pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0208647**
Facility Type	**Municipal**	APS ID	**1041023**
Major / Minor	**Minor**	Authorization ID	**1358116**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Kratzer Run Sewer Authority**	Facility Name	**Kratzer Run Sewer Authority WWTP**
Applicant Address	PO Box 253	Facility Address	1265 Stronach Road
	Grampian, PA 16838-0253		Grampian, PA 16838-7911
Applicant Contact	Betty Jo Sutika, Secretary	Facility Contact	Betty Jo Sutika, Secretary
Applicant Phone	(814) 236-8346	Facility Phone	(814) 236-8346
Client ID	159928	Site ID	482999
Ch 94 Load Status	Not Overloaded	Municipality	Penn Township
Connection Status	No Limitations	County	Clearfield
Date Application Received	June 8, 2021	EPA Waived?	No
Date Application Accepted	June 21, 2021	If No, Reason	Discharge with Wasteload Allocation in a EPA-approved TMDL
Purpose of Application	Renewal of NPDES Permit		

Summary of Review

The subject facility is a municipal sewage treatment plant serving Grampian Borough and Penn Township in Clearfield County. A map indicating the discharge location is attached (Attachment A).

Sludge use and disposal description and location(s): The facility's dried sludge is disposed by landfill.

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
✓		*Keith C. Allison* Keith C. Allison / Project Manager	October 21, 2021
✓		*Nicholas W. Hartranft* Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	October 22, 2021

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.08
Latitude	40º 58' 2.67"	Longitude	-78º 35' 12.20"
Quad Name	Curwensville, PA	Quad Code	1117
Wastewater Description:	Sewage Effluent		
Receiving Waters	Kratzer Run (CWF)	Stream Code	26659
NHD Com ID	61831557	RMI	2.6
Drainage Area	5.77 mi^2	Yield (cfs/mi^2)	0.0886
Q_{7-10} Flow (cfs)	0.54	Q_{7-10} Basis	USGS Gage 01541000, W. Branch Susquehanna River at Bower, PA (1915-2008)
Elevation (ft)	1480	Slope (ft/ft)	0.2178
Watershed No.	8-B	Chapter 93 Class.	CWF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	METALS, NUTRIENTS, PH		
Source(s) of Impairment	ACID MINE DRAINAGE, ACID MINE DRAINAGE, ON-SITE TREATMENT SYSTEMS (SEPTIC SYSTEMS AND SIMILAR DECENTRALIZED SYSTEMS)		
TMDL Status	Final	Name	Anderson Creek
Nearest Downstream Public Water Supply Intake	PA-American Water Company at Milton, PA		
PWS Waters	West Branch Susquehanna River	Distance from Outfall (mi)	Approx. 153

Changes Since Last Permit Issuance: None. The above discharge and drainage characteristics are from the previous review and remain adequate.

Other Comments:

The above-listed Anderson Creek TMDL is primarily for pH and metals from Abandoned Mine Drainage (AMD) but also includes nutrient impairment for the Kratzer Run sub-watershed. This facility was included as a source of pollution and has received a wasteload allocation for phosphorus in an amendment to the TMDL in 2014 of 1.34 lbs/day and 487.35 lbs/year from a concentration of 2.0 mg/L. The daily waste load allocation of 1.34 lbs/day from the TMDL will be included at this time in addition to the concentration and annual load limits already included.

Due to the AMD-related impairments monitoring was included in the previous permit for the metals typically associated with AMD – Aluminum, Iron, and Manganese. This monitoring for the past permit term found the levels for all three of these parameters to be below their respective instream criteria and therefore, the monitor will not continue at this time. It is noted that the facility also meets its pH limits. Per the TMDL, Kratzer Run is meeting criteria related to AMD near the discharge point (site KR2).

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: Kratzer Run Sewer Authority WWTP

WQM Permit No.	Issuance Date
1793407	May 2, 1994

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	UV	0.08

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.08	167	Not Overloaded	Aerobic Digestion	Landfill

Changes Since Last Permit Issuance: UV disinfection was installed during the past permit term without permit approval.

