pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0034860**
Facility Type	**Non-Municipal**	APS ID	**7725**
Major / Minor	**Minor**	Authorization ID	**989017**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**P.C.S. Chadaga, M.D.**	Facility Name	**Penn Valley MHP**
Applicant Address	123 Gilpin Drive	Facility Address	908 Perry Road
	West Chester, PA 19382		Lititz, PA 17543
Applicant Contact	P.C.S. Chadaga, M.D.	Facility Contact	P.C.S. Chadaga, M.D.
Applicant Phone	(610) 292-9785	Facility Phone	(610) 292-9785
Client ID	27060	Site ID	239661
Ch 94 Load Status	Not Overloaded	Municipality	Penn Township
Connection Status		County	Lancaster
Date Application Received	August 7, 2013	EPA Waived?	No
Date Application Accepted	August 26, 2013	If No, Reason	Chiques Creek Alternate TMDL
Purpose of Application	NPDES Renewal.		

Summary of Review

Penn Valley MHP has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its National Pollutant Discharge Elimination System (NPDES) permit. The permit was issued on August 6, 2008 and became effective on September 1, 2008. The permit authorized discharge of treated sewage from the existing wastewater treatment plant (WWTP) located in Penn Township, Lancaster County into UNT to Chiques Creek. The existing permit expiration date was August 31, 2013, and the permit has been administratively extended since that time.

Per the previous renewal, the receiving stream was observed to be dry upstream and the effluent eventually soaked into the streambed before reaching the first downstream farm, approximately 2,000' away. The effluent was maintaining a school of minnows at the discharge pipe. Aquatic life was checked by lifting rocks, but nothing except planarians was observed. The stream was observed to be dry on October 13, 2001 and during August 2002. The stream was still dry at the bridge of S.R. 4040, and another 100' downstream the stream became a wetland type swamp with no discrete channel. Eventually a channel was formed, but the streambed is heavily impacted by the cows pasturing in the area, leading to silt deposition over the substrate. Because of the silted conditions, it was difficult to determine whether there was aquatic life. A further 500' downstream, there was still no aquatic life, and a small UNT entered the stream at the intersection of L.R. 36002 and S.R. 4040. It was found that the UNT contained a sparse community of snails, planarians, a couple of webforming caddis larvae, and beetle larvae. Downstream of the UNT, the main stem continued as before. After discussions with the aquatic biologist, it was determined that the point of first use was approximately 3,000' downstream, where the UNT entered the stream.

Penn Valley MHP is in the process of upgrading their WWTP. There are several problems with the existing system. The existing aeration tank and clarifier are deteriorated and cannot effectively treat wastewater. The existing EQ tank and sludge holding tank equipment are insufficient to allow proper operation of the facility. The existing flow meter location has been providing

Approve	Deny	Signatures	Date
		Benjamin R. Lockwood / Environmental Engineering Specialist	October 23, 2019
		Daniel W. Martin, P.E. / Environmental Engineer Manager	
		Maria D. Bebenek, P.E. / Program Manager	

Summary of Review

inaccurate data, and the existing chlorine contact tank is deteriorated. Upgrades and replacements have been included in a permit amendment received on August 30, 2019.

Changes in this renewal: A D.O. and ammonia limit were added to the permit. Fecal coliform IMAX limits were added to the permit. A UV transmittance monitoring requirement was added to the permit. TN monitoring was added to the permit.

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.

Supplemental information for this report is located in an attachment to the fact sheet:

Penn Valley MHP
PA0034860 Supplem

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.011
Latitude	40º 10' 47.9"	Longitude	76º 21' 0.7"
Quad Name	Lititz	Quad Code	1735
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Chiques Creek (WWF)	Stream Code	7999
NHD Com ID	57462403	RMI	2.8
Drainage Area	2.1 mi^2	Yield (cfs/mi^2)	0.119
Q_{7-10} Flow (cfs)	0.25	Q_{7-10} Basis	USGS Gage #01576500
Elevation (ft)	429	Slope (ft/ft)	
Watershed No.	7-G	Chapter 93 Class.	WWF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	N/A	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	Nutrients, Siltation, Siltation, Pathogens		
Source(s) of Impairment	Agriculture, Agriculture, Urban Runoff/Storm Sewers, Source Unknown		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	Columbia Water Company		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI	27.5	Distance from Outfall (mi)	25

