pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0114758**
Facility Type	**Non-Municipal**	APS ID	**1046525**
Major / Minor	**Minor**	Authorization ID	**1366921**

Applicant and Facility Information

Applicant Name	**GSP Management Co.**	Facility Name	**Bucknell View MHP**
Applicant Address	PO Box 677	Facility Address	PA Route 405
	Morgantown, PA 19543-0677		Milton, PA 17847, Regional Manager
Applicant Contact	Frank Perano, COO	Facility Contact	Leanne Miller
Applicant Phone	(610) 286-0490	Facility Phone	(717) 577-6240
Client ID	33789	Site ID	240925
Ch 94 Load Status	Not Overloaded	Municipality	West Chillisquaque Township
Connection Status	**N/A**	County	Northumberland
Date Application Received	August 23, 2021	EPA Waived?	Yes
Date Application Accepted	August 30, 2021	If No, Reason	

Purpose of Application: Renewal of a NPDES permit

Summary of Review

The subject facility is a sewage treatment plant serving a mobile home park in West Chillisquaque Township, Northumberland County. A map indicating the discharge location is attached (Attachment A).

Sludge use and disposal description and location(s): Per the application the facility's sludge is sent to other WWTPs for further processing in the past year and approximately 0.9 tons of sludge were disposed in the previous year.

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		Keith C. Allison Keith C. Allison / Project Manager	December 2, 2021
X		Nicholas W. Hartranft Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	December 3, 2021

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.0186
Latitude	40º 57' 26.33"	Longitude	-76º 52' 32.73"
Quad Name	Northumberland, PA	Quad Code	1131
Wastewater Description:	Sewage Effluent		
Receiving Waters	West Branch Susquehanna River (WWF, MF)	Stream Code	18668
NHD Com ID	66920535	RMI	7.13
Drainage Area	6848 mi^2	Yield (cfs/mi^2)	0.122
Q_{7-10} Flow (cfs)	838	Q_{7-10} Basis	USGS Gage 01553500, West Branch Susquehanna R. @ Lewisburg
Elevation (ft)	433	Slope (ft/ft)	0.00015
Watershed No.	10-C	Chapter 93 Class.	WWF, MF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	POLYCHLORINATED BIPHENYLS (PCBS)		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Final	Name	West Branch Susquehanna
Nearest Downstream Public Water Supply Intake	Sunbury Municipal Authority		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	1740
PWS RMI	124	Distance from Outfall (mi)	Approx. 8

Changes Since Last Permit Issuance: The above stream and drainage characteristics were determined in the previous review and remain adequate.

Other Comments: The discharge is not expected to be contributing to the impairment to the River by PCBs. The TMDL for the West Branch addresses AMD impairment upstream and this discharge is not identified as a contributor to the impairment in the TMDL.

The discharge is not expected to affect any downstream water supply at this time with the limitations and monitoring proposed.

Treatment Facility Summary				
Treatment Facility Name: Bucknell View Mobile Home Park				
WQM Permit No.	**Issuance Date**			
4992401	06/09/1992			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Extended Aeration	Hypochlorite	0.0186
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.0186	38.7	Not Overloaded	Aerated Digestor	Other WWTP

Changes Since Last Permit Issuance: None

Other Comments: The treatment facility consists of an influent pump station, comminutor, equalization tank, two aeration tanks, clarifier, sodium hypochlorite feed, chlorine contact tank, dechlorination, and aerated sludge digester.

Compliance History

DMR Data for Outfall 001 (from October 1, 2020 to September 30, 2021)

