pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0114898**
Facility Type	**Municipal**	APS ID	**1058666**
Major / Minor	**Minor**	Authorization ID	**1388217**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Madison Township Municipal Authority**	Facility Name	**Madison Township MA Jerseytown Sewer System**
Applicant Address	PO Box 620	Facility Address	Route 44
	Millville, PA 17846-0620		Jerseytown, PA 17899-0620
Applicant Contact	Robert Bower	Facility Contact	Robert Bower
Applicant Phone	(570) 204-2784	Facility Phone	(570) 204-2784
Client ID	44352	Site ID	4576
Ch 94 Load Status	Not Overloaded	Municipality	Madison Township
Connection Status	No Limitations	County	Columbia
Date Application Received	March 4, 2022	EPA Waived?	Yes
Date Application Accepted	March 18, 2022	If No, Reason	

Purpose of Application: Application for a renewal of an NPDES permit for discharge of treated Sewage.

Summary of Review

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		*Jonathan P. Peterman* Jonathan P. Peterman / Project Manager	February 28, 2023
X		*Nicholas W. Hartranft* Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	March 2, 2023

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.02
Latitude	41º 5' 20.95"	Longitude	-76º 34' 53.06"
Quad Name	Columbia West	Quad Code	1833
Wastewater Description:	Sewage Effluent		
Receiving Waters	Mud Creek (WWF)	Stream Code	18777
NHD Com ID	66917453	RMI	6.5
Drainage Area	1.29	Yield (cfs/mi^2)	0.23
Q_{7-10} Flow (cfs)	0.3	Q_{7-10} Basis	-
Elevation (ft)	600	Slope (ft/ft)	-
Watershed No.	10-D	Chapter 93 Class.	WWF
Existing Use	WWF	Existing Use Qualifier	n/a
Exceptions to Use	None	Exceptions to Criteria	none
Assessment Status	Impaired		
Cause(s) of Impairment	ORGANIC ENRICHMENT, SILTATION		
Source(s) of Impairment	AGRICULTURE, AGRICULTURE		
TMDL Status	Final	Name	Mud Creek Watershed TMDL
Nearest Downstream Public Water Supply Intake	Sunbury Municipal Authority		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	1740
PWS RMI	124	Distance from Outfall (mi)	30

Changes Since Last Permit Issuance: None. Given that there have been no changes to the watershed or discharge, the previous Q^{7-10} information and modeling data will be utilized.

Other Comments: None.

Treatment Facility Summary				
Treatment Facility Name: Madison Township Municipal Authority Jerseytown Sewer System STP				
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Extended Aeration	Hypochlorite	0.02
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.0015	25	Not Overloaded	Aerobic Digestion	Other WWTP

The treatment plant consists of a wet well, bar screen, three aeration tanks, a clarifier, an erosion chlorinator, a chlorine contact tank, a polishing/post aeration tank, and an aerated sludge holding tank.

Changes Since Last Permit Issuance: None.
Other Comments: None.

TMDL Impairment

The Department's Geographical Information System indicates that there is a TMDL associated for this segment of MudCreek. However, the source is identified as organic enrichment and siltation due to agriculture. This facility is not expected to contribute to this impairment.

Anti-Backsliding

In accordance with 40 CFR 122.44(l)(1) and (2), this permit does not contain effluent limitations, standards, or conditions that are less stringent than the previous permit.

Chesapeake Bay Requirements

Since this facility's annual average design flow is 0.02 MGD, the permittee will be required to monitor and report TN and TP throughout the permit term at a frequency no less than annually in accordance with the Phase III WIP Chesapeake Bay Strategy for Phase V facilities (0.002 MGD to 0.2 MGD).

Existing Effluent Limitations and Monitoring Requirements

Existing Limits – Outfall 001

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	1/week	Weir
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Max	XXX	5/week	Grab
Dissolved Oxygen	XXX	XXX	Report	XXX	XXX	XXX	5/week	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	5/week	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	4.0	6.5	XXX	25	40	50	2/month	Grab
Total Suspended Solids	5.0	7.5	XXX	30	45	60	2/month	Grab
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Total Nitrogen	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	Grab
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Grab
Total Phosphorus	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	Grab

*The existing effluent limits for Outfall 001 were based on a design flow of 0.02 MGD.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.02
Latitude 41º 5' 20.90" **Longitude** -76º 34' 53.00"
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

To establish whether or not water-quality based effluent limitations (WQBELs) are required, the Department models in-stream conditions. In order to determine limitations for CBOD5, ammonia-N and dissolved oxygen, the Department utilizes the WQM 7.0 v1.0b model and in order to determine limitations for toxics, the Department utilizes the Toxic Screening analysis spreadsheet.

WQM 7.0 for Windows, Version 1.0b, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen
The previous model was run using the latest information on Q7-10 stream flow, background water quality, average annual design flow, and other discharge characteristics. There have been no changes to the discharge characteristics or background modeling information, so the previous modeling is still valid and will be utilized for this review. The existing technology-based effluent limits for $CBOD_5$ (25 mg/l) and NH3-N (25 mg/l) were used as inputs for the modeling. The DO minimum daily average criterion from §93.7 (5.0 mg/L for WWF) was used for the in-stream objective for the model. The summary of the output is as follows:

Parameter	Effluent Limit		
	30 Day Average	Maximum	Minimum
CBOD5	25	N/A	N/A
Ammonia-N	25	50	N/A
Dissolved Oxygen	N/A	N/A	3

The model previously indicated that the effluent limits for ammonia-nitrogen and CBOD5 as shown above were protective of water quality. The model did not recommend water-quality based effluent limitations with regards to dissolved oxygen. Refer to the previous fact sheet for the WQM 7.0 inputs and results.
Comments: None.

Best Professional Judgment (BPJ) Limitations

See Dissolved Oxygen and Ammonia-nitrogen sections below.
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 the abovementioned 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) and/or BPJ.

Proposed Limits - 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	1/week	Weir
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Max	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	Report	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	4.0	6.5	XXX	25	40	50	2/month	Grab
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	2/month	Grab
Total Suspended Solids	5.0	7.5	XXX	30	45	60	2/month	Grab
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	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	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	Grab
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Grab
Total Phosphorus	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	Grab

*The proposed effluent limits for Outfall 001 were based on a design flow of 0.02 MGD.

Effluent Limit Determination for Outfall 001

General Information
The associated mass-based limits (lbs/day) for all parameters were based on the formula: design flow (average annual) (MGD) x concentration limit (mg/L) at design flow x conversion factor (8.34). All effluent limits were then rounded down in accordance with the rounding rules established in the *Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001)*, Chapter 5 - Specifying Effluent Limitations in NPDES Permits. The existing monitoring frequencies and sample types for these parameters generally correspond with the *Technical Guidance for the Development and Specification of Effluent Limitations* (362-0400-001) Table 6-3 and will remain.

Flow
Reporting of the daily maximum flow is consistent with monitoring requirements for other treatment plants and will remain.

Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)
The results of the previous WQM 7.0 model show that the previously applied secondary treatment standards (25 PA Code §92a.47 (a) (1&2)) for $CBOD_5$ are protective of water quality and will remain.

Total Suspended Solids (TSS)
The previously applied technology based secondary treatment standards (25 PA Code §92a.47 (a) (1&2)) for TSS will remain as well.

pH
CFR Title 40 §133.102(c) and 25 PA Code §95.2(1) provide the basis of effluent limitations for pH.

Total Residual Chlorine (TRC)
In accordance with 25 Pa. Code § 92a.48(b)(1), a site-specific BAT value of 0.5 mg/l (which is also the existing effluent limit) was used as the input in the TRC model evaluation. The attached TRC model indicates that the existing BAT effluent limits of 0.5 mg/L (Average Monthly) and 1.6 mg/L (Instantaneous Maximum) are protective of water quality and will remain.

Fecal Coliforms
The existing fecal coliform limits with I-max limits were previously updated from the previous Chapter 92 code to correspond with what is specified in the updated 25 PA Code § 92a.47 (a)(4)&(5). The existing effluent limits will remain.

Ammonia-Nitrogen (NH3-N)
The previous WQM 7.0 modeling results for summer indicates that an average monthly limit of 25 mg/L is acceptable. A year-round monitoring requirement for ammonia-nitrogen was previously established and will remain.

Dissolved Oxygen (DO)
25 PA Code §93.7 provides specific water quality criteria for DO and monitoring for this parameter will ensure that the facility is not creating or contributing to an in-stream excursion below these water quality standards

Influent BOD_5 and TSS
The Department requires the reporting of raw sewage influent monitoring for BOD_5 and TSS in all POTW permits. This provides the Department with the ability to monitor the percent removal of each parameter as stipulated in section 2 of the Part A conditions and maintain records of the BOD_5 loading as required by 25 Pa. Code Chapter 94. The monitoring frequencies and sample types will be identical to the effluent sampling.

E. Coli
25 PA Code § 92a.61 provide the basis of monitoring requirements for E. Coli. Yearly monitoring will be required going forward.

Note: Madison Twp M.A. has previously requested that the monitoring for DO, TRC, and pH to be maintained at 5/week. Daily sampling is now proposed, in correspond with the *Technical Guidance for the Development and Specification of Effluent Limitations* (362-0400-001) Table 6-3, given that the effluent is discharged daily.

Compliance History

Summary of Inspections -The most recent Clean Water Program onsite inspection for this facility was a Compliance Evaluation Inspection on 1/11/23. No violations were noted and the facility was operating normally.

WMS Query Summary - A WMS Query was run at *Reports - Violations & Enforcements – Open Violations for Client Report* to determine whether there are any unresolved violations associated with the client that will affect issuance of the permit (per CSL Section 609). This query revealed that there were no open violations.

Compliance History

DMR Data for Outfall 001 (from January 1, 2022 to December 31, 2022)

Parameter	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22
Flow (MGD) Average Monthly	0.016894	0.011942	0.011729	0.01352	0.00703	0.004379	0.00737	0.01332	0.02262	0.02481	0.00529	0.00917
Flow (MGD) Daily Maximum	0.02	0.01976	0.02028	0.02128	0.02178	19900	0.01712	0.03167	0.03199	0.03212	0.02813	0.002578
pH (S.U.) Instantaneous Minimum	7.59	7.61	7.37	7.34	6.56	7.0	7.34	7.38	7.18	7.17	7.29	7.34
pH (S.U.) Instantaneous Maximum	7.89	7.96	7.99	8.02	7.98	7.4	7.85	7.64	7.74	7.61	7.89	7.88
DO (mg/L) Daily Minimum	9.21	8.54	7.40	8.18	7.42	6.99	8.51	8.67	3.43	6.5	9.12	9.4
TRC (mg/L) Average Monthly	0.46	0.49	0.44	0.50	0.35	0.31	0.32	0.48	0.26	0.23	0.09	0.16
TRC (mg/L) Instantaneous Maximum	0.61	0.71	1.03	0.79	0.96	0.5	0.45	0.79	0.61	0.32	0.3	0.22
CBOD5 (lbs/day) Average Monthly	0.3	< 0.08	< 0.3	0.3	< 0.6	< 0.1	< 0.1	< 0.3	< 0.4	0.8	< 0.3	0.4
CBOD5 (lbs/day) Weekly Average	< 0.4	< 0.1	< 0.3	< 0.5	1.0	< 0.2	< 0.1	< 0.3	< 0.4	< 0.7	< 0.3	0.4
CBOD5 (mg/L) Average Monthly	< 3.0	< 3.0	< 3.0	< 3.0	< 4.94	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	3.0
CBOD5 (mg/L) Weekly Average	< 3.0	< 3.0	< 3.0	< 3.0	< 6.88	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
TSS (lbs/day) Average Monthly	0.4	0.1	0.4	0.8	0.7	< 0.1	0.5	0.3	0.8	0.9	0.2	0.5
TSS (lbs/day) Weekly Average	0.5	0.2	0.4	1.0	0.9	0.2	1.0	0.2	0.7	1.0	0.3	0.9
TSS (mg/L) Average Monthly	3.6	7.2	4.9	5.2	6.0	< 3.0	12.2	< 2.4	4.8	4.2	< 2.0	4.2
TSS (mg/L) Weekly Average	4.4	12.4	5.2	8.4	6.0	4.4	22.4	3.2	4.8	5.6	2.4	6.8
Fecal Coliform (No./100 ml) Geometric Mean	1.0	< 2.0	3.0	2	2	9.8	< 1.0	< 1.0	< 3.0	29	1864.7	< 3.4
Fecal Coliform (No./100 ml)	3.0	5.2	9.7	3.1	5.2	18.5	< 1.0	1.0	< 3.0	161.6	2429.6	6.3

Instantaneous Maximum												
Ammonia (mg/L) Average Monthly	< 0.01	< 0.1000	< 0.1000	< 0.1000	< 0.1000	< 0.1000	< 0.1000	< 1.0	< 0.1000	< 0.1000	< 0.1000	< 0.1000

APPENDIX A

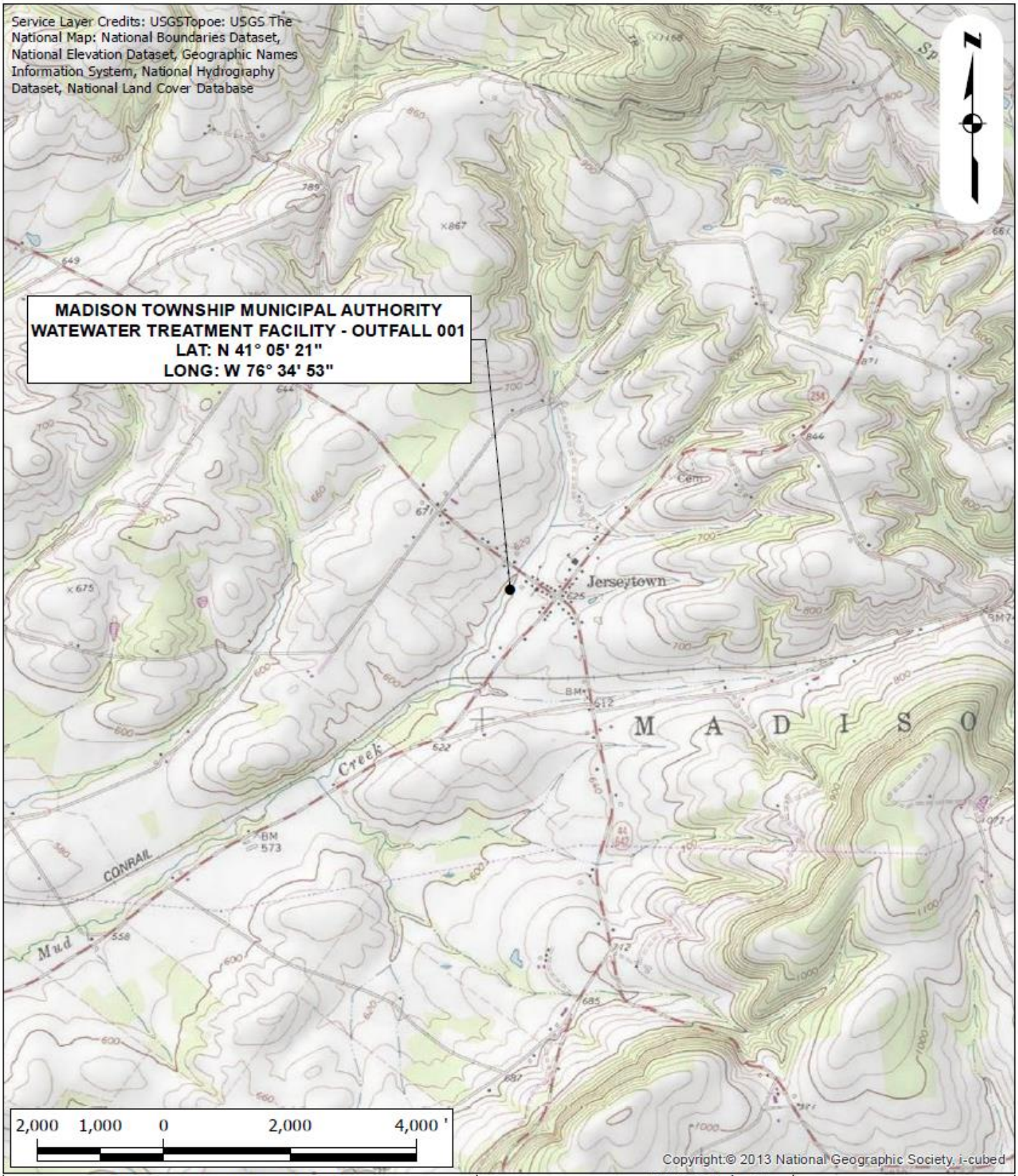
TRC ANALYSIS SPREADSHEET

	B	C	D	E	F	G
1A						
2	**TRC EVALUATION**	Madison Twp MA PA0114898				
3	Input appropriate values in B4:B8 and E4:E7					
4	0.3	= Q stream (cfs)		0.5	= CV Daily	
5	0.02	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
	0	= % Factor of Safety (FOS)		0	=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA afc =	3.112	1.3.2.iii	WLA cfc = 3.027
12	PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc=	1.160	5.1d	LTA_cfc = 1.759
14						
15	Source		Effluent Limit Calculations			
16	PENTOXSD TRG	5.1f	AML MULT =	1.231		
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.500	BAT/BPJ	
18			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)

APPENDIX B

FACILITY MAP AND SCHEMATIC



USGS LOCATION MAP

PREPARED FOR

MADISON TOWNSHIP MUNICIPAL AUTHORITY

WWTF NPDES PERMIT RENEWAL

MADISON TOWNSHIP, COLUMBIA COUNTY, PA

MILLVILLE, PA USGS QUADS

PROJECT -	2021-0937_Madison Twp Auth Chaper 94 Reports
DATE -	03/03/2022
SCALE -	1 " = 2,000 '
DRAWN -	LMACK
FILE -	2022-03-03_USGS Location-Map.mxd

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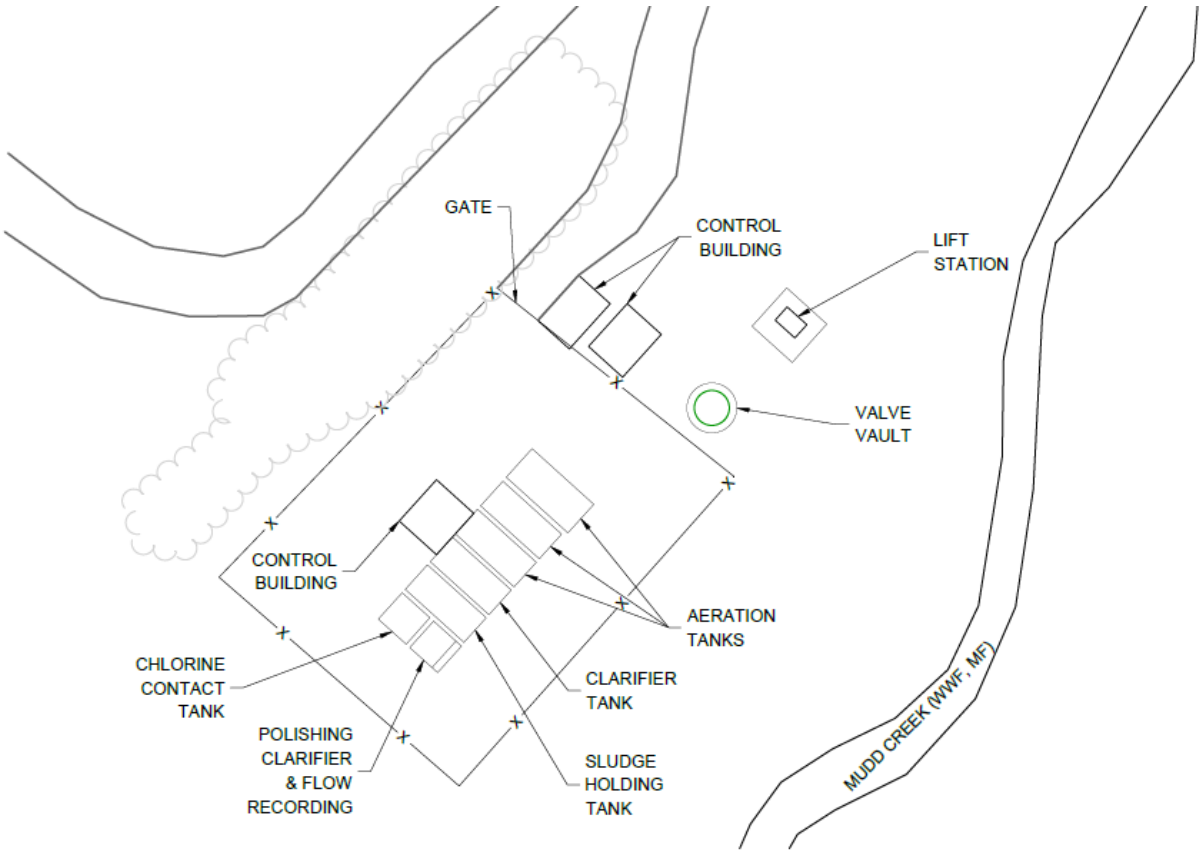

EXISTING SITE PLAN

SCALE: 1" = 30'