Changes Since Last Permit Issuance: A drainage area of 2.1 mi^2 and a Q_{7-10} flow of 0.25 cubic feet per second (cfs) were determined by establishing a correlation to the yield of USGS Gage Station #01576500 on the Conestoga River. The Q_{7-10} and drainage area at the gage are 38.6 cfs and 324 mi^2, respectively. These values are taken from the USGS document "Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania". The Q_{7-10} runoff rate at the gage station was calculated as follows:

Yield = (38.6 cfs)/ 324 mi^2 = 0.119 cfs/mi^2

The drainage area at the discharge point, taken from USGS PA StreamStats = 2.1 mi^2

The Q_{7-10} at the discharge point = 2.1 mi^2 x 0.119 cfs/mi^2 = 0.25 cfs

Other Comments: None

Treatment Facility Summary				
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Extended Aeration	UV	0.011
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.011	22.9	Not Overloaded	Sludge Holding	Other WWTP

Changes Since Last Permit Issuance: The existing treatment process is as follows: Comminutor – Basket – Equalization Tank – Two (2) Aeration Tanks – Two (2) Clarifiers – Dosing Tank – Two (2) Sand Filter Beds – Chlorine Contact Tank – De-Chlorination – Sludge Holding Tank – Outfall 001 to UNT to Chiques Creek

Penn Valley MHP is currently in the process of upgrading their WWTP. The new treatment process will be as follows: Influent Trash Basket – EQ Tank – Two (2) New Aeration Tanks – New Clarifier – Sand Filter Bed PS – Two (2) Sand Filter Beds – New UV PS – New UV Disinfection System – Sludge Holding Tank – Outfall 001 to UNT to Chiques Creek

Compliance History	
Summary of DMRs:	A summary of the past 12-month DMR effluent data is presented on the next page of this fact sheet.
Summary of Inspections:	10/28/2014: A routine inspection was conducted. An effluent grab sample was collected; pH, D.O., and TRC results were within permitted range. The effluent was clear. The plant appeared to be in poor condition. The comminutor was removed from the EQ tank and was laid on top of the grating. The large metal in-ground tank consisting of the aeration tanks and clarifiers had significant wear and corrosion. Many different pipes running over the tops of the tanks were held together with duct tape. The clarifiers had lots of pin floc and popping sludge on the surface. Some sludge had carried over to the clarifier effluent channel. The #1 sand filter bed was under about 4 inches of water with sludge deposits settled on top. The #2 sand filter was clear and well maintained but was not being used. It was recommended to take the #1 sand filter offline and take necessary steps to get it filtering properly. It was noted that the plant was in need of maintenance and was only a matter of time before effluent quality would be affected. There was no process control information or DMRs available. 12/19/2014: A follow up inspection was conducted. The #1 sand filter had been taken offline, but had not yet been rehabilitated. Some additional supplemental forms for TP loading calculations still needed to be submitted. DMRs had been placed on site and the flow meter had been calibrated. A DEP lab registration ID number still needed to be obtained. 3/2/2017: A routine inspection was conducted. At the time of inspection there was a line clog with the chlorine feed system. Popping sludge and a scum layer were observed on the clarifier. The effluent trough on the #1 clarifier was no longer attached. Flow from the #1 clarifier was passing through the overflow to the #2 clarifier and was discharged through that effluent trough. The #2 sand filter had standing water on it for the duration of the inspection. 5/11/2017: A follow up inspection was conducted. The #1 sand filter held several inches of water for the duration of the inspection. Solids had been raked into piles and remained on the media. The #2 sand filter was inactive and held rainwater on the surface. The sand filter had been taken offline on 4/24/17. It was noted in the operator log that the sand filter