Other Comments: The treatment plant consists of a comminutor, bar screen, 13,200-gallon aerated equalization tank, two 40,000-gallon aeration tanks, one 7,500-gallon clarifier, UV disinfection, aerobic digester and sludge drying beds. Per the application the permittee retains the capability to disinfect with sodium hypochlorite.

Compliance History

DMR Data for Outfall 001 (from September 1, 2020 to August 31, 2021)

Parameter	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20
Flow (MGD) Average Monthly	0.0309	0.0299	0.0237	0.029	0.0273	0.0362	0.0258	0.0263	0.0265	0.0233	0.019	0.018
Flow (MGD) Daily Maximum	0.0667	0.0537	0.0368	0.0399	0.0357	0.0453	0.0648	0.0488	0.0550	0.0452	0.0359	0.0249
pH (S.U.) Minimum	6.9	6.9	6.9	6.9	6.7	6.7	6.8	6.9	6.7	7.0	6.6	6.5
pH (S.U.) Maximum	7.2	7.2	7.3	7.2	7.2	7.2	7.1	7.3	7.4	7.4	7.3	7.5
DO (mg/L) Minimum	3.6	3.5	3.4	3.4	3.4	3.6	3.4	3.3	3.3	3.2	3.2	3.2
TRC (mg/L) Average Monthly	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
TRC (mg/L) Instantaneous Maximum	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
CBOD5 (lbs/day) Average Monthly	< 0.5	< 0.7	< 0.5	1.0	0.7	0.8	1.0	1.0	1.0	1.0	0.5	0.3
CBOD5 (lbs/day) Weekly Average	0.5	1.0	0.8	2.7	0.6	1.5	1.6	2.3	1.5	1.4	0.8	0.4
CBOD5 (mg/L) Average Monthly	< 2	< 3	< 3	< 3	2	< 2	6	5	7	5	4	< 2
CBOD5 (mg/L) Weekly Average	2	4	5	7	3	3	8	12	5	7	6	3
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	16	11	17	15	34	27	23	22	23	20	18	11
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	24	13	24	18	73	44	29	32	30	22	23	14
BOD5 (mg/L) Raw Sewage Influent Average Monthly	72	49	92	65	134	94	136	103	109	106	118	77
TSS (lbs/day) Average Monthly	< 0.7	< 0.6	< 0.7	< 1.5	0.7	1.7	2.3	1.9	3.4	2.1	0.6	0.6
TSS (lbs/day) Raw Sewage Influent Average Monthly	20	10	12	16	16	30	12	21	28	18	15	11

TSS (lbs/day) Raw Sewage Influent Daily Maximum	27	14	16	28	27	47	19	28	34	23	21	15
TSS (lbs/day) Weekly Average	0.8	0.8	1.2	4.2	1.0	4.1	3.9	2.1	7.3	4.1	1.1	1.1
TSS (mg/L) Average Monthly	< 3	< 3	< 4	< 5	3	5	13	9	17	11	4	< 4
TSS (mg/L) Raw Sewage Influent Average Monthly	86	45	66	65	67	99	67	94	134	96	98	79
TSS (mg/L) Weekly Average	4	3	6	10	4	12	24	11	33	21	7	8
Fecal Coliform (CFU/100 ml) Geometric Mean	< 1	< 2	< 1	< 1	< 2	< 1	116	< 2	< 7	< 1	29	< 1
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	2	9.6	< 1	< 1	7.4	1	579.4	16	2419.6	5.2	217.8	1
Ammonia (lbs/day) Average Monthly	0.1	0.08	< 0.2	< 0.02	0.02	0.1	0.5	0.8	0.52	0.05	0.07	0.5
Ammonia (mg/L) Average Monthly	0.504	0.364	< 1.154	< 0.1	0.1	0.3	3.06	3.28	2.41	0.84	0.51	0.5
Total Phosphorus (lbs/day) Average Monthly	0.6	0.3	0.3	0.2	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3
Total Phosphorus (mg/L) Average Monthly	2.62	1.33	1.64	1.09	1.33	0.658	2.0	0.87	1.44	1.49	2.01	1.86

