pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northeast Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0063321**
Facility Type	**Municipal**	APS ID	**860917**
Major / Minor	**Minor**	Authorization ID	**1056197**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Ararat Township**	Facility Name	**Fiddle Lake WWTP**
Applicant Address	1765 Ararat Road	Facility Address	Airport Road
	Thompson, PA 18465		Thompson, PA 18465
Applicant Contact	Mavis Cottrell	Facility Contact	Joseph Holmes
Applicant Phone	(570) 727-3115	Facility Phone	(570) 727-3115
Client ID	44739	Site ID	520284
Ch 94 Load Status	Not Overloaded	Municipality	Herrick Township
Connection Status	No Limitations	County	Susquehanna
Date Application Received	December 24, 2014	EPA Waived?	Yes
Date Application Accepted	January 5, 2015	If No, Reason	-

Purpose of Application: Renewal of existing NPDES permit.

Summary of Review

A draft NPDES permit was issued for this facility on October 10, 2019. The final permit was not issued after the public comment period due to open violations for the permittee. When compared to the first draft permit, this second draft permit includes the most current permit template (revised 8/2021), slightly less stringent Ammonia-Nitrogen water quality-based limitations, and monthly E. Coli monitoring/reporting.

The applicant is requesting renewal of their NPDES permit to discharge up to 0.035 MGD of treated sewage to Fiddle Lake Creek (stream code is 28612), a CWF/MF designated receiving water in state water plan basin 05-A (Lackawanna River). As per the Department's current existing use list, the receiving water does not have an existing use classification that is more protective than its designated use.

The default low flow yield (LFY) of 0.1 cfs/mi^2 was chosen to model the discharge since there are no nearby representative stream gages to obtain flow data from. The drainage area at Outfall 001 is outside of the USGS StreamStats suggested range for estimating low flow values (see StreamStats Low Flow attachment). For modeling inputs, RMI values were obtained using the "PA Historic Streams" feature of eMapPA as well as the "measure" tool. Drainage areas were delineated using USGS's StreamStats Interactive Map and elevations were obtained using the elevation profile feature of StreamStats (see Watershed Information attachment).

Limitations for $CBOD_5$, TSS, pH and Fecal Coliform are technology-based and carried over from the previous permit. Note that technology-based IMAX limitations for Fecal Coliform are added to the permit during this renewal.

TRC limitations in the previously issued permit were old technology-based limitations (1.2 mg/L monthly average, 2.8 mg/L IMAX). As per PA Code 92a.47(a)(8) (which refers to PA Code 92a.48(b)(2)), a monthly average TRC facility-specific BAT effluent limit of 0.5 mg/L and an IMAX limit of 1.6 mg/L is applied to this permit renewal. These limitations will come into effect 1 year after the Permit Effective Date.

Approve	Deny	Signatures	Date
X		*Brian Burden* Brian Burden, E.I.T. / Project Manager	October 8, 2021
X		Amy M. Bellanca (signed) Amy M. Bellanca, P.E. / Environmental Engineer Manager	10-12-21

Summary of Review

When modeling the discharge using the latest TRC calculation spreadsheet, a monthly average limitation of 0.13 mg/L and an IMAX of 0.42 mg/L was recommended. These water quality-based limitations will come into effect 4 years after the Permit Effective Date. The permittee may conduct site-specific studies to alter the new TRC limitations (see Part C.IV). Several factors can change the recommended TRC limitations as calculated by the spreadsheet, such as: chlorine demand of stream, chlorine demand of discharge, and stream flow. Default values for chlorine demand were used to develop the limitations (0.3 mg/L for stream demand, 0 mg/L for discharge demand). The stream flow value was determined by multiplying the drainage area at Outfall 001 (delineated using USGS's StreamStats) by the default LFY of 0.1 cfs/mi^2. Partial mixing factors were obtained from PENTOX (attached).

WQM modeling recommends a summertime 3.45 mg/L monthly average limitation for Ammonia-Nitrogen to meet water quality standards. The new Ammonia-Nitrogen limitations will come into effect 4 years after the Permit Effective Date. The standard 2x multiplier was used to develop the IMAX limits and the standard 3x multiplier was used to develop the wintertime limitations for Ammonia-Nitrogen.

Quarterly monitoring and reporting requirements for Total Nitrogen, Nitrate+Nitrite-Nitrogen, Total Kjeldahl Nitrogen and Total Phosphorus are included in this renewal to monitor nutrient concentrations.