	was overflowing out the back. The #1 clarifier had pin floc and some popping sludge. Tanks showed corrosion and potentially required repair or replacement. 4/4/2018: An inspection was conducted. The bar screen had a heavy accumulation of rags. There was grease and screenings on the surface of the wet well. The comminutor was offline. The aeration tank appeared dark gray, and septic. The operator stated that the tank had lost aeration for a period of time. The #1 sand filter was holding standing water up to the top of its containment wall and is leaking from the side walls. A pump was being used to transfer standing water to the #2 sand filter. Partially treated sewage from the sand filter entered a stormwater swale behind the sand filters and was discharged to UNT of Chiques Creek. The #2 sand filter was holding water. The sludge holding tank had very poor, uneven aeration. It appeared gray, not homogenous. There was a deposit of sewage sludge on the streambed in front of the outfall. The clarifier effluent trough was above the water level. Supernatant appeared cloudy, with light popping sludge. The metal tank containing the aeration tank and clarifiers was heavily corroded, and there was ground subsidence surrounding the tank. 4/23/2018: A routine inspection was conducted. The comminutor was not in use. The clarifier supernatant appeared cloudy. The skimmers were offline, and the effluent trough is above the water level. The return sludge for the #2 clarifier was not online. The WAS piping to the sludge holding tank appeared corroded. The second alum feed line behind the first sludge baffle is not dripping. The #2 sand filter was holding water. A sump pump had been put in place to pump standing water to a frac tank. The frac tank was about ½ full. The sump pump floats were raised, and the pumps were not activated. The #2 sand filter was not being used during the inspection. There was a sludge accumulation over the media surface. Cross metal beams have broken off of the treatment tank, buckling on the right side. Empty hypochlorite containers were stored outside. 5/21/2018: An incident inspection was conducted. DEP Emergency Response had been dispatched on 5/20/18 in response to a complaint. An overflow was documented from the frac tank to UNT of Chiques Creek. The site of the overlow was still wet at the time of inspection. Some lime had been applied along the fence line. JG Environmental was onsite removing standing water from the driveway, and emptying the clarifier. The operator log noted that the Adler container was overflowing into the driveway on 5/19/18 and 5/20/18. The operator log noted on 5/4/18 that the #1 aeration tank blower was turned off for a rain event. On 5/5/18 upon air start up, the RAS return was not functional. During the inspection the RAS return was offline. The #1 aeration tank appeared dark brown, and it was recommended to reseed. The sand filter was holding standing water at the time of inspection. It was recommended to apply additional lime to the site of the overflow. Light sludge accumulation was observed at the outfall in the effluent channel. No apparent solids accumulation was noted at the overflow discharge point to UNT to Chiques Creek. 7/25/2018: An inspection was conducted due to notification that the sand filter rehabilitation had been completed. The area had received approximately 6” of rainfall over the last 4 days. At the time of inspection the sand filters were holding water, and there was no headspace within the containment walls. The sand filters overflowed from gaps cut into the top of the containment walls, and there appeared to be seepage from the containment wall. The float level for the sump pump was unplugged, and the frac tank was empty. The gravel area around the frac tank was ponding stormwater, with heavy algae growth near the frac tank. A visual alarm in the blower room was triggered. The operator was informed of the active discharge of partially treated sewage. 7/26/2018: A follow up inspection was conducted. There was overflow from the sand filter to the ground surface. The standing water on the sand filters had sludge floating on the surface. The sump pump was back online and discharging to the frac tank. The frac tank was discharging from the overflow pipe to the influent EQ tank. The chlorine contact/post aeration tank was full above the baffle, and the outlet pipe was submerged. The plant outfall was submerged. It was recommended to the operator to haul out as necessary and

