Pennsylvania Department of Environmental Protection

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0112488**
Facility Type	**Municipal**	APS ID	**1081676**
Major / Minor	**Minor**	Authorization ID	**1428210**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Ralpho Township Municipal Authority**	Facility Name	**Bear Gap STP**
Applicant Address	206 S Market Street Suite 1	Facility Address	Fredricks Road
	Elysburg, PA 17824-9782		Bear Gap, PA 17842
Applicant Contact	Ted Yeager	Facility Contact	Ted Yeager
Applicant Phone	(570) 672-9792	Facility Phone	(570) 672-9792
Client ID	25371	Site ID	245444
Ch 94 Load Status	Not Overloaded	Municipality	Ralpho Township
Connection Status	No Limitations	County	Northumberland
Date Application Received	February 17, 2023	EPA Waived?	Yes
Date Application Accepted	February 28, 2023	If No, Reason	

Purpose of Application: Application for the renewal of the existing individual NPDES permit.

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.

This facility serves the Bear Gap Area of the township and was originally designed to treat a total of 20 residences. The collection system consists of approximately 2,200 linear feet of 4" diameter PVC gravity sewer piping. Each residence has individual septic tanks and the primary treated effluent from the tanks is gravity fed to the treatment plant.

Approve	Deny	Signatures	Date
X		Jonathan P. Peterman / Project Manager	December 27, 2024
X		Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	December 27, 2024

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.006
Latitude	40º 49' 49.29"	Longitude	-76º 32' 31.00"
Quad Name	Shamokin	Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Miller's Run (CWF)	Stream Code	18626
NHD Com ID	54961435	RMI	2.65
Drainage Area	1.07	Yield (cfs/mi^2)	0.3
Q_{7-10} Flow (cfs)	0.35	Q_{7-10} Basis	Stream Gage No. 1468500
Elevation (ft)	740	Slope (ft/ft)	0.008
Watershed No.	6-B	Chapter 93 Class.	CWF
Existing Use	CWF	Existing Use Qualifier	N/A
Exceptions to Use	None.	Exceptions to Criteria	None.
Assessment Status	Impaired		
Cause(s) of Impairment	Metals; pH		
Source(s) of Impairment	Abandoned Mine Drainage		
TMDL Status	Final 4/9/2001	Name	Shamokin Creek Watershed
Nearest Downstream Public Water Supply Intake	Capital Region Water		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	2610
PWS RMI	74	Distance from Outfall (mi)	70

Changes Since Last Permit Issuance: None.

Other Comments: In order to determine the Q7-10 low flow for Miller's Run, a comparative stream analysis was previously conducted and the results of which are attached in Appendix A. This stream gage was used in the analysis and indicates that the Q_{7-10} for Miller's Run is 0.3564 cfs (0.2303 MGD).

Treatment Facility Summary		
Treatment Facility Name: Bear Gap STP		
WQM Permit No.	**Issuance Date**	**Notes:**
488409	1/12/89	Initial construction.

Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Design Flow (MGD)**
Sewage	Primary	Septic Tanks	Hypochlorite	0.006
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.006	10	Not Overloaded	None.	Other WWTP.

Treatment System Components for Outfall 001:
- Note: Individual septic tanks at each residence and effluent is sent to plant.

- One (1) settling/receiving tank.
- One (1) dosing tank.
- Two (2) sand filter beds (5,264 sq. ft. total).
- One (1) erosion chlorinator.
- One (1) chlorine contact tank.
- One (1) carbonate tank. (pH adjustment using limestone)
- One (1) Outfall.