Parameter	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20
Flow (MGD) Average Monthly	0.0083	0.0061	0.0061	0.005	0.0047	0.0053	0.0045	0.0038	0.0032	0.004	0.00341	0.0036
pH (S.U.) Minimum	7.1	7.1	7.1	7.1	7.0	7.1	7.1	7.1	7.2	7.1	7.2	7.1
pH (S.U.) Maximum	7.5	7.3	7.3	7.3	7.5	7.3	7.4	7.5	7.7	7.7	7.7	7.6
DO (mg/L) Minimum	2.2	3.0	2.4	4.5	2.3	2.9	5.5	5.5	5.8	7.7	8.3	7.0
TRC (mg/L) Average Monthly	< 0.02	< 0.03	0.04	< 0.1	< 0.01	< 0.02	0.02	0.01	< 0.01	< 0.01	< 0.01	< 0.01
TRC (mg/L) Instantaneous Maximum	0.05	0.13	0.43	0.38	0.05	0.07	0.09	0.03	0.05	0.04	0.02	0.02
CBOD5 (mg/L) Average Monthly	< 3	6.0	3	8	< 3	6	5	9.07	< 3.0	< 3.0	< 3.0	< 3.0
TSS (mg/L) Average Monthly	< 5	< 5.0	< 5	< 5	< 5	7	11	8.5	7.0	5.0	4.0	12
Fecal Coliform (CFU/100 ml) Geometric Mean	1	44	28	41	88	5	16	50	< 1.0	< 19.0	< 1.0	< 4
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	2	219	86	61	1553	7	1986	613	< 1.0	378.4	< 1.0	16
Ammonia (mg/L) Average Monthly	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 1	< 0.1	< 0.1	< 0.1	< 0.1

Compliance History, Cont'd

Effluent Violations for Outfall 001, from: October 1, 2020 to September 30, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	05/31/21	IMAX	1553	CFU/100 ml	1000	CFU/100 ml

Compliance History, Cont'd	
Summary of Inspections:	The facility has been inspected at least annually by the Department during the past permit term, most recently on March 30, 2021. This inspection identified no violations at the time of inspections.
Other Comments:	A WMS query found the open violations listed below in eFACTS for GSP Management Co.

Open Violations for GSP Management Co.

FACILITY	INSP_PROGRAM	PROGRAM SPECIFIC_ID	VIOLATION DATE	VIOLATION	REGION
MOUNTAIN VIEW TERRACE	Safe Drinking Water	7670025	11/17/2021	FAILURE OF A PUBLIC WATER SYSTEM TO OBTAIN A PERMIT	SCRO
MOUNTAIN VIEW TERRACE	Safe Drinking Water	7670025	11/17/2021	FAILURE TO MEET DESIGN AND CONSTRUCTION STANDARDS	SCRO
MOUNTAIN VIEW TERRACE	Safe Drinking Water	7670025	11/17/2021	FAILURE TO OPERATE AND MAINTAIN THE WATER SYSTEM	SCRO
MOUNTAIN VIEW TERRACE	Safe Drinking Water	7670025	11/17/2021	FAILURE OF AN OWNER TO ENSURE THAT PROCESS CONTROL DECISIONS ARE MADE BY AN AVAILABLE OPERATOR	SCRO
SHADYBACK ACRES MHP	WPC NPDES	PA0087696	6/11/2020	NPDES - Failure to properly operate and maintain all facilities which are installed or used by the permittee to achieve compliance	SCRO
SHADYBACK ACRES MHP	WPC NPDES	PA0087696	10/27/2021	NPDES - Violation of Part C permit condition(s)	SCRO

Existing Effluent Limitations and Monitoring Requirements								
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	XXX	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	9.0	XXX	1/day	Grab
DO	XXX	XXX	Report	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Total Nitrogen	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Ammonia	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Phosphorus	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.0186
Latitude 40º 57' 30.50" **Longitude** -76º 52' 20.00"
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 above limits are applicable and are included in the existing permit.

Water Quality-Based Limitations

DO, CBOD5 and NH3-N

The WQM7.0 model allows the Department to evaluate point source discharges of dissolved oxygen (DO), carbonaceous BOD ($CBOD_5$), and ammonia-nitrogen (NH_3-N) into free-flowing streams and rivers. To accomplish this, the model simulates two basic processes: the mixing and degradation of NH_3-N in the stream and the mixing and consumption of DO in the stream due to the degradation of $CBOD_5$ and NH_3-N. Although significant dilution is available in the River (at a ratio of ~45,000:1 at low flow conditions) WQM7.0 modeling was performed at this time because it was not performed for the previous reviews. The modeling shows that the existing limitations are adequate to protect the receiving stream.

Total Residual Chlorine

The Department uses a modeling spreadsheet to analyze the toxicity of a discharge's TRC in a receiving stream, accounting for available dilution. TRC modeling was performed at this time because it had not been performed in the previous reviews. The modeling shows that the existing BAT limit of 0.5 mg/L is adequate to protect the receiving stream.