Compliance History, Cont'd

Effluent Violations for Outfall 001, from: September 1, 2020 To: August 31, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	9/30/21	Inst. Max	2419.6	CFU/100 ml	1000	CFU/100 ml
Total Phosphorus	08/31/21	Avg Mo	2.62	mg/L	2.0	mg/L
Total Phosphorus	10/31/20	Avg Mo	2.01	mg/L	2.0	mg/L

Compliance History, Cont'd	
Summary of Inspections:	The facility was inspected most recently by the Department on November 12, 2020. This inspection identified violations including failure to obtain WQM permit approval, failure to notify DEP of physical changes, effluent violations, and failure to comply with terms of a WQM permit.
Other Comments:	A query in WMS found the open violations listed below for Kratzer Run Sewer Authority in eFACTS.

Open violations in eFACTS for Kratzer Run Sewer Authority

CLIENT ID	CLIENT	PROGRAM SPECIFIC ID	INSP ID	VIOLATION ID	VIOLATION DATE	VIOLATION CODE	VIOLATION
159928	KRATZER RUN SEW AUTH	PA0208647	3126571	903212	11/12/2020	92A.44	NPDES - Violation of effluent limits in Part A of permit
159928	KRATZER RUN SEW AUTH	PA0208647	3126571	903213	11/12/2020	CSL611	CSL - Failure to comply with terms and conditions of a WQM permit
159928	KRATZER RUN SEW AUTH	PA0208647	3126571	903214	11/12/2020	92A.41(A)12A	NPDES - Failure to notify DEP of planned physical changes to a facility
159928	KRATZER RUN SEW AUTH	PA0208647	3126571	903215	11/12/2020	91.21	CSL - Failure to apply for and/or obtain a WQM permit for the construction of sewage or industrial waste facilities

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	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Max	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	16.7	26.7	XXX	25	40	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS	20.0	30.0	XXX	30	45	60	1/week	8-Hr Composite
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/year	8-Hr Composite
Ammonia Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	10.6	XXX	XXX	16	XXX	32	2/month	8-Hr Composite
Total Phosphorus (lbs/year)	XXX	487.35 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus	Report	XXX	XXX	2.0	XXX	XXX	2/month	8-Hr Composite
Total Aluminum	Report	XXX	XXX	Report	XXX	XXX	1/year	8-Hr Composite
Total Iron	Report	XXX	XXX	Report	XXX	XXX	1/year	8-Hr Composite
Total Manganese	Report	XXX	XXX	Report	XXX	XXX	1/year	8-Hr Composite

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.08
Latitude 40º 58' 2.60" **Longitude** -78º 35' 12.20"
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 limitations are applicable and included in the existing permit. Due to the addition of e. coli bacteria criteria to Chapter 93 of the Department's regulations in 2021, monitoring for e. coli will now be included in the permit.

Water Quality-Based Limitations

CBOD5, NH3-N and DO

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. The facility has an existing water quality-based limitation for ammonia-nitrogen of 16 mg/L as a monthly average.

WQM7.0 modeling was performed at this time (see Attachment B) for the discharge to Kratzer Run and indicated that the existing secondary limits for CBOD5 are adequate to protect the receiving stream but a more stringent May through October Monthly Average limitation for ammonia-nitrogen of 11.94 mg/l will be necessary. The more stringent limitation is due to changes in 2021 to the Department's ammonia-nitrogen criteria in Chapter 93. Based on the data for the facility listed on page 5 of this Fact Sheet, the facility should be capable of meeting the limit. No November through April limit is necessary due to typically higher flows and lower temperatures during this period. The existing DO monitoring will continue.

Disinfection/Total Residual Chlorine

The facility has an existing BAT monthly average limit of 0.5 mg/l with the typical instantaneous maximum limit of 1.6 mg/l. The attached modeling shows that the limit of 0.5 mg/l is adequate to protect the receiving stream. While chlorine is no longer used at the facility TRC monitoring will be included in the draft permit while chlorine is still the only WQM permit-approval disinfection method and the permittee retains the ability to use chlorination.

Due to the actual use of UV disinfection at the facility monitoring will be included in the draft permit for UV Light Intensity. The permittee will be asked to clarify the actual monitoring capabilities for UV in the draft cover letter so that the monitoring can be altered, if necessary.