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

TMDL Impairment

The Department's Geographic Information System (GIS) shows that the Miller's Run (Shamokin Creek Watershed) is impaired and a TMDL does exist for the stream segment. High levels of metals caused these impairments (iron, manganese, aluminum) as well as pH. All impairments resulted from acid mine drainage. The TMDL addresses the three primary metals associated with acid mine drainage (iron, manganese, aluminum). There is currently no industrial waste being discharged into the treatment plant and this discharge is not expected to contribute to the level of metals in the stream. Given the regulations contained in 40 CFR §122.44(d)(1)(ii)&(iii), it can be determined that the type of effluent from this facility has no "Reasonable potential to cause, or contributes to an in-stream excursion above the allowable ambient concentration of a State numeric criteria within a State water quality standard for an individual pollutant." However, monitoring requirements for metals (iron, manganese and aluminum) will be placed in the permit because point sources in the segment where the TMDL does not assign any wasteload allocations are not authorized to discharge these metals of concern. The result from the monitoring that was conducted over the previous permit cycles demonstrates that the facility is not contributing to this impairment and no furth monitoring is required. The monitoring requirements will be removed. The monitoring results for these metals are attached in the Appendix E.

Chesapeake Bay Requirements

Previously, the permittee was 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) since it did not have at least two of years of monitoring completed. Monitoring for these parameters was conducted over the previous permit term and the yearly monitoring requirements for nutrients will be removed accordingly. No further monitoring is required at this time. The monitoring results are attached in the Appendix E.

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	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	5/week	Grab
Dissolved Oxygen	XXX	XXX	Report Daily Min	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)	1.3	2.0	XXX	25.0	40.0	50	1/month	Grab
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/month	Grab
Total Suspended Solids	1.5	2.3	XXX	30.0	45.0	60	1/month	Grab
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/month	Grab
Ammonia-Nitrogen	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	Grab
Total Nitrogen (lbs/year)	Report Annl Avg	Report Total Annual	XXX	Report Annl Avg	XXX	XXX	1/year	Grab
Total Phosphorus (lbs/year)	Report Annl Avg	Report Total Annual	XXX	Report Annl Avg	XXX	XXX	1/year	Grab
Aluminum, Total	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
Iron, Total	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
Manganese, Total	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab

*The existing effluent limits for Outfall 001 were based on a design flow of 0.006 MGD.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.006
Latitude 40º 49' 49.00" **Longitude** -76º 32' 31.00"
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)

Comments: None.

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 Toxics Management Spreadsheet (TMS). The TMS was not utilized for this review.

WQM 7.0 for Windows, Version 1.0b, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen
Since there have been no changes to the watershed or the facility and there is sufficient dilution, the previous modeling results shall be utilized. The model was previously run using the Q7-10 stream flow, background water quality, average annual design flow, and other discharge characteristics. The existing technology-based effluent limits for $CBOD_5$ (25 mg/l) and NH3-N (25.0 mg/l) were used as inputs for the modeling. The DO minimum daily average criterion from §93.7 (5.0 mg/L for CWF) 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 previous model did not recommend water-quality based effluent limitations with regards to $CBOD_5$, ammonia-nitrogen, and dissolved oxygen. Refer to the Appendix B for the previous WQM 7.0 inputs and results. The existing effluent limits will remain.

Best Professional Judgment (BPJ) Limitations

See the D.O. and Ammonia-Nitrogen sections below.
Comments: None.

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.

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	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	5/week	Grab
Dissolved Oxygen	XXX	XXX	Report Daily Min	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)	1.3	2.0	XXX	25.0	40.0	50	1/month	Grab
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/month	Grab
Total Suspended Solids	1.5	2.3	XXX	30.0	45.0	60	1/month	Grab
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/month	Grab
Ammonia-Nitrogen	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab

*The proposed effluent limits for Outfall 001 were based on a design flow of 0.006 MGD.

Effluent Limit Determination for Outfall 001

General Information
All of the limits proposed above are consistent with other permits issued for wastewater treatment plants in the region. 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.

Flow
Reporting of the average monthly and daily maximum flow is consistent with monitoring requirements for other treatment plants of this size.

Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)
The results of the 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.

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. The existing limits will remain.

TRC
In accordance with 25 Pa. Code 92a.48(b)(2), a best available technology (BAT) value of 0.5 mg/l was used in lieu of the existing effluent limit (1.0 mg/L) in the TRC Spreadsheet. The attached TRC model indicates that the technology-based 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).

Ammonia-Nitrogen (NH3-N)
The results of the WQM 7.0 model show that a discharge of ammonia-nitrogen at the technology-based effluent limit (25 mg/L) would be protective of water quality. It is anticipated that the influent NH3-N concentration would be 25 mg/L and the effluent concentration would be significantly lower. Therefore, the permittee will only be required to monitor for ammonia-nitrogen.