Monthly monitoring and reporting requirements for influent BOD_5 and influent TSS are added to the permit to determine if the facility meets secondary treatment standards of 85% removal.

A Total Maximum Daily Load (TMDL) for the Lackawanna River Watershed was prepared for PA DEP on March 9, 2005. The TMDL addresses metals (Iron, Manganese, and Aluminum) and depressed pH associated with acid mine drainage (AMD). The TMDL load allocations apply to nonpoint sources of pollution; there are no Waste Load Allocations (WLAs). Quarterly monitoring requirements for Total Iron, Total Manganese, and Total Aluminum are added to the permit to monitor these pollutants of concern.

Monitoring frequencies for all parameters with limitations are consistent with the recommended frequencies found in Table 6-3 of DEP's Technical Guidance for the Development and Specification of Effluent Limitations (doc. no. 362-0400-001).

A stream survey was conducted on July 28, 2016 on Fiddle Lake Creek by Timothy Daley, PA DEP Aquatic Biologist, to collect biological and chemical data for the Ararat Township WWTP and to determine if the discharge has caused any biological impacts to the receiving stream. Sampling was performed at two stations, one just upstream of the discharge, and the other approximately 300 feet downstream from the discharge. The results of the survey are below:

Station 01: "Sampling at this location occurred just upstream of the discharge location. The stream here was small and shallow and only several feet wide, but was flowing clear and full. A total of 18 taxa were found in the subsample, with 10 sensitive EPT taxa. Collectively, sensitive mayflies, stoneflies, and caddisflies were common, and the sensitive caddisfly *Diplectrona* was abundant. The IBI score here of 59.7, although modest, is well above the impairment threshold of 43.0.

In addition, the presence of numerous long-lived taxa clearly establishes this stream as perennial at the discharge location. A previous April 14, 1994 Point of First Use survey conducted by DER Water Pollution Biologist Edward Kupsky determined the stream to be ephemeral based on a sample collected 25 yards downstream of the Fiddle Lake outlet. The point of first use at that time was located approximately 1.5 miles downstream of the existing discharge location, and should be re-evaluated based on these current findings."

Station 02: "The discharge during the course of sampling was a milky gray color and odorous. Several extreme changes occurred here when compared to the upstream station. The entire stream section, from the discharge downstream approximately 300 feet (and likely further) was coated by gray solids. This sludge was several inches thick throughout much of the reach, and covered all substrates on the stream bottom (cobble, boulder, gravel, woody debris). In several areas, colonies of what appeared to be *Sphaerotilus natans* (aka "sewage fungus") were observed growing on top of heavy sludge deposits. This filamentous bacterium can thrive in highly organic and low dissolved oxygen conditions such as sewage sludge.

The macroinvertebrate community here was poor, with just 4 total taxa and 0 sensitive EPT taxa, and contrasts sharply with the upstream community. Nearly the entire subsample (97%) was dominated by pollution tolerant Chironomids (midges) and worms (Oligochaeta), predominantly the red hemoglobin/erythrocruorin-containing varieties known as "bloodworms" and "sludge worms", respectively. These blood pigments allow species of both groups to flourish in organic sediments and

Summary of Review

sludge nearly devoid of oxygen. There was a total loss of all mayflies, stoneflies, and caddisflies which were numerous upstream, and both the Beck's Index and Percent Sensitive were zero, as no sensitive individuals were found. The results of these changes was a 46.8 point decrease in the IBI score, from 59.7 upstream of the discharge to 12.9 here, indicative of severely degraded conditions.

The water quality parameters of note downstream of the discharge include elevated ammonia and phosphorus, and decreased dissolved oxygen. The ammonia value of 4.17 mg/L would violate the Chapter 93 Water Quality Standards Chronic Criteria (1.917 mg/L) at a temperature of 20.0°C and pH of 7.00. The low dissolved oxygen (2.72 mg/L) would also violate the 5.0 mg/L minimum criteria for Cold Water Fishes."

The facility's latest Chapter 94 report shows no projected hydraulic/organic overloads at the WWTF. As per the September 2020 Sewage Sludge / Biosolids Production and Disposal form, 10,000 gallons of liquid sludge was hauled off site by Hallstead Sanitary on September 17, 2020 and 10,000 more gallons were hauled off site by Hallstead on September 18, 2020.