	apply lime to the area of overflow. On 7/27/18, the interim daily operator noted that the frac tank had been hauled out twice, and lime had been applied to the area behind the sand filter. The outfall was still submerged, and chlorine tablets were being used in the clarifier effluent weir. 12/13/2018: A partial inspection was conducted. The comminutor was not operational. The bar screen had a large accumulation of rags and solids. The EQ tank had approximately 2 inches or more of grease and floatable accumulation across the surface. The tank had little or no aeration. Some white foaming was present. The metal supports surrounding the tank were significantly corroded. As previously noted, cross bar supports on the west side of the tank are no longer present. The concrete walkway splitting the aeration tank and clarifiers had collapsed. Corrosion of the metal tank is also visible in this area. Several corroded holes are visible between the aeration tanks and clarifiers. The west aeration tank was more heavily aerated. The aeration was not evenly distributed throughout the tank. The clarifier returns were functioning, and both appeared light brown in color. The west aeration tank had some white foaming on the surface. The east aeration tank had no foaming and less aeration. Both clarifiers had a significant amount of sludge bulking. The clarifiers had approximately 70-80% sludge coverage. The west clarifier no longer had an effluent through, so flow was being directed to the east clarifier. The east clarifier effluent trough is improperly positioned so that flow travels down the center of the trough and not over the effluent weirs. The troughs and baffles were heavily corroded. The east sand filter had a layer of sludge approximately 4 inches deep and was not online during inspection. The west sand filter was filled to capacity and overflowing at the time of inspection. The overflow was entering a swale in the back of the property which discharged to UNT to Chiques Creek. The creek appeared clear at the time of inspection. The sodium hypochlorite drip was functioning. The sludge holding tank appeared dark gray in color with floating grease accumulation. The east sludge holding tank was not being aerated. The west sludge holding tank had very little aeration. The operator planned to begin hauling influent. Property Management, Inc. was notified concerning the sand filter overflow. They stated that a hauler would be onsite that afternoon to collect influent and begin tank dewatering. They also stated that the sludge layer had been removed from the east sand filter and standing water from the west sand filter was being pumped. 12/17/2018: A follow up inspection was conducted. The influent EQ tank was very low due to recent hauling. The bar screen had a significant accumulation of rags. A corrugated pipe had been placed in the EQ tank for influent removal. The air to the aeration tank was currently shut off. The tanks had a layer of floating sludge on top and had a gray/brown appearance. The east clarifier had been pumped down. The inlet clarifier baffle was significantly corroded and partially missing. Two other clarifier baffles showed signs of corrosion and deterioration. The west clarifier remained full. The east sand filter bed had been raked and solids were pushed to the side. A small amount of ponding was visible on the surface. The west sand filter bed had approximately 2-3 inches of standing water. The bed was significantly lower than the last inspection and was not overflowing. A layer of solids was visible below standing water. The sodium hypochlorite pump was dripping. The effluent appeared slightly cloudy. Field sampling results were within permitted limits. The stream bank surrounding Outfall 001 showed signs of erosion. The outfall pipe was not visible. A side channel where the outfall is located had sediment accumulation. The digesters were being used to store extra effluent. Tank had approximately 2 feet of freeboard, with overflow being directed to aeration tanks. In several locations solid/rag accumulations were observed on the ground. The facility fencing had been removed, and temporary construction fencing had been put in place. The fencing was no longer standing upon inspection. The facility's buildings were being kept unlocked. It was recommended to secure the perimeter and onsite buildings. 12/27/2018: A follow up inspection was conducted. No discharge had been noted since 12/17/18. Influent was being held in aeration tanks, sludge holding tanks, and frac tank. No leaks were noted. The west clarifier was empty and showed signs of corrosion. The scum