Dissolved Oxygen (DO)
Based on BPJ, monitoring of the minimum Dissolved Oxygen (DO) standard found in Chapter 93 for cold water fishes will reamin. This will ensure that the discharge does not contributes to an in-stream excursion above the allowable ambient concentration of State numeric criteria within a State water quality standard for an individual pollutant.

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 are 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.

Monitoring Frequencies (TRC, pH, $CBOD_5$, TSS, and Fecal Coliforms)
Previous reviews established a monitoring frequency of 5/ Week for pH, D.O., and TRC and 1/ Month for $CBOD_5$, TSS, and Fecal Coliforms. However, these monitoring frequencies do not correspond with the *Technical Guidance for the*

Development and Specification of Effluent Limitations (362-0400-001) Table 6-3 which calls for daily monitoring and 2/ month samples accordingly. Based on BPJ and given that there is no history of significant non-compliance with effluent limitations over the past two years of DMR data, the existing frequencies will be continued in the renewed permit. Given that this facility utilizes a septic / sand filter system in lieu of a traditional aeration system, a 5/ week sampling frequency is acceptable. It is expected that the effluent quality would not differ drastically on days when monitoring is not conducted given that there is a lesser potential for a system malfunction with a sand filter system.

Compliance History

Summary of Inspections -The last inspection of the facilities was conducted on 12/13/24 by the Department which reveals the facility was operating normally. No major issues were noted.
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 unresolved violations.
DMRs Summary - Upon review of the last year of DMR's, the facility appears to be generally operating within the given concentration limits. See DMR data in continued Compliance History below.

Compliance History

DMR Data for Outfall 001 (from November 1, 2023 to October 31, 2024)

Parameter	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23
Flow (MGD) Average Monthly	0.002	0.002	0.0021	0.0023	0.0020	0.0027	0.0038	0.004	0.0027	0.004442	0.0066	0.0020
Flow (MGD) Daily Maximum	0.003	0.003	0.0032	0.0035	0.0034	0.0101	0.0143	0.014	0.0070	0.01484	0.0158	0.0045
pH (S.U.) Instantaneous Minimum	6.1	6.1	6.1	6.0	6.1	6.0	6.1	6.0	6.0	6.0	5.8	6.0
pH (S.U.) Instantaneous Maximum	6.8	6.9	6.7	6.5	6.5	6.7	7.1	6.9	7.4	7.0	9.0	7.0
DO (mg/L) Daily Minimum	5.68	6.12	0.33	4.17	6.07	4.32	7.01	7.88	8.36	7.36	7.67	0.65
TRC (mg/L) Average Monthly	0.4	0.4	0.2	0.1	0.1	0.1	0.2	0.4	0.3	0.03	0.4	0.5
TRC (mg/L) Instantaneous Maximum	1.37	1.15	0.62	0.43	0.42	0.45	0.86	2.2	1.09	1.57	1.26	1.67
CBOD5 (lbs/day) Average Monthly	< 0.05	< 0.04	< 0.05	< 0.06	0.1	< 0.04	1.8	< 0.1	0.08	< 0.05	< 0.05	0.1
CBOD5 (lbs/day) Weekly Average	< 0.05	< 0.04	< 0.05	< 0.06	0.1	< 0.04	1.8	< 0.1	0.08	< 0.05	< 0.05	0.1
CBOD5 (mg/L) Average Monthly	< 3.0	< 3.0	< 3.0	< 3.0	7.1	< 3.0	15.3	< 3.0	4.6	< 3.0	< 3.0	7.5
CBOD5 (mg/L) Weekly Average	< 3.0	< 3.0	< 3.0	< 3.0	7.1	< 3.0	15.3	< 3.0	4.6	< 3.0	< 3.0	7.5
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	1	1	3	1	< 1	1	18	3	2	2	3	1
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	1	1	3	1	< 1	1	18	3	2	2	3	1
BOD5 (mg/L) Raw Sewage Influent Average Monthly	60	57	167	49	28	103	154	57	144	124	177	81

