pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0203891**
Facility Type	**Non-Municipal**	APS ID	**869862**
Major / Minor	**Minor**	Authorization ID	**1391785**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Western Area Career & Tech Center**	Facility Name	**Western Area Vocational-Tech School STP**
Applicant Address	688 Western Avenue	Facility Address	688 Western Avenue
	Canonsburg, PA 15317-1477		Canonsburg, PA 15317-1477
Applicant Contact	Kim Siegman	Facility Contact	
Applicant Phone	(724) 746-2890	Facility Phone	
Client ID	45127	Site ID	248160
Ch 94 Load Status	Not Overloaded	Municipality	Chartiers Township
Connection Status		County	Washington
Date Application Received	April 1, 2022	EPA Waived?	Yes
Date Application Accepted	April 12, 2022	If No, Reason	

Purpose of Application: Renewal application to discharge treated sewage

Summary of Review

This review is in response to a renewal application received on April 1, 2022. Sewage from the Western Area Vocational Technical School treats its sewage with extended aeration, chlorination and de-chlorination before discharging to Chartiers Run through outfall 001.

Sludge use and disposal description and location(s): sludge is hauled to the Allegheny Valley Joint Sewer Authority STP in Cheswick, PA for further processing.

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		James Vanek James Vanek, P.E. / Environmental Engineer	July 7, 2022
X		Mahbuba Iasmin Mahbuba Iasmin, Ph.D. / Environmental Engineering Trainee	July 18, 2022

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.005
Latitude	40º 15' 8.76"	Longitude	-80º 14' 37.90"
Quad Name	Canonsburg	Quad Code	1604
Wastewater Description:	Sewage Effluent		

Receiving Waters	Chartiers Run (WWF)	Stream Code	37043
NHD Com ID	99693332	RMI	2.36
Drainage Area	15.73	Yield (cfs/mi^2)	0.034
Q_{7-10} Flow (cfs)	0.535	Q_{7-10} Basis	Previous pollution report
Elevation (ft)	985	Slope (ft/ft)	0.003
Watershed No.	20-F	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use	none	Exceptions to Criteria	none
Assessment Status	Impaired		
Cause(s) of Impairment	HABITAT ALTERATIONS, METALS, PATHOGENS, SILTATION, TOTAL DISSOLVED SOLIDS (TDS)		
Source(s) of Impairment	ACID MINE DRAINAGE, CONSTRUCTION, HABITAT MODIFICATION - OTHER THAN HYDROMODIFICATION, SOURCE UNKNOWN		
TMDL Status	Final	Name	Chartiers Creek,Watershed

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

Nearest Downstream Public Water Supply Intake	West View Municipal Authority		
PWS Waters	Ohio River	Flow at Intake (cfs)	5400
PWS RMI	976	Distance from Outfall (mi)	35

Changes Since Last Permit Issuance:

Other Comments:

Treatment Facility Summary

Treatment Facility Name: Western Area Vocational-Tech School STP

WQM Permit No.	Issuance Date
6371403	
6371403-A1	12/01/2020

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Chlorination /de-chlor	0.005

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.005		Not Overloaded	None	Other STP

Changes Since Last Permit Issuance: none

Other Comments:

Compliance History

DMR Data for Outfall 001 (from March 1, 2021 to February 28, 2022)