Chesapeake Bay/Nutrient Requirements

According to the Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, this facility is an existing Phase 5 Chesapeake Bay sewage discharger that is not expanding, and therefore requires no nutrient loading limits but does require Total Nitrogen and Total Phosphorus monitoring. Annual nutrient monitoring was included in the current permit consistent with the Phase III Watershed Implementation Plan. The results of this monitoring from the eDMR system found the Total Nitrogen to average 24.6 mg/L and the Total Phosphorus to Average 2.6 mg/L. Because nutrient has been performed during the past permit term to characterize the discharge's nutrient load, no further monitoring for nutrients will be required in the proposed permit.

Toxics Management

No further "Reasonable Potential Analysis" was performed for this minor sewage facility with no industrial users to determine additional parameters as possible candidates for limitations or monitoring.

Best Professional Judgment (BPJ) Limitations

Comments: None needed beyond the limitations mentioned above.

Anti-Backsliding

No proposed limitations have been made less stringent consistent with the anti-backsliding provisions of the Clean Water Act and 40 CFR 122.44(l).

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" (362-0400-001), 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	XXX	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	9.0	XXX	1/day	Grab
DO	XXX	XXX	Report	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
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
Ammonia	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

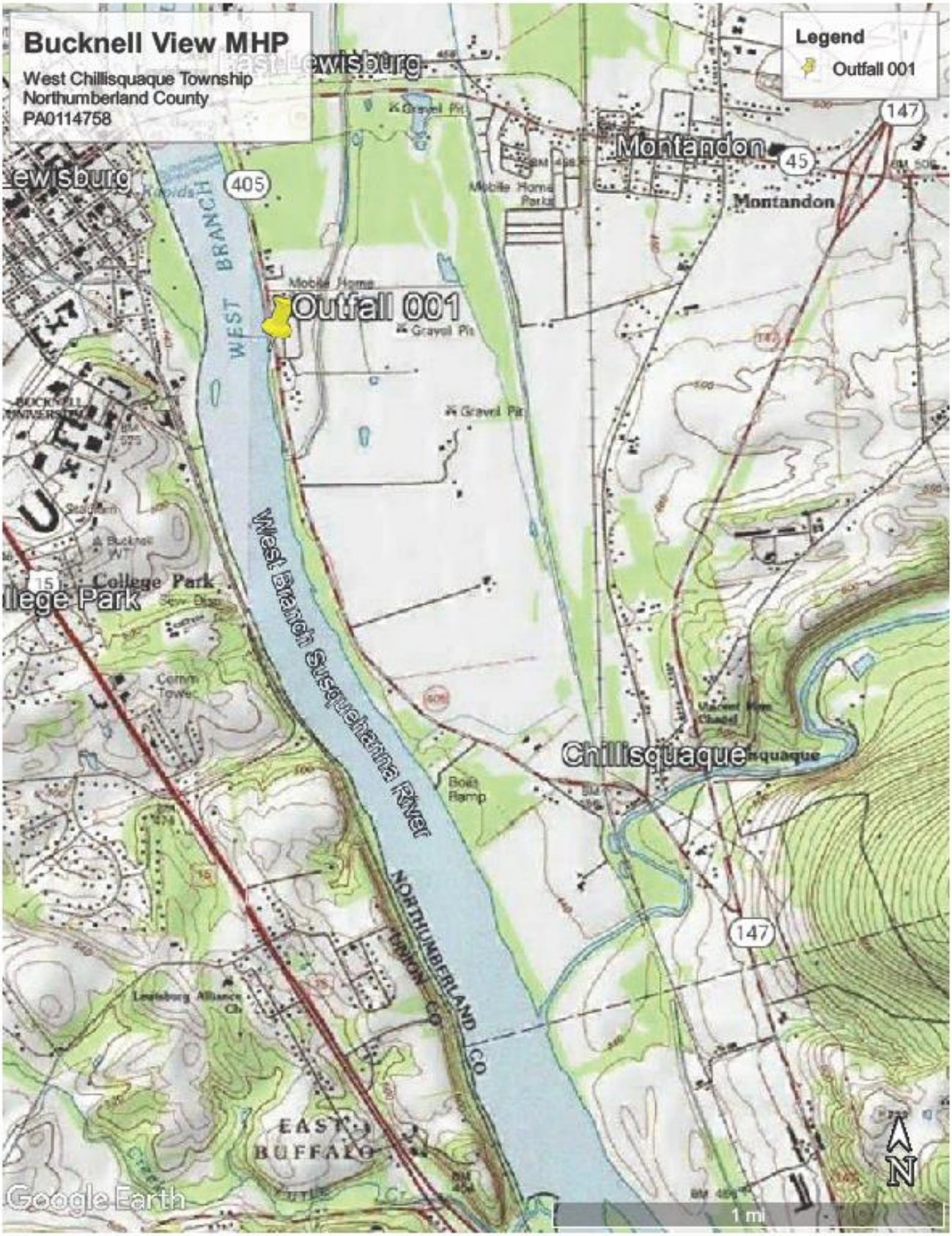
Compliance Sampling Location: Outfall 001

