pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0216381**
Facility Type	**Non-Municipal**	APS ID	**1104015**
Major / Minor	**Minor**	Authorization ID	**1467810**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**MDDA LLC**	Facility Name	**Holly Hill STP**
Applicant Address	114 Snyder Drive	Facility Address	200 Freedom Road
	Rochester, PA 15074-2706		Freedom, PA 15042
Applicant Contact	Robert Anzio	Facility Contact	Robert Anzio
Applicant Phone	(724) 630-9762	Facility Phone	(878) 207-2582
Client ID	381910	Site ID	240103
Ch 94 Load Status	Not Overloaded	Municipality	New Sewickley Township
Connection Status	No Limitations	County	Beaver
Date Application Received	January 2, 2024	EPA Waived?	Yes
Date Application Accepted	January 22, 2024	If No, Reason	
Purpose of Application	Renewal of an existing NPDES permit for the discharge of treated sewage.		

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		Derek S. Garner / Project Manager	March 20, 2024
X		Mahbuba Iasmin Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineer Manager	March 21, 2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.0178
Latitude	40º 40' 48.00"	Longitude	-80º 12' 39.00"
Quad Name	Baden	Quad Code	1304
Wastewater Description:	Sewage Effluent		

Receiving Waters	UNT of Crows Run	Stream Code	36558-U
NHD Com ID	99678786	RMI	3.15 (1)
Drainage Area	n/a	Yield (cfs/mi^2)	0
Q_{7-10} Flow (cfs)	0	Q_{7-10} Basis	2013 WQPR
Elevation (ft)	897	Slope (ft/ft)	n/a
Watershed No.	20-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	Attaining Use(s)		
Cause(s) of Impairment	n/a		
Source(s) of Impairment	n/a		
TMDL Status	n/a	Name	n/a

(1) Point of first use on Crows Run

Treatment Facility Summary

The Holly Hill Sewage Treatment Plant is a stabilization lagoon system constructed and operated under WQM Permit No. 0471418, issued October 29, 1971. The existing treatment process consists of one (1) primary and one (1) secondary clay-lined stabilization lagoon and one (1) chlorine contact tank. Hypochlorite is used for disinfection.

The STP's annual average design flow is 0.009 MGD and the hydraulic design capacity is 0.0178 MGD. The organic design capacity is estimated at 40 lbs BOD / day.

DEP is unaware of any substantive changes since the previous renewal.

Compliance History

The facility was most recently inspected by DEP on August 19, 2021. The associated inspection report indicated that the lagoons appeared to be in good operating condition with adequate freeboard space and minimal duck weed growth. No violations were noted at the time of the inspection.

There violations were identified during the existing permit's term.

There are no open violations associated with the permittee.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.009
Latitude 40º 40' 48.00" **Longitude** -80º 12' 39.00"
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)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
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)

The above limitations are consistent with the existing NPDES permit.

Water Quality-Based Limitations

The receiving UNT of Crows Run is a dry drainage way. Historically, where the unnamed tributary meets Crows Run has been designated as the point of first use for modeling purposes.

The attached WQM 7 v1.1 modeling output indicates that the existing water-quality based limits are protective. Accordingly, DEP recommends that the existing WQBELs for ammonia-n of 20 mg/l average monthly and 40 mg/l instantaneous maximum and the 2/month monitoring requirements remain in the permit.

The attached TRC_CALC spreadsheet indicates the existing technology-based limits are protective.

Best Professional Judgment (BPJ) Limitations

DEP recommends the following:

- Existing minimum dissolved oxygen limit of 3.0 mg/l should remain in the permit to protect the receiving surface water.
- Existing annual monitoring for total nitrogen and total phosphorus should remain in the permit per 25 PA § 92a.61(c).
- Annual E. Coli reporting requirements are proposed per the 2017 Triennial Review of Water Quality Standards, published in the PA Bulletin on July 11, 2020.

Additional Considerations

Mass loading limits and influent monitoring are not applicable for non-publicly owned treatment works.

Anti-Backsliding

No limits or monitoring requirements are proposed to be made less stringent.

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" (386-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	0.0178	XXX	XXX	XXX	XXX	XXX	2/month	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	3.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25.0	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 Daily Max	XXX	1/year	Grab
Ammonia-Nitrogen Nov 1 - Apr 30	XXX	XXX	XXX	Report	XXX	Report	2/month	Grab
Ammonia-Nitrogen May 1 - Oct 31	XXX	XXX	XXX	20.0	XXX	40.0	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

Compliance Sampling Location: Outfall 001

Input Data WQM 7.0

Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
36558	CROWS RUN	**3.150**	853.00	7.53	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 (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
Q7-10	0.033	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	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 (ºC)	Disc pH
Holly Hill STP	PA0216381	0.0090	0.0090	0.0090	0.000	20.00	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

Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
36558	CROWS RUN	**2.150**	776.00	11.70	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 (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
Q7-10	0.033	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	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 (ºC)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
20G	36558	CROWS 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 (ºC)	Analysis pH
Q7-10 Flow												
3.150	0.25	0.00	0.25	.0139	0.01458	.423	8.92	21.1	0.07	0.878	24.73	7.00
Q1-10 Flow												
3.150	0.21	0.00	0.21	.0139	0.01458	NA	NA	NA	0.06	0.962	24.69	7.00
Q30-10 Flow												
3.150	0.34	0.00	0.34	.0139	0.01458	NA	NA	NA	0.08	0.745	24.80	7.00

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	0.84	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20G	36558	CROWS 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
3.150	Holly Hill STP	11.36	50	11.36	50	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
3.150	Holly Hill STP	1.38	25	1.38	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
3.15	Holly Hill STP	25	25	25	25	3	3	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20G	36558	CROWS RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
3.150	0.009	24.735	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
8.917	0.423	21.096	0.070
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.22	0.369	1.33	1.008
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.965	20.031	Owens	5
Reach Travel Time (days)			
0.878			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.088	3.09	1.21	7.57
0.176	2.97	1.11	7.57
0.263	2.85	1.02	7.57
0.351	2.74	0.93	7.57
0.439	2.63	0.85	7.57
0.527	2.53	0.78	7.57
0.614	2.43	0.71	7.57
0.702	2.33	0.65	7.57
0.790	2.24	0.60	7.57
0.878	2.15	0.55	7.57

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20G	36558	CROWS 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)
3.150	Holly Hill STP	PA0216381	0.009	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

TRC EVALUATION

Input appropriate values in B4:B8 and E4:E7

0.25	= Q stream (cfs)	0.5	= CV Daily
0.009	= 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)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 5.747	1.3.2.iii	WLA cfc = 5.595
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 2.141	5.1d	LTA_cfc = 3.253

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)