Parameter	FEB-22	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21
Flow (MGD) Average Monthly	0.00144	0.00144	0.00144	0.00144	0.00146	0.001	0.002	0.001	0.00195	0.00144	0.00144	0.00144
pH (S.U.) Minimum	7.13	6.88	6.39	6.79	6.98	6.39	6.64	6.30	6.16	6.0	6.88	6.97
pH (S.U.) Maximum	7.62	7.88	7.75	8.23	7.69	7.91	7.58	7.95	7.82	7.66	8.28	7.84
DO (mg/L) Minimum	5.82	6.4	5.65	5.18	5.49	5.89	5.73	5.67	6.14	6.04	7.21	6.29
TRC (mg/L) Average Monthly	< 0.06	< 0.03	< 0.04	< 0.04	< 0.06	0.07	0.09	0.15	0.12	0.16	0.2777	0.31
TRC (mg/L) Instantaneous Maximum	0.16	0.09	0.12	0.09	0.28	0.17	0.34	0.25	0.59	0.3	0.3	0.47
CBOD5 (mg/L) Average Monthly	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	3.0	3.0	3.0	< 3.0	< 3.0	< 3.00	< 3.0
CBOD5 (mg/L) Instantaneous Maximum	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	3.0	3.0	3.0	< 3.0	< 3.0	< 3.00	< 3.0
TSS (mg/L) Average Monthly	< 3.0	< 4.0	< 5.0	< 3.0	5.0	5.50	5.50	7.0	13.0	< 5.0	< 3.0	< 4.0
TSS (mg/L) Instantaneous Maximum	< 3.0	5.0	7.0	3.0	6.0	8.0	8.0	11.0	16.0	7.0	< 3.0	4.0
Fecal Coliform (No./100 ml) Geometric Mean	20	5	< 2.0	< 1.0	14	23	1.0	1.0	< 2.0	< 1.0	< 49.0	< 7
Fecal Coliform (No./100 ml) Instantaneous Maximum	30	14	5.0	1.0	194	489	1.0	1.0	5	< 1.0	2420	54
Total Nitrogen (mg/L) Daily Maximum			34.4									
Ammonia (mg/L) Average Monthly	0.75	0.28	0.4	0.51	0.16	1.15	0.19	0.22	0.16	0.11	< 0.35	0.24

Ammonia (mg/L) Instantaneous Maximum	0.90	0.43	0.50	0.91	0.16	1.51	0.20	0.23	0.16	0.11	0.59	0.31
Total Phosphorus (mg/L) Daily Maximum			3.15									

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .005
Latitude 40º 15' 20.00" **Longitude** -80º 14' 40.00"
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

WQM 7.0 Water Quality Modeling Program

WQM 7.0 is a water quality modeling program for Windows that determines Waste Load Allocations ("WLAs") and effluent limitations for carbonaceous biochemical oxygen demand ("$CBOD_5$"), ammonia-nitrogen, and dissolved oxygen ("DO") for single and multiple point-source discharge scenarios. To accomplish this, the model simulates two basic processes. In the ammonia-nitrogen module, the model simulates the mixing and degradation of ammonia-nitrogen in the stream and compares calculated instream ammonia-nitrogen concentrations to ammonia-nitrogen water quality criteria. In the DO module, the model simulates the mixing and consumption of DO in the stream due to the degradation of $CBOD_5$ and ammonia-nitrogen, and compares calculated instream DO concentrations to DO water quality criteria. WQM 7.0 then determines the highest pollutant loadings that the stream can assimilate while still meeting water quality criteria under design conditions. The output from WQM 7.0 is in the references section of this report. The output is attached in the references section of this fact sheet. The analysis showed no need for water quality-based effluent limits for $CBOD_5$, NH_3N or DO.

Best Professional Judgment (BPJ) Limitations

Dissolved oxygen will be limited at 4.0 mg/l as an instantaneous minimum.

Anti-Backsliding

Anti-backsliding was not used in this permit review.

Chartiers Creek Total Maximum Daily Load (TMDL)

A Total Maximum Daily Load ("TMDL") for the Chartiers Creek Watershed ("Redstone Creek TMDL") was completed in April 2003 for the control of acid mine drainage pollutants: aluminum, iron, manganese, sediment, and pH. In accordance with 40 CFR § 122.44(d)(1)(vii)(B), when developing WQBELs, the permitting authority shall ensure that effluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available wasteload allocation (WLA) for the discharge prepared by the State and approved by EPA pursuant to 40 CFR § 130.7. The TMDL does not require municipal sewage plants to do any reductions for aluminum, iron or manganese. The Chartiers Creek TMDL report does not recommend any actions for municipal sewage plants.