	baffle had come apart and was visible at the bottom of the tank. The west sand filter was covered in a layer of solids. A temporary fence had been installed. 2/6/2019: A routine partial inspection was conducted. Discharge from outfall 001 began again on 2/1/19. The bar screen had an accumulation of rags and solids. The EQ surface had a small amount of grease and floatables. The west side of the EQ tank was well aerated. The east side had less aeration. Both aeration tanks had an even amount of aeration. RAS lines were functioning. Clarifier levels were equalized. Supernatant was mostly clear with some pin floc. A small amount of floatables were present on the surface. The east clarifier had a greater amount of pin floc. Some surface scum was present. The effluent trough still sits above surface level. The west sand filter bed was not in use, and was free of solids and vegetation. The east filter bed was in use, and had approximately 1-2 inches of standing water on about 60% of its surface. A light layer of solids was present underneath the standing water. The chlorine contact tank appeared clear. The sodium hypochlorite drip was functioning. There was erosion evident surrounding the outfall structure. Supernatant from the sludge holding tanks appeared clear with a gray tint. Two chemical storage totes were in use outside of the blower building with no secondary containment. On 2/11/2019, the operator provided a list of repairs, including new waste and return lines, 3 new scum baffles in clarifiers, rebuilt diffusers, sand filter cleaning, and new chemical feed lines. 3/25/2019: A notification was received that a 500 gallon overflow occurred from the sand filter bed to the ground surface. On 3/21/19 the plant was put into storm mode. An incident inspection was conducted. The overflow appeared to have originated from the east sand filter. Sand filter media was present on the ground and there was channeling between the sand filter and a nearby swale leading to UNT of Chiques Creek. Hydrated lime was not applied to the area. The dosing tank was feeding to the west sand filter bed, which was free of solids and ponding. The west EQ tank had approximately 50% coverage of grease and solids. Some rags were present in the bar screen. The east EQ tank had approximately 30% coverage of grease. Both air lifts were functioning. The clarifiers had some pin floc and a slight gray tint. Clarifier skimmers were not present. The effluent trough weirs on the east clarifier remain positioned above the water level. Groundwater appeared to be infiltrating into dosing tank through several cracks. The chemical feeds in the chlorine contact tank were functioning. The sludge holding tank was not aerated. The effluent appeared clear. The frac tank had been removed from the site.

Other Comments: 6/5/2017: A Notice of Violation (NOV) was issued due to standing water on the active sand filter during the 3/2/17 and 5/11/17 site inspections. It was also noted that there is a pattern of effluent violations related to Total Phosphorus, and that supplemental reports for the NPDES permit were not being submitted.

6/29/2018: A NOV was issued due to violations noted during the 4/4/18, 4/23/18, 5/21/18, and 5/31/18 inspections. The violations included standing water on the active sand filter, discharge of partially treated sewage and discharge of sewage solids to UNT of Chiques Creek, and installation of a frac tank without obtaining a WQM permit. It was also noted that there is a pattern of effluent violations related to Total Phosphorus, Total Suspended Solids, Dissolved Oxygen, Carbonaceous Biological Oxygen Demand, and Fecal Coliform.

8/23/2019: A Consent Order and Agreement (COA) was entered into between the DEP and Dr. P.C. Sekhar Chadaga. The COA required corrective actions including submittal of a WQM Part II Permit within 30 days of the date of the COA, construction start of the sewage treatment plant within 60 days of permit issuance, and completion of construction within 180 days of start of construction.

Compliance History

DMR Data for Outfall 001 (from August 1, 2018 to July 31, 2019)