TSS (lbs/day) Average Monthly	0.04	< 0.02	0.05	< 0.03	< 0.02	< 0.02	1.1	0.2	< 0.03	< 0.03	0.05	< 0.02
TSS (lbs/day) Raw Sewage Influent Average Monthly	< 1	< 1	1	1	1	< 1	7	1	< 1	1	< 1	< 1
TSS (lbs/day) Raw Sewage Influent Daily Maximum	< 1	< 1	1	1	1	< 1	7	1	< 1	1	< 1	< 1
TSS (lbs/day) Weekly Average	0.04	< 0.02	0.05	< 0.03	< 0.02	< 0.02	1.1	0.2	< 0.03	< 0.03	0.05	< 0.02
TSS (mg/L) Average Monthly	2.8	< 1.6	2.8	< 1.6	< 1.6	< 1.6	9.6	5.2	< 1.6	< 1.6	3.2	< 1.6
TSS (mg/L) Raw Sewage Influent Average Monthly	20	28	48	34	42	33	62	30	27.0	44	86	34
TSS (mg/L) Weekly Average	2.8	< 1.6	2.8	< 1.6	< 1.6	< 1.6	9.6	5.2	< 1.6	< 1.6	3.2	< 1.6
Fecal Coliform (No./100 ml) Geometric Mean	< 1	2	1	< 10	2	< 1	> 49	1553	< 1	< 1	< 1	< 1
Fecal Coliform (No./100 ml) Instantaneous Maximum	< 1	2	1	< 10	2	< 1	> 2419.6	1553.1	< 1	< 1	< 1	< 1
Total Nitrogen (lbs/day) Annual Average		< 0.7										
Total Nitrogen (mg/L) Annual Average		< 48.14										
Total Nitrogen (lbs) Total Annual		< 254										
Ammonia (lbs/day) Average Quarterly		0.06			1			0.01			0.004	
Ammonia (mg/L) Average Quarterly		3.284			10.61			0.5633			0.277	
Total Phosphorus (lbs/day) Annual Average		0.005										
Total Phosphorus (mg/L) Annual Average		0.36										
Total Phosphorus (lbs) Total Annual		2										

Total Aluminum (mg/L) Daily Maximum											0.525	
Total Iron (mg/L) Daily Maximum											< 0.2	
Total Manganese (mg/L) Daily Maximum											0.175	

Compliance History

Effluent Violations for Outfall 001, from: December 1, 2023 To: October 31, 2024

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
pH	12/31/23	Inst Min	5.8	S.U.	6.0	S.U.
pH	12/31/23	Inst Min	5.8	S.U.	6.0	S.U.
TRC	03/31/24	IMAX	2.2	mg/L	1.6	mg/L
CBOD5	04/30/24	Avg Mo	1.8	lbs/day	1.3	lbs/day
Fecal Coliform	04/30/24	Geo Mean	> 49	No./100 ml	2000	No./100 ml
Fecal Coliform	04/30/24	IMAX	> 2419.6	No./100 ml	10000	No./100 ml

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☐	PENTOXSD for Windows Model (see Attachment)
☒	TRC Model Spreadsheet (see Attachment **C**)
☐	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:

APPENDIX A

Q7-10 ANALYSIS AND STREAM DATA

Q_{7-10} Calculations

Ralpho Twp. - Bear Gap STP

Comparative Analysis

Stream Name	Schuylkill River
Reference Gage	1468500
Station Name	Schuylkill River at Landingville, PA
Gage Drainage Area (sq. mi.)	133
Q_{7-10} at Gage (cfs)	44.3
Drainage Area at site (sq. mi.)	1.07
Q_{7-10} at discharge site (cfs)	0.3564
Q_{7-10} at discharge site (mgd)	0.2303

Correlation
0.914

Low Flow Yield Ratio of 0.1 cfs/mi²

Q_{7-10} at discharge site (cfs)	0.3070
Q_{7-10} at discharge site (mgd)	0.0692

Check Dilution Ratio

	sf (cfs)	wf (cfs)
Dilution Ratio = sf/wf	0.3564	0.01547229
Dilution Ratio =	23.03463 to 1	

Basin Characteristics Report

Date: Wed Sep 26 2012 14:18:47 Mountain Daylight Time
NAD27 Latitude: 40.8304 (40 49 49)
NAD27 Longitude: -76.5431 (-76 32 35)
NAD83 Latitude: 40.8305 (40 49 50)
NAD83 Longitude: -76.5428 (-76 32 34)

Parameter	Value
Area in square miles	1.68
Mean Basin Elevation in feet	997.5
Unadjusted basin slope, in degrees	9.1
Adjusted basin slope, in degrees	9.2
Total stream length in miles	1.44
Stream density (miles/square mile)	1.34
Percent of area covered by lakes, ponds, reservoirs and wetlands	0.1
Percent of area covered by carbonate bedrock	0.0
Percent of area covered by glacial activity	0.0
Depth to rock in feet	4.9
Mean annual precipitation in inches	41.0
Maximum Daily Temperature in degrees F	57.3
Percent of area covered by forest	73.6
Percentage of impervious area determined from NLCD 2001 impervious dataset	0.7
Percent of area covered by urban land according to an enhanced version of NLCD 1992	0.0
Percentage of urban land cover determined from NLCD 2001 land cover dataset	6.7
Drainage quality index from STATSGO	3.1
X coordinate of the centroid, in map projection, meters	124178.5
Y coordinate of the centroid, in map projection, meters	204175.3
X coordinate of the outlet, in map projection, meters	122895.0
Y coordinate of the outlet, in map projection, meters	204255.0

APPENDIX B

PREVIOUS WQM 7.0 MODEL INPUT/OUTPUT

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
06B	18621	MILLERS RUN	2.650	740.00	1.07	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 (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	0.36	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Ralpho Twp Bear	PA0112488	0.0000	0.0060	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

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
06B	18621	MILLERS RUN	2.520	734.00	2.34	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 (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	0.78	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	0.00	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
06B	18621	MILLERS RUN

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	WD Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
2.660	0.36	0.00	0.36	.0093	0.00874	.43	6.88	16.09	0.12	0.064	20.13	7.00
Q1-10 Flow												
2.660	0.35	0.00	0.35	.0093	0.00874	NA	NA	NA	0.12	0.065	20.13	7.00
Q30-10 Flow												
2.660	0.43	0.00	0.43	.0093	0.00874	NA	NA	NA	0.14	0.056	20.11	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	0.97	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.2	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
06B	18621	MILLERS 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
2.650	Ralpho Twp Bear	9.68	50	9.68	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
2.650	Ralpho Twp Bear	1.9	25	1.9	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)		
2.65	Ralpho Twp Bear	25	25	25	25	3	3	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
06B	18621	MILLERS RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.650	0.006	20.127	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
8.883	0.430	15.991	0.123
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Ka (1/days)**
2.58	0.355	0.63	0.707
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.110	25.486	Owens	8
Reach Travel Time (days)			
0.064			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.006	2.58	0.63	8.22
0.013	2.57	0.63	8.22
0.019	2.57	0.63	8.22
0.026	2.56	0.62	8.22
0.032	2.55	0.62	8.22
0.039	2.55	0.62	8.22
0.045	2.54	0.61	8.22
0.051	2.54	0.61	8.22
0.058	2.53	0.61	8.22
0.064	2.53	0.61	8.22

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
06B	18621	MILLERS RUN

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
2.650	Ralpho Twp Bear	PA0112488	0.008	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

APPENDIX C

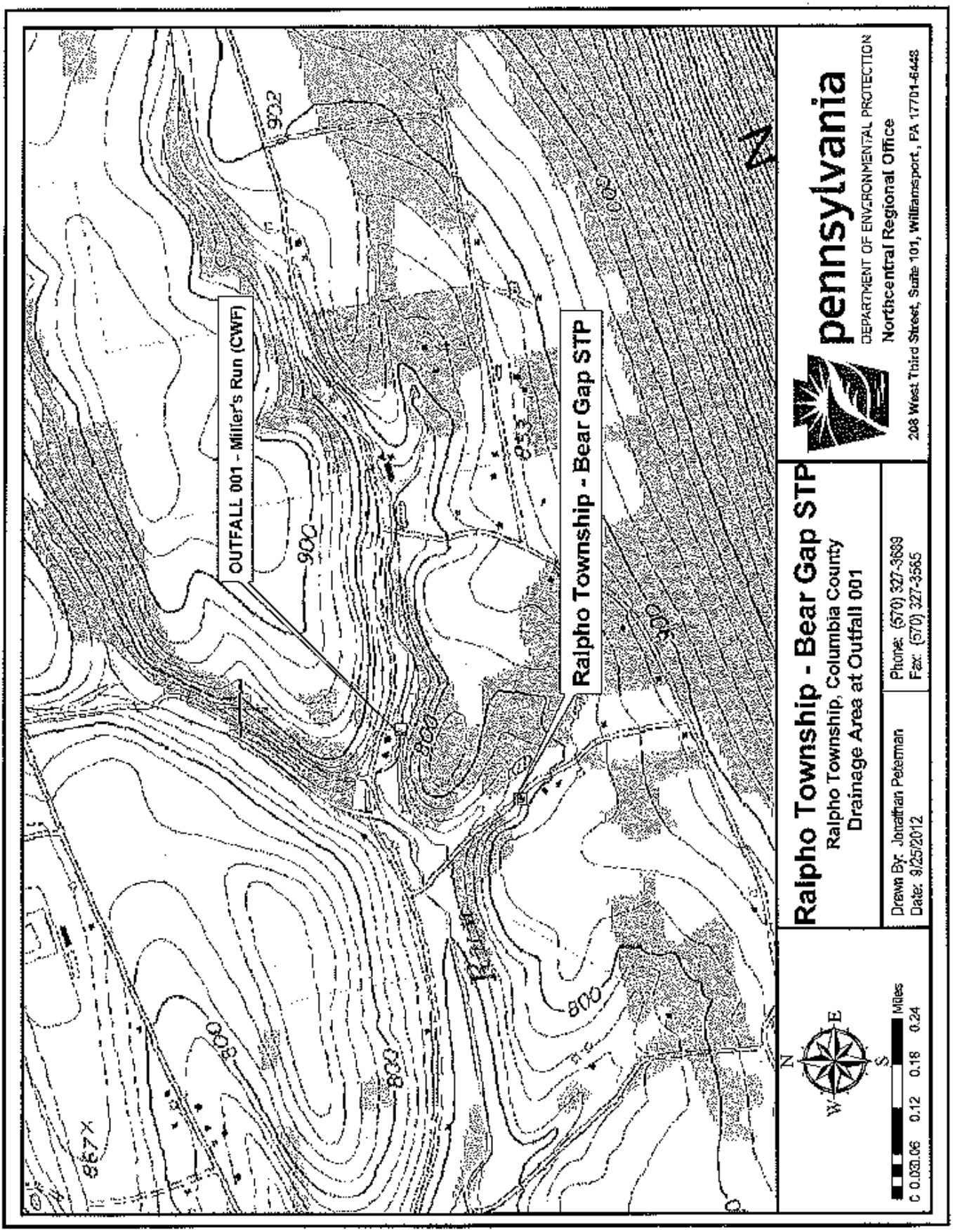
TRC ANALYSIS

1A	B	C	D	E	F	G
2	**TRC EVALUATION**			Ralpho Twp PA0112488		
3	Input appropriate values in B4:B8 and E4:E7					
4	0.35	= Q stream (cfs)		0.5	= CV Daily	
5	0.006	= 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 = 12.048		1.3.2.iii	WLA cfc = 11.738
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= 4.489		5.1d	LTA_cfc = 6.824
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 D

FACILITY MAP


OUTFALL 001 - Miller's Run (CWF)
Ralpho Township - Bear Gap STP
Ralpho Township - Bear Gap STP
Ralpho Township, Columbia County
Drainage Area at Outfall 001
Drawn By: Jonathan Peterman
Date: 9/25/2012
Phone: (570) 327-3693
Fax: (570) 327-3565
pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Northcentral Regional Office
208 West Third Street, Suite 101, Williamsport, PA 17701-6448
N
E
S
W
0 0.03 0.06 0.12 0.18 0.24
Miles

APPENDIX E

TN, TP, AND METALS SAMPLING RESULTS

PERMIT	PF NAME	REPORT FR	DUE DATE	OUTFALL	MONITORI	PARAMETE	PARAMETER	LOADUNIT	LOAD 1VAL	LOAD 1LIM	LOAD 1SBC	LOAD 2VAL	LOAD 2LIM	LOAD 2SBC	CONCUNITS		CONC 2VAI	CONC 2LIM	CONC 2SBC	CONC 3VAI	SAMPLE FR	SAMPLE TY
PA011248	RALPHO TV	Annually	01/28/2020	001	Final Effluе	01105	Aluminum, Total								mg/L		0.126	Monitor an	Daily Maximum		1/year	Grab
PA011248	RALPHO TV	Annually	01/28/2021	001	Final Effluе	01105	Aluminum, Total								mg/L		0.856	Monitor an	Daily Maximum		1/year	Grab
PA011248	RALPHO TV	Annually	01/28/2022	001	Final Effluе	01105	Aluminum, Total								mg/L		0.519	Monitor an	Daily Maximum		1/year	Grab
PA011248	RALPHO TV	Annually	01/28/2023	001	Final Effluе	01105	Aluminum, Total								mg/L		0.814	Monitor an	Daily Maximum		1/year	Grab
PA011248	RALPHO TV	Annually	01/28/2024	001	Final Effluе	01105	Aluminum, Total								mg/L		0.525	Monitor an	Daily Maximum		1/year	Grab
PA011248	RALPHO TV	Annually	01/28/2020	001	Final Effluе	01045	Iron, Total								mg/L	<	0.3	Monitor an	Daily Maximum		1/year	Grab
PA011248	RALPHO TV	Annually	01/28/2021	001	Final Effluе	01045	Iron, Total								mg/L	<	0.2	Monitor an	Daily Maximum		1/year	Grab
PA011248	RALPHO TV	Annually	01/28/2022	001	Final Effluе	01045	Iron, Total								mg/L	<	0.2	Monitor an	Daily Maximum		1/year	Grab
PA011248	RALPHO TV	Annually	01/28/2023	001	Final Effluе	01045	Iron, Total								mg/L	<	0.2	Monitor an	Daily Maximum		1/year	Grab
PA011248	RALPHO TV	Annually	01/28/2024	001	Final Effluе	01045	Iron, Total								mg/L	<	0.2	Monitor an	Daily Maximum		1/year	Grab
PA011248	RALPHO TV	Annually	01/28/2020	001	Final Effluе	01055	Manganese, Total								mg/L		0.539	Monitor an	Daily Maximum		1/year	Grab
PA011248	RALPHO TV	Annually	01/28/2021	001	Final Effluе	01055	Manganese, Total								mg/L		0.315	Monitor an	Daily Maximum		1/year	Grab
PA011248	RALPHO TV	Annually	01/28/2022	001	Final Effluе	01055	Manganese, Total								mg/L		0.0963	Monitor an	Daily Maximum		1/year	Grab
PA011248	RALPHO TV	Annually	01/28/2023	001	Final Effluе	01055	Manganese, Total								mg/L		0.195	Monitor an	Daily Maximum		1/year	Grab
PA011248	RALPHO TV	Annually	01/28/2024	001	Final Effluе	01055	Manganese, Total								mg/L		0.175	Monitor an	Daily Maximum		1/year	Grab
PA011248	RALPHO TV	Annually	11/28/2020	001	Final Effluе	00600	Total Nitrogen								mg/L	<	38.78	Monitor an	Annual Average		1/year	Grab
PA011248	RALPHO TV	Annually	11/28/2021	001	Final Effluе	00600	Total Nitrogen	lbs/day	0.8	Monitor an	Annual Average				mg/L		21.81	Monitor an	Annual Average		1/year	Calculation
PA011248	RALPHO TV	Annually	11/28/2022	001	Final Effluе	00600	Total Nitrogen	lbs/day	3	Monitor an	Annual Average				mg/L	<	62.55	Monitor an	Annual Average		1/year	Calculation
PA011248	RALPHO TV	Annually	11/28/2023	001	Final Effluе	00600	Total Nitrogen	lbs/day	0.9	Monitor an	Annual Average				mg/L		23.8	Monitor an	Annual Average		1/year	Calculation
PA011248	RALPHO TV	Annually	11/28/2024	001	Final Effluе	00600	Total Nitrogen	lbs/day	< 0.7	Monitor an	Annual Average				mg/L	<	48.14	Monitor an	Annual Average		1/year	Calculation
PA011248	RALPHO TV	Annually	11/28/2020	001	Final Effluе	51445	Total Nitrogen (Total L	lbs	< 0.8	Monitor an	Annual Ave	< 26	Monitor ar	Total Annual							1/year	Grab
PA011248	RALPHO TV	Annually	11/28/2021	001	Final Effluе	51445	Total Nitrogen (Total L	lbs				24	Monitor ar	Total Annual							1/year	Calculation
PA011248	RALPHO TV	Annually	11/28/2022	001	Final Effluе	51445	Total Nitrogen (Total L	lbs				< 99	Monitor ar	Total Annual							1/year	Calculation
PA011248	RALPHO TV	Annually	11/28/2023	001	Final Effluе	51445	Total Nitrogen (Total L	lbs				29	Monitor ar	Total Annual							1/year	Calculation
PA011248	RALPHO TV	Annually	11/28/2024	001	Final Effluе	51445	Total Nitrogen (Total L	lbs				< 254	Monitor ar	Total Annual							1/year	Calculation
PA011248	RALPHO TV	Annually	11/28/2020	001	Final Effluе	00665	Total Phosphorus								mg/L		2.09	Monitor an	Annual Average		1/year	Grab
PA011248	RALPHO TV	Annually	11/28/2021	001	Final Effluе	00665	Total Phosphorus	lbs/day	0.08	Monitor an	Annual Average				mg/L		2.29	Monitor an	Annual Average		1/year	Grab
PA011248	RALPHO TV	Annually	11/28/2022	001	Final Effluе	00665	Total Phosphorus	lbs/day	0.01	Monitor an	Annual Average				mg/L		0.27	Monitor an	Annual Average		1/year	Grab
PA011248	RALPHO TV	Annually	11/28/2023	001	Final Effluе	00665	Total Phosphorus	lbs/day	0.04	Monitor an	Annual Average				mg/L		0.962	Monitor an	Annual Average		1/year	Grab
PA011248	RALPHO TV	Annually	11/28/2024	001	Final Effluе	00665	Total Phosphorus	lbs/day	0.005	Monitor an	Annual Average				mg/L		0.36	Monitor an	Annual Average		1/year	Grab
PA011248	RALPHO TV	Annually	11/28/2020	001	Final Effluе	51451	Total Phosphorus (Tot	lbs	0.04	Monitor an	Annual Ave	1	Monitor ar	Total Annual							1/year	Grab
PA011248	RALPHO TV	Annually	11/28/2021	001	Final Effluе	51451	Total Phosphorus (Tot	lbs				3	Monitor ar	Total Annual							1/year	Grab
PA011248	RALPHO TV	Annually	11/28/2022	001	Final Effluе	51451	Total Phosphorus (Tot	lbs				0.4	Monitor ar	Total Annual							1/year	Grab
PA011248	RALPHO TV	Annually	11/28/2023	001	Final Effluе	51451	Total Phosphorus (Tot	lbs				1	Monitor ar	Total Annual							1/year	Grab
PA011248	RALPHO TV	Annually	11/28/2024	001	Final Effluе	51451	Total Phosphorus (Tot	lbs				2	Monitor ar	Total Annual							1/year	Grab

Averages		
Total Aluminum	0.568	mg/L
Total Iron	0.22	mg/L
Total Manganese	0.26406	mg/L
Total Nitorgen	39.016	mg/L
Total Phosphorus	1.1944	mg/L