DMR review of the past 2 years reveals the following concentration limitation exceedances:

July 2021: $CBOD_5$ – 28.2 mg/L monthly average (limitation is 25 mg/L)
August 2021: $CBOD_5$ – 29.0 mg/L monthly average (limitation is 25 mg/L)

The previously issued permit expired on June 30, 2015 and the application for permit renewal was submitted on time. There are three open violations for the client that could warrant withholding the issuance of the final permit:

- Inspection ID 3094672, Violation ID 897295 (dated 10/20/2020) – "NPDES - Failure to utilize an accredited environmental laboratory for testing or analysis of environmental samples".
- Inspection ID 3094672, Violation ID 897296 (dated 10/20/2020) – "Operator Certification - Operator failed to comply with the Act or Chapter 302 regulations".
- Inspection ID 3094672, Violation ID 897297 (dated 10/20/2020) – "Operator Certification - Operator failed to comply with the Act or Chapter 302 regulations".

Antibacksliding requirements have been met since no effluent limitations were made less stringent or removed from the permit. EPA waiver is in effect.

TRC Calculation.pdf
PENTOX.pdf
Watershed Information.pdf
StreamStats Low Flow.pdf
WQM Modeling 1.pdf
WQM Modeling 2.pdf
WQM Modeling 3.pdf
WQM Modeling 4.pdf
WQM Modeling 5.pdf
WQM Modeling 6.pdf

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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.035
Latitude	41º 46' 48"	Longitude	-75º 31' 48"
Quad Name	Thompson	Quad Code	0441
Wastewater Description:	Sewage Effluent		

Receiving Waters	Fiddle Lake Creek (CWF)	Stream Code	28612
NHD Com ID	65628989	RMI	5.92
Drainage Area	0.45 mi^2	Yield (cfs/mi^2)	0.1
Q_{7-10} Flow (cfs)	0.045	Q_{7-10} Basis	Default LFY
Elevation (ft)	1976	Slope (ft/ft)	0.016
Watershed No.	5-A	Chapter 93 Class.	CWF/MF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired		
Cause(s) of Impairment	Cause Unknown & Thermal Modification		
Source(s) of Impairment	Natural Sources (both)		
TMDL Status	Final	Name	Lackawanna River Watershed

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

Nearest Downstream Public Water Supply Intake	PAWC Forest City		
PWS Waters	Stillwater Reservoir (Lackawanna River)	Flow at Intake (cfs)	3.8 (using default LFY)
PWS RMI	38.63	Distance from Outfall (mi)	~8.75

Treatment Facility Summary

Treatment Facility Name: Fiddle Lake WWTP

WQM Permit No.	Issuance Date
5899402	12/13/1999

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Trickling Filter With Settling	Chlorination	0.012* (2020)

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.035	73	Not Overloaded	Settled	Hauled

Other Comments: *Calculated from eDMRs.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.035
Latitude 41º 46' 48" **Longitude** -75º 31' 48"
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
$CBOD_5$	25.0	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40.0	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
	50.0	IMAX	-	-
Total Suspended Solids	30.0	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45.0	Average Weekly	133.102(b)(2)	92a.47(a)(2)
	60.0	IMAX	-	-
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)
	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)
	10,000 / 100 ml	IMAX	-	92a.47(a)(5)

Water Quality-Based Limitations

The following limitations were determined through water quality modeling (output files attached):

Parameter	Limit (mg/l)	SBC	Model
Ammonia-Nitrogen (5/1 – 10/31)	3.45	Average Monthly	2021 WQM 7.0 Modeling
	6.9	IMAX	
Ammonia-Nitrogen (11/1 – 4/30)	10.35	Average Monthly	
	20.7	IMAX	
Total Residual Chlorine	0.13	Average Monthly	2021 TRC Calculation Spreadsheet
	0.42	IMAX	

Comments: The Total Residual Chlorine limitations above will come into effect 4 years after the permit effective date. For the first year of permit coverage, the old technology-based 1.2 mg/L monthly average and 2.8 mg/L IMAX limitations are in effect. For the second, third and fourth years of permit coverage, the updated technology-based TRC limitations will be in effect (0.5 mg/L monthly average, 1.6 mg/L IMAX). The Ammonia-Nitrogen limitations will come into effect 4 years after the permit effective date.