0.8	< 2.0
Total Phosphorus (mg/L) Daily Maximum										0.92		

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .036
Latitude 39º 57' 20.00" **Longitude** -80º 18' 24.00"
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)

Water Quality-Based Limitations

The discharge was evaluated using WQM7.0 to determine the $CBOD_5$, ammonia nitrogen, and dissolved oxygen parameters. The model results show less restrictive limits for ammonia-nitrogen, CBOD5 and DO.

To comply with anti-backsliding regulations, the previous, more restrictive limits will again be imposed for Ammonia-Nitrogen for the facility.

Parameter	Limit (mg/l)	SBC	Model
DO	4	Inst Min.	WQM 7
Ammonia-Nitrogen (May 1 – Oct 31)	4.88 9.76	Average Monthly IMAX	WQM 7
Ammonia-Nitrogen (Nov 1 – Apr 30)	13.13 26.26	Average Monthly IMAX	WQM 7
$CBOD_5$	25.0 50.0	Average Monthly IMAX	WQM 7

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 permit limits and/or monitoring requirements have been relaxed in this permit cycle.

Additional Considerations

Sewage discharges will include monitoring, at a minimum, for *E. Coli*, in new and reissued permits, with a monitoring frequency of 1/year for facilities with design flows of 0.002 – 0.05 MGD.

An annual sampling frequency for total phosphorus and total nitrogen will again be imposed per 25 PA Code §92a.61.

Nineveh STP is an existing facility and is not expanding. Therefore, anti-degradation requirements are not evaluated during this permit cycle.

Per DEP SOP New and Reissuance Sewage Individual NPDES Permit Applications SOP No. BCW-PMT-002, that for POTWs with design flows greater than 2,000 GPD, non-municipal sewage facilities, and other non-municipal sewage facilities where justified influent BOD5 and TSS monitoring in the permit using the same frequency and sample type as is used for effluent will be established. The department finds it appropriate to again impose influent BOD5 and TSS monitoring for this facility,

Per DEP SOP New and Reissuance Sewage Individual NPDES Permit Applications SOP No. BCW-PMT-002, For POTWs, mass loading limits will be established for CBOD5, TSS, NH3-N, and where necessary Total P and Total N. In general, average monthly mass loading limits will be established for CBOD5, TSS, NH3-N, and where necessary Total P and Total N, and average weekly mass loading limits will be established for CBOD5 and TSS. The department finds it appropriate to again impose mass-loading limits for CBOD5, TSS, and Ammonia-Nitrogen.

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	Daily Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	6.0 Inst Min	XXX	XXX	XXX	1/day	Grab
CBOD5 Nov 1 - Apr 30	6.0	XXX	XXX	20.0	XXX	40.0	2/month	Grab
CBOD5 May 1 - Oct 31	3.0	XXX	XXX	10.0	XXX	20.0	2/month	Grab
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab
TSS	3.0	XXX	XXX	10.0	XXX	20.0	2/month	Grab
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
UV Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured

Outfall 001, Continued (from 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	Daily Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Nitrogen	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
Ammonia-Nitrogen Nov 1 - Apr 30	2.7	XXX	XXX	9.0	XXX	18.0	2/month	Grab
Ammonia-Nitrogen May 1 - Oct 31	0.9	XXX	XXX	3.0	XXX	6.0	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab

Compliance Sampling Location: Outfall 001

Other Comments: None

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Attachment 1
Upstream USGS StreamStat

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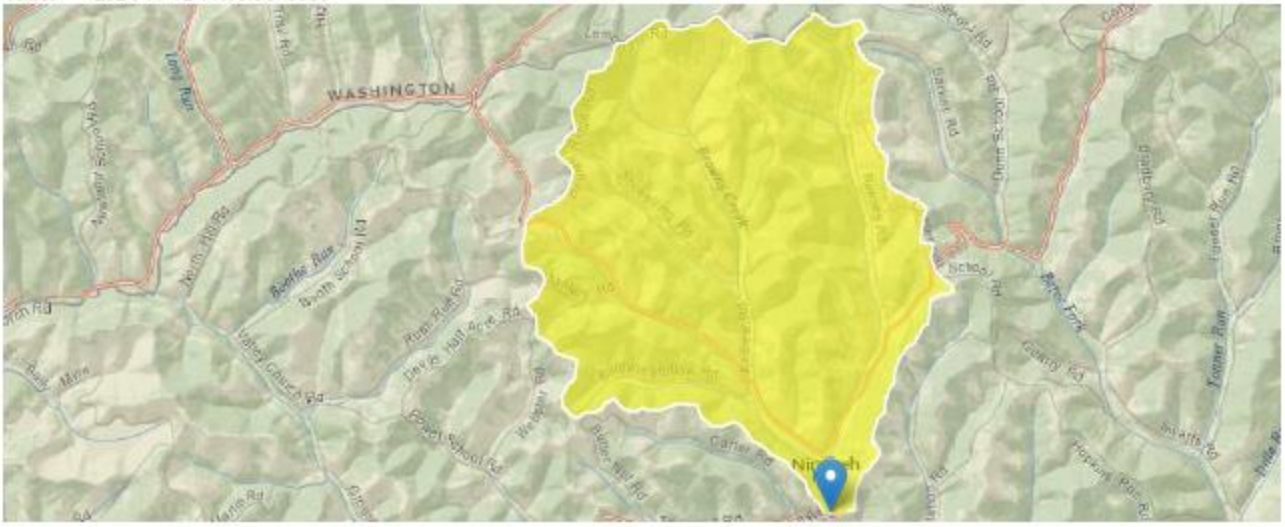
StreamStats Report