Parameter	AUG-18	SEP-18	OCT-18	NOV-18	DEC-18	JAN-19	FEB-19	MAR-19	APR-19	MAY-19	JUN-19	JUL-19
Flow (MGD) Average Monthly	0.02512	0.02012	0.01231	0.04075	0.062		0.01401	0.01392	0.01205	0.01549	0.0128	0.01258
Flow (MGD) Daily Maximum	0.1993	0.10715	0.02075	0.16291	0.122		0.02726	0.05414	0.02179	0.04084	0.02601	0.0232
pH (S.U.) Minimum	6.99	7.32	7.19	7.24	7.21		6.88	6.97	6.79	6.86	6.82	6.75
pH (S.U.) Maximum	8.05	8.28	8.21	7.92	8.29		7.93	7.8	7.79	7.69	7.65	7.63
DO (mg/L) Minimum	7.4	6.8	7.6	10.2	6.79		9.0	8.09	6.93	6.23	5.61	5.37
TRC (mg/L) Average Monthly	0.04	0.24	0.38	0.24	0.6		< 0.1	< 0.2	< 0.2	0.3	0.3	0.3
TRC (mg/L) Instantaneous Maximum	0.07	0.89	0.81	0.75	3.99		0.89	1.24	0.99	1.24	0.59	0.74
CBOD5 (mg/L) Average Monthly	< 3.0	< 3.0	< 3.0	< 3.0	4.0		8.0	8.0	< 4.0	< 2.0	< 2.0	< 2.0
TSS (mg/L) Average Monthly	1.5	10.7	9.0	3.0	9.0		< 5.0	< 10.0	6.0	< 6.0	< 4.0	< 4.0
Fecal Coliform (CFU/100 ml) Geometric Mean	777	< 30	< 5.0	< 34	< 0.01		< 1.0	< 258	< 16	< 2.0	< 1.0	< 1
Total Phosphorus (mg/L) Average Monthly	0.81	0.69	1.4	0.29	0.9		0.4	0.30	0.2	0.2	< 0.1	0.2
Total Phosphorus (lbs/day) Total Monthly	0.06	0.1	0.1	0.1	0.8		1.0	2.0	0.5	0.2	< 0.4	0.3
Total Phosphorus (lbs) Total Annual		45										

Compliance History

Effluent Violations for Outfall 001, from: September 1, 2018 To: July 31, 2019

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TRC	12/31/18	Avg Mo	0.6	mg/L	0.5	mg/L
TRC	12/31/18	IMAX	3.99	mg/L	1.6	mg/L

Existing Effluent Limitations and Monitoring Requirements

The table below summarizes the effluent limits and monitoring requirements implemented in the existing NPDES permit.

Outfall 001

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	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
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4.0	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	XXX	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	XXX	2/month	Grab

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	2/month	8-hr Composite
Total Phosphorus	XXX	67	XXX	XXX	XXX	XXX	1/year	Calculate

Compliance Sampling Location: At discharge from facility

Other Comments: None

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .011
Latitude 40º 10' 47.9" **Longitude** 76º 21' 0.7"
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

Pursuant to 40 CFR § 122.44(d)(1)(i), more stringent requirements should be considered when pollutants are discharged at the levels which have the reasonable potential to cause or contribute to excursions above water quality standards.

WQM 7.0 ver. 1.0b is a water quality model designed to assist DEP in determining appropriate water quality based effluent limits (WQBELs) for carbonaceous biochemical oxygen demand ($CBOD_5$), ammonia (NH_3-N), and dissolved oxygen (D.O.). The model simulates two basic processes: In the NH_3-N module, the model simulates the mixing and degradation of NH_3-N in the stream and compares calculated instream NH_3-N concentrations to NH_3-N water quality criteria. In the D.O. module, the model simulates the mixing and consumption of D.O. in the stream due to the degradation of $CBOD_5$ and NH_3-N and compares calculated instream D.O. concentrations to D.O. water quality criteria. The model then determines the highest pollutant loadings that the stream can assimilate while still meeting water quality criteria under design conditions. DEP's Technical Guidance No. 391-2000-007 provides the technical methods contained in WQM 7.0 for determining wasteload allocations and for determining recommended NPDES effluent limits for point source discharges.

The model was utilized for this permit application. The information used to run the model was acquired from USGS PA StreamStats, and USGS Gage # 01576500 on the Conestoga River, and is included in an attachment. Stream pH and temperature inputs for this model run were based on data acquired from the National Water Quality Monitoring Council website. Data was analyzed from the Water Quality Network (WQN) Station ID 284 from November 2012 to March 2019. DEP's Standard Operating Procedure (SOP) No. BPNPSM-PMT-033 (Establishing Effluent Limitations for Individual Sewage Permits) recommends using the 90th percentile of long-term data for background and discharge characteristics when using WQM 7.0. A 90th percentile analysis was performed on the data and resulted in a Stream pH of 8.3 and a Stream Temperature of 22.1°C. The model output indicated a $CBOD_5$ average monthly limit of 25 mg/l, an NH_3-N average monthly limit of 11.23 mg/l, and a D.O. minimum limit of 5.0 mg/l were protective of water quality. The $CBOD_5$ limit is the same as the existing limit, and will remain in the permit. Based on the round-off guidelines from Chapter 5 of the Technical Guidance for the Development and Specification of Effluent Limitations (Guidance No. 362-0400-001), a NH_3-N limit of 11 mg/l will be added to the permit as a summertime limit. A multiplier of 3 times the summertime average monthly limit will be used to establish a limit for the winter period. Monitoring requirements of 2/month using an 8-hr composite sample will be applied to be consistent with the existing permit limits.