Nitrogen

Sewage discharges with design flows > 2,000 GPD will include monitoring, at a minimum, for Total Nitrogen in new and reissued permits, with a monitoring frequency equivalent to conventional pollutants in Table 6-3 of DEP's *Technical Guidance for the Development and Specification of Effluent Limitations* (362-0400-001) ("Permit Writer's Manual") where the facility discharges to nutrient-impaired waters, or a lesser frequency for discharges to waters not impaired for nutrients, at the discretion of the application manager. 25 PA Code section 92a.61 allows for the implementation of nitrogen monitoring. Annual monitoring is adequate.

Phosphorus

Sewage discharges with design flows > 2,000 GPD will include monitoring, at a minimum, for Total Phosphorus in new and reissued permits, with a monitoring frequency equivalent to conventional pollutants in Table 6-3 of the Permit Writer's Manual where the facility discharges to nutrient-impaired waters, or a lesser frequency for discharges to waters not impaired for nutrients, at the discretion of the application manager. 25 PA Code section 92a.61 allows for the implementation of phosphorus monitoring. Annual monitoring is adequate.

E-Coli

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 of 0.002 – 0.05 MGD. 25 PA Code section 92a.61 allows for the implementation of E-Coli monitoring.

Monitoring Frequencies

Table 6-3 of DEP's *Technical Guidance for the Development and Specification of Effluent Limitations* (362-0400-001) ("Permit Writer's Manual") establishes the sample types and monitoring frequencies. In general, weekly average limits for CBOD5 and TSS will not be imposed where the sampling frequency is less than 1/week.

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	Daily Maximum	Instant. Maximum		
Flow (MGD)	0.005	XXX	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	Daily when Discharging	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	Daily when Discharging	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	Daily when Discharging	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	50.0	2/month	Grab
TSS	XXX	XXX	XXX	30.0	XXX	60.0	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
Total Nitrogen	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	Report	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	XXX	Report	XXX	1/year	Grab

Compliance Sampling Location: at outfall 001

References

WQM Model Output

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
20F	37043	CHARTIERS RUN	**2.360**	985.00	15.73	0.00300	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	0.034	0.00	0.00	0.000	0.000	10.0	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
West Area VoTec	PA0203891	0.0050	0.0050	0.0050	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

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
20F	37043	CHARTIERS RUN	**1.500**	971.40	22.00	0.00300	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	0.034	0.00	0.00	0.000	0.000	10.0	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 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	85.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
20F	37043	CHARTIERS 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												
2.360	0.53	0.00	0.53	.0077	0.00300	.488	14.25	29.18	0.08	0.674	20.07	7.00
Q1-10 Flow												
2.360	0.34	0.00	0.34	.0077	0.00300	NA	NA	NA	0.06	0.861	20.11	7.00
Q30-10 Flow												
2.360	0.73	0.00	0.73	.0077	0.00300	NA	NA	NA	0.09	0.569	20.05	7.00

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
20F	37043	CHARTIERS 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												
2.360	0.53	0.00	0.53	.0077	0.00300	.488	14.25	29.18	0.08	0.674	20.07	7.00
Q1-10 Flow												
2.360	0.34	0.00	0.34	.0077	0.00300	NA	NA	NA	0.06	0.861	20.11	7.00
Q30-10 Flow												
2.360	0.73	0.00	0.73	.0077	0.00300	NA	NA	NA	0.09	0.569	20.05	7.00

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20F	37043	CHARTIERS RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.360	0.005	20.071	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
14.248	0.488	29.181	0.078
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.33	0.152	0.36	0.704
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.168	14.818	Owens	5
Reach Travel Time (days)			
0.674			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.067	2.30	0.34	7.77
0.135	2.28	0.32	7.77
0.202	2.26	0.31	7.77
0.270	2.23	0.29	7.77
0.337	2.21	0.28	7.77
0.404	2.19	0.27	7.77
0.472	2.17	0.26	7.77
0.539	2.14	0.24	7.77
0.607	2.12	0.23	7.77
0.674	2.10	0.22	7.77

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20F	37043	CHARTIERS 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)
2.360	West Area VoTec	PA0203891	0.005	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3