Region ID: PA
Workspace ID: PA20241112161606671000
Clicked Point (Latitude, Longitude): 39.95554, -80.30675
Time: 2024-11-12 11:16:35 -0500



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	6.88	square miles
ELEV	Mean Basin Elevation	1264	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	6.88	square miles	2.26	1400
ELEV	Mean Basin Elevation	1264	feet	1050	2580

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

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.264	ft^3/s	43	43
30 Day 2 Year Low Flow	0.467	ft^3/s	38	38
7 Day 10 Year Low Flow	0.0913	ft^3/s	66	66
30 Day 10 Year Low Flow	0.17	ft^3/s	54	54
90 Day 10 Year Low Flow	0.32	ft^3/s	41	41

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Attachment 2
Downstream USGS StreamStat

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StreamStats Report

Region ID: PA
Workspace ID: PA20241112194335824000
Clicked Point (Latitude, Longitude): 39.94752, -80.29240
Time: 2024-11-12 14:43:59 -0500

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	10.1	square miles
ELEV	Mean Basin Elevation	1254	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	10.1	square miles	2.26	1400
ELEV	Mean Basin Elevation	1254	feet	1050	2580

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

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.406	ft^3/s	43	43
30 Day 2 Year Low Flow	0.705	ft^3/s	38	38
7 Day 10 Year Low Flow	0.146	ft^3/s	66	66
30 Day 10 Year Low Flow	0.264	ft^3/s	54	54
90 Day 10 Year Low Flow	0.487	ft^3/s	41	41

Low-Flow Statistics Citations

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Attachment 3
Summer WQM7 Results

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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
19B	40492	BROWNS CREEK	**8.510**	1264.00	6.88	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	0.010	0.09	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
Nineveh STP	PA0254681	0.0360	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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
19B	40492	BROWNS CREEK

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												
8.510	0.09	0.00	0.09	.0557	0.00189	.398	8.53	21.44	0.04	1.410	23.11	7.00
Q1-10 Flow												
8.510	0.06	0.00	0.06	.0557	0.00189	NA	NA	NA	0.04	1.625	22.56	7.00
Q30-10 Flow												
8.510	0.12	0.00	0.12	.0557	0.00189	NA	NA	NA	0.05	1.260	23.45	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		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19B	40492	BROWNS CREEK

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
8.510	Nineveh STP	13.56	27.78	13.56	27.78	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
8.510	Nineveh STP	1.51	4.88	1.51	4.88	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)		
8.51	Nineveh STP	25	25	4.88	4.88	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19B	40492	BROWNS CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
8.510	0.036	23.106	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
8.528	0.398	21.442	0.043
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
10.71	1.011	1.85	0.889
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.635	15.699	Owens	5
Reach Travel Time (days)			
1.410			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.141	9.09	1.63	7.09
0.282	7.71	1.44	7.33
0.423	6.54	1.27	7.52
0.564	5.55	1.12	7.68
0.705	4.71	0.99	7.79
0.846	3.99	0.87	7.79
0.987	3.39	0.77	7.79
1.128	2.87	0.68	7.79
1.269	2.44	0.60	7.79
1.410	2.07	0.53	7.79

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19B	40492	BROWNS CREEK

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)
8.510	Nineveh STP	PA0254681	0.036	CBOD5	25		
				NH3-N	4.88	9.76	
				Dissolved Oxygen			4

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Department of
Environmental Protection

Attachment 4
Winter WQM7 Results

Pennsylvania
Department of
Environmental Protection

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
19B	40492	BROWNS CREEK	8.510	1264.00	6.88	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	0.020	0.09	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
Nineveh STP	PA0254681	0.0360	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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
19B	40492	BROWNS CREEK

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												
8.510	0.09	0.00	0.09	.0557	0.00189	.398	8.53	21.44	0.04	1.410	8.79	7.00
Q1-10 Flow												
8.510	0.06	0.00	0.06	.0557	0.00189	NA	NA	NA	0.04	1.625	9.88	7.00
Q30-10 Flow												
8.510	0.12	0.00	0.12	.0557	0.00189	NA	NA	NA	0.05	1.260	8.10	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		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19B	40492	BROWNS CREEK

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
8.510	Nineveh STP	24.1	49.39	24.1	49.39	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
8.510	Nineveh STP	4.07	13.13	4.07	13.13	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)		
8.51	Nineveh STP	25	25	13.13	13.13	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19B	40492	BROWNS CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
8.510	0.036	8.789	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
8.528	0.398	21.442	0.043
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
10.71	1.194	4.97	0.295
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
9.286	11.179	Owens	5
Reach Travel Time (days)			
1.410			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.141	9.69	4.77	9.88
0.282	8.76	4.58	10.10
0.423	7.92	4.39	10.23
0.564	7.16	4.21	10.33
0.705	6.48	4.04	10.42
0.846	5.86	3.87	10.43
0.987	5.30	3.72	10.43
1.128	4.79	3.56	10.43
1.269	4.33	3.42	10.43
1.410	3.92	3.28	10.43

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19B	40492	BROWNS CREEK

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)
8.510	Nineveh STP	PA0254681	0.036	CBOD5	25		
				NH3-N	13.13	26.26	
				Dissolved Oxygen			4