Other Comments: The above limitations and monitoring are unchanged from the existing permit expect for the removal of annual Total Nitrogen and Total Phosphorus monitoring are mentioned above. Consistent with recent changes to Chapter 93 of the Department's regulations and current Department policy E. Coli monitoring has now been included.

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☐	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment **C**)
☐	Temperature Model Spreadsheet (see Attachment)
☒	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☒	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☒	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 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, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 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, 391-2000-022, 3/1999.
☒	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: Establishing Effluent Limitations for Individual Sewage Permits, rev. 3/24/21
☐	Other:

Attachments:

A. Discharge Location Map
B. WQM7.0 Model
C. TRC Model


Bucknell View MHP
West Chillisquaque Township
Northumberland County
PA0114758
Legend
Outfall 001
Outfall 001
Lewisburg
Montandon
Montandon
Chillisquaque
College Park
WEST BRANCH
West Branch Susquehanna River
NORTHUMBERLAND CO
UNION CO
EAST BUFFALO
147
45
405
Gravel Pit
Mobile Home Park
Boat Ramp
Google Earth
1 mi
N

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
10D	18668	WEST BRANCH SUSQUEHANNA RI	**7.130**	433.00	6848.00	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	0.122	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	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
Bucknell View	PA0114758	0.0186	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

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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
10D	18668	WEST BRANCH SUSQUEHANNA RI	4.560	431.00	7000.00	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	0.122	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	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 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
10D	18668	WEST BRANCH SUSQUEHANNA 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												
7.130	835.46	0.00	835.46	.0288	0.00015	1.166	629.73	539.87	1.14	0.138	20.00	7.00
Q1-10 Flow												
7.130	534.69	0.00	534.69	.0288	0.00015	NA	NA	NA	0.89	0.177	20.00	7.00
Q30-10 Flow												
7.130	1136.22	0.00	1136.22	.0288	0.00015	NA	NA	NA	1.35	0.116	20.00	7.00

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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 D.O.Simulation

SWP Basin	Stream Code	Stream Name
10D	18668	WEST BRANCH SUSQUEHANNA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
7.130	0.019	20.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
629.727	1.166	539.873	1.137
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.00	0.001	0.00	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.243	0.782	Tsivoglou	5
Reach Travel Time (days)			
0.138			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.014	2.00	0.00	8.24
0.028	2.00	0.00	8.24
0.041	2.00	0.00	8.24
0.055	2.00	0.00	8.24
0.069	2.00	0.00	8.24
0.083	2.00	0.00	8.24
0.097	2.00	0.00	8.24
0.110	2.00	0.00	8.24
0.124	2.00	0.00	8.24
0.138	2.00	0.00	8.24

Permit No. PA0114758

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
10D	18668	WEST BRANCH SUSQUEHANNA 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
7.130	Bucknell View	16.76	50	16.76	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
7.130	Bucknell View	1.89	25	1.89	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)		
7.13	Bucknell View	25	25	25	25	3	3	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
10D	18668	WEST BRANCH SUSQUEHANNA 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)
7.130	Bucknell View	PA0114758	0.019	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

Permit No. PA0114758

TRC_CALC

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

838	= Q stream (cfs)	0.5	= CV Daily
0.0186	= 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 =	9290.355	1.3.2.iii	WLA cfc =	9057.361
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	3461.808	5.1d	LTA_cfc =	5265.525

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)