There are no industrial/commercial users contributing industrial wastewater to the system and Penn Valley MHP does not currently have an EPA-approved pretreatment program. Accordingly, evaluating reasonable potential of toxic pollutants is not necessary as effluent levels of toxic pollutants are expected to be insignificant.

Best Professional Judgement (BPJ) Limitations

Dissolved Oxygen

A minimum D.O. limit of 5.0 mg/L is a D.O. water quality criterion found in 25 Pa. Code § 93.7(a). It is recommended to include this limit in the draft permit to ensure that the facility continues to achieve compliance with DEP water quality standards.

UV Monitoring

As part of Penn Valley's upgrade, the existing chlorine disinfection system will be replaced with UV disinfection. DEP's SOP No. BPNPSM-PMT-033 recommends at a minimum, routine monitoring of UV transmittance, dosage, or intensity when the facility is utilizing a UV disinfection system. The monitoring should occur at the same frequency as would be used for TRC. This recommendation was implemented as a part of the proper operation and maintenance requirement specified in Part B of the NPDES permit, requesting permittees to demonstrate the effectiveness of UV disinfection system. This approach has been assigned to other facilities equipped with similar technology. Accordingly, a parameter for UV Transmittance will be included in the permit.

Additional Considerations

Chesapeake Bay Total Maximum Daily Load (TMDL)

DEP developed a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). This strategy can be located in the *Pennsylvania Chesapeake Watershed Implementation Plan* (WIP), dated January 11, 2011. Subsequently, an update to the WIP was published as the Phase 2 WIP. As part of the Phase 2 WIP, a *Phase 2 Watershed Implementation Plan Wastewater Supplement* (Phase 2 Supplement) was developed, providing an update on TMDL implementation for point sources and DEP's current implementation strategy for wastewater. The Phase 2 Supplement was most recently revised on September 6, 2017. Sewage discharges have been prioritized based on their design flow to the Bay. The highest priority (Phases 1, 2, and 3) dischargers will receive annual Cap Loads based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. These limits may be achieved through a combination of treatment technology, credits, or offsets. For Phase 4 and 5 facilities, Cap Loads are not currently being implemented for renewed or amended permits for facilities that do not increase design flow.

This facility is considered a Phase 5 non-significant discharger with a design flow less than 0.2 MGD but greater than 0.002 MGD. According to DEP's latest-revised Phase 2 Supplement, issuance of permits with monitoring and reporting for TN and TP is recommended for any Phase 5 non-significant sewage facilities (i.e., facilities with average annual design flows on August 29, 2005 less than 0.2 MGD but greater than 0.002 MGD). Furthermore, DEP's SOP No. BPNPSM-PMT-033 states that in general, at a minimum, monitoring for TN and TP should be included in new and reissued permits for sewage discharges with design flows > 2,000 gpd. A TP limit is included in the existing permit. Therefore, TN monitoring will be included in the renewed permit. Table 6-3 of DEP's Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001) recommends a measurement frequency of 2/month for NH_3-N and phosphorus. This is consistent with existing permit monitoring requirements and will be used for these parameters.