Toxics Management
No further "Reasonable Potential Analysis" was performed to determine additional parameters of concern for this minor municipal treatment plant with no significant industrial users.

Chesapeake Bay/Nutrient Requirements
As noted above the facility has received Wasteload Allocations for Total Phosphorus under the Anderson Creek TMDL which will be included in the draft permit.

In addition, according to the Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, this facility is considered a Phase 5 Chesapeake Bay sewage discharger, and as such requires no nutrient loading limits. Per the application the Total Nitrogen has averaged 13.2 mg/L and the Total Phosphorus has averaged 1.80 mg/L. Regular Total Phosphorus monitoring will continue due to the existing effluent limitation. The existing annual monitoring for Total Nitrogen will also remain.

Best Professional Judgment (BPJ) Limitations

Comments: No BPJ limits are necessary beyond the technology-based limits noted above.

Anti-Backsliding
No proposed limitations have been made less stringent consistent with the antidegradation requirements of the Clean Water Act and 40 CFR 122.44(I).

Additional Considerations

None

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	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Max	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	16.7	26.7	XXX	25	40	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS	20.0	30.0	XXX	30	45	60	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	Report	XXX	XXX	1/year	8-Hr Composite
Ammonia Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	7.97	XXX	XXX	11.94	XXX	23.88	2/month	8-Hr Composite
Total Phosphorus (lbs/year)	XXX	487.35 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

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	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Phosphorus	Report	1.34 Daily Max	XXX	2.0	XXX	XXX	2/month	8-Hr Composite
e. Coli (No./100 ml)	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	Grab
UV Light Intensity (mW/cm^2)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured

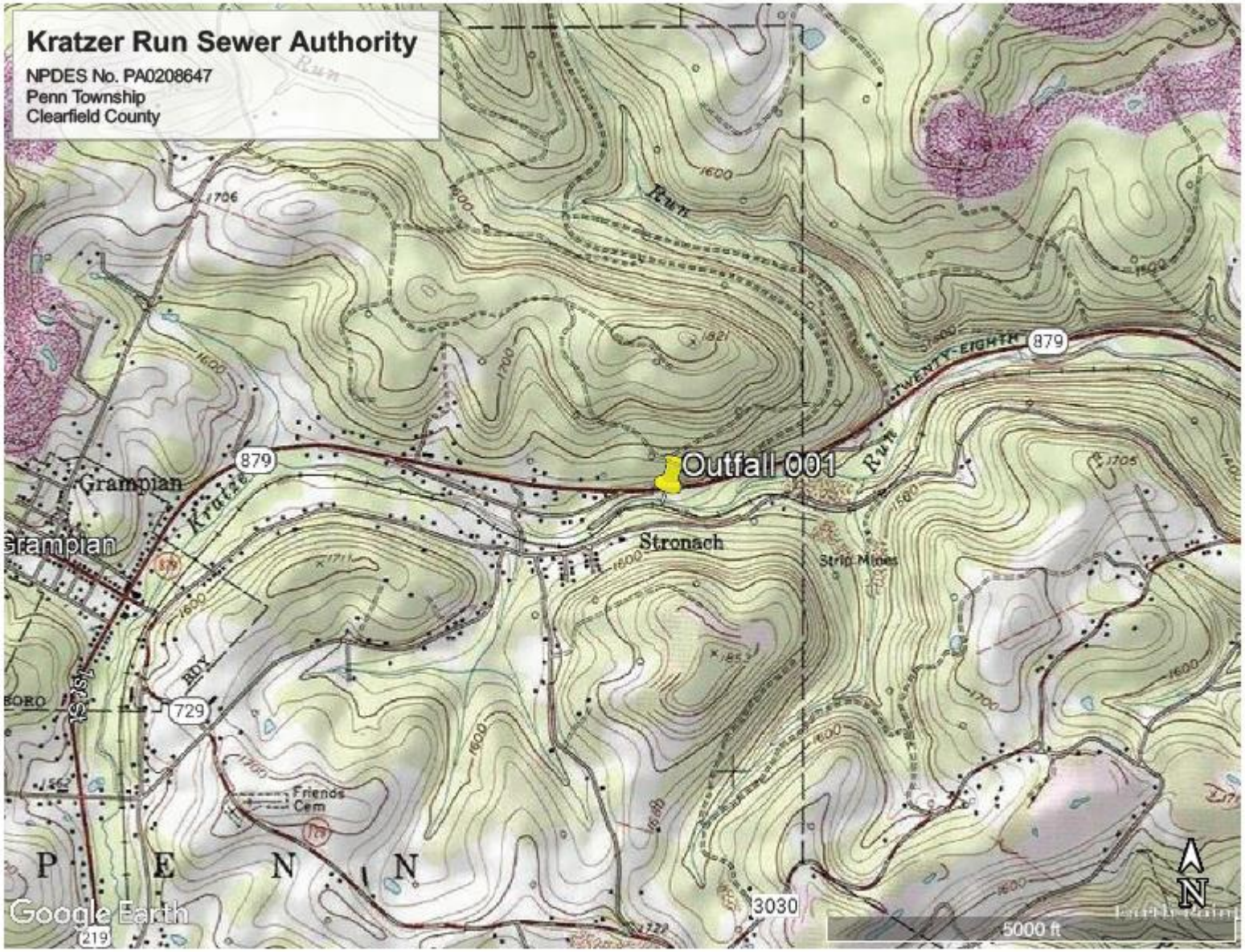
Compliance Sampling Location: Outfall 001

Other Comments: Fecal Coliform monitoring units has been more accurately changed to No./100 ml from CFU/100 ml. Quarterly e. Coli monitoring is now included consistent with Department policy and recent changes to Chapter 93 of the Department's regulations. Monitoring for Total Aluminum, Total iron, and Total Manganese has been removed as noted above. A more stringent ammonia-nitrogen limitation is included as mentioned above.

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


Kratzer Run Sewer Authority
NPDES No. PA0208647
Penn Township
Clearfield County
Outfall 001
Run
TWENTY-EIGHTH
879
Grampian
Stronach
Strip Mines
729
Friends Cem
P E N N
3030
Google Earth
5000 ft
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
08B	26659	KRATZER RUN	2.600	1480.00	5.77	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	0.089	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
Kratzer Run	PA0208647	0.0800	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	16.00	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
08B	26659	KRATZER RUN	0.000	1161.00	15.40	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	0.089	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

Permit No. PA0208647

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	6		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
08B	26659	KRATZER RUN

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												
2.600	0.51	0.00	0.51	.1238	0.02178	.486	10.45	21.48	0.13	1.267	20.97	7.00
Q1-10 Flow												
2.600	0.33	0.00	0.33	.1238	0.02178	NA	NA	NA	0.10	1.535	21.37	7.00
Q30-10 Flow												
2.600	0.70	0.00	0.70	.1238	0.02178	NA	NA	NA	0.14	1.098	20.75	7.00

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
08B	26659	KRATZER RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.600	0.080	20.971	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
10.447	0.486	21.483	0.125
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
6.47	0.788	2.32	0.754
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.225	20.972	Owens	6
Reach Travel Time (days)			
1.267			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.127	5.83	2.11	8.10
0.253	5.25	1.92	8.10
0.380	4.73	1.74	8.10
0.507	4.26	1.58	8.10
0.633	3.84	1.44	8.10
0.760	3.46	1.31	8.10
0.887	3.11	1.19	8.10
1.013	2.81	1.08	8.10
1.140	2.53	0.98	8.10
1.267	2.28	0.89	8.10

Permit No. PA0208647

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
08B	26659	KRATZER RUN

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
2.600	Kratzer Run	14.96	32	14.96	32	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
2.600	Kratzer Run	1.8	11.94	1.8	11.94	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)		
2.60	Kratzer Run	25	25	11.94	11.94	3	3	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
08B	26659	KRATZER RUN

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)
2.600	Kratzer Run	PA0208647	0.080	CBOD5	25		
				NH3-N	11.94	23.88	
				Dissolved Oxygen			3

Permit No. PA0208647

TRC_CALC

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.54	= Q stream (cfs)	0.5	= CV Daily
0.08	= 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 = 1.411	1.3.2.iii	WLA cfc = 1.368
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.526	5.1d	LTA_cfc = 0.795

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)

Page 1