Chiques Creek Alternate Restoration Plan

This facility discharges to Chiques Creek. Chiques Creek was included on Pennsylvania's 1996 303(d) List of Impaired Waters due to nutrient impairments. A Total Maximum Daily Load (TMDL) for the Chiques Creek Watershed was approved by the United States Environmental Protection Agency (EPA) on April 9, 2001. Due to several deficiencies within the TMDL, it was withdrawn with approval from EPA on October 28, 2015. DEP, Susquehanna River Basin Commission (SRBC) and watershed stakeholders have been in the process of developing a large scale monitoring and restoration plan. The goal of this Alternate Restoration Plan (ARP) is to address impacts to the Chiques Creek Watershed due to suspended solids/siltation and nutrient pollution. During the ongoing ARP development, this discharge permit will be renewed to conform with existing guidance. This permit will include a Total Phosphorus (TP) limit of 2.0 mg/l. The TP limit of 2.0 mg/l is derived from 25 Pa. Code § 96.5(c). This section states that "when it is determined that the discharge of phosphorus, alone or in

combination with the discharge of other pollutants, contributes or threatens to impair existing or designated uses in a free flowing surface water, phosphorus discharges from point source discharges shall be limited to an average monthly concentration of 2 mg/l." This is consistent with existing limits for other dischargers to the Chiques Creek Watershed. This limit is included in the existing permit, and will remain in the renewal. A continued evaluation of dischargers to Chiques Creek will be performed as described in the NPDES Part C Conditions.

Chiques Creek TMDL

During the previous permit renewal, an evaluation was performed regarding phosphorus limitations. A TMDL was approved for Chiques Creek in 2001, which allocated 67 lbs/year TP to this facility based on 2 mg/l and 0.011 mgd. This allocation was included in the existing permit, and will remain in the renewal.

Fecal Coliform

PA Code § 92a.47.(a)(4) requires a monthly average limit of 200/100 mL as a geometric mean and an instantaneous maximum limit not greater than 1,000/100 mL from May through September for fecal coliform. PA Code § 92a.47.(a)(5) requires a monthly average limit of 2,000/100 mL as a geometric mean and an instantaneous maximum limit not greater than 10,000/100 mL from October through April for fecal coliform. The instantaneous maximum fecal coliform limits have been included in the renewal permit.

Anti-Degradation (93.4)

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

303d Listed Streams

The discharge is located on a stream segment that is designated on the 303(d) list as impaired. There is an aquatic life impairment for agriculture due to siltation and nutrients, and urban runoff/storm sewers due to siltation. There is a recreational impairment from an unknown source due to pathogens. The permit includes a fecal coliform and TP phosphorus limit, and TN monitoring.

Class A Wild Trout Fisheries

No Class A Wild Trout Fisheries are impacted by this discharge.

Anti-Backsliding

Pursuant to 40 CFR § 122.44(l)(1), all proposed permit requirements addressed in this fact sheet are at least as stringent as the requirements implemented in the existing NPDES permit unless any exceptions addressed by DEP in this fact sheet.

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 Completion of Upgrade.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25	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	2,000 Geo Mean	XXX	10,000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Ammonia-N May 1 – Oct 31	XXX	XXX	XXX	11	XXX	22	2/month	8-Hr Composite
Ammonia-N Nov 1 – Apr 30	XXX	XXX	XXX	33	XXX	66	2/month	8-Hr Composite
Kjeldahl-N	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Nitrate-Nitrite as N	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	XXX	XXX	2.0	XXX	4.0	2/month	8-Hr Composite
Total Phosphorus (Total Load, lbs)	XXX	67 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: Outfall 001
Other Comments: 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: Completion of Upgrade through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
UV Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
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	2,000 Geo Mean	XXX	10,000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Ammonia-N May 1 – Oct 31	XXX	XXX	XXX	11	XXX	22	2/month	8-Hr Composite
Ammonia-N Nov 1 – Apr 30	XXX	XXX	XXX	33	XXX	66	2/month	8-Hr Composite
Kjeldahl-N	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Nitrate-Nitrite as N	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	XXX	XXX	2.0	XXX	4.0	2/month	8-Hr Composite
Total Phosphorus (Total Load, lbs)	XXX	67 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: Outfall 001
Other Comments: None

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☐	PENTOXSD for Windows Model (see Attachment)
☒	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Toxics Screening Analysis 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:
☐	Other: