pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0260134**
Facility Type	**Non-Municipal**	APS ID	**604294**
Major / Minor	**Minor**	Authorization ID	**1232442**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Lancaster Famly YMCA**	Facility Name	**Camp Shand Lancaster Family YMCA**
Applicant Address	265 Harrisburg Avenue	Facility Address	20 Penryn Lane
	Lancaster, PA 17603-2936		Cornwall, PA 17016
Applicant Contact	Christine Smith	Facility Contact	Christine Smith
Applicant Phone	(717) 272-8001	Facility Phone	(717) 272-8001
Client ID	253757	Site ID	683939
Ch 94 Load Status	Not Overloaded	Municipality	Cornwall Borough
Connection Status	No Limitations	County	Lebanon
Date Application Received	June 1, 2018	EPA Waived?	Yes
Date Application Accepted	June 14, 2018	If No, Reason	

Purpose of Application: Permit renewal for discharge of treated sewage

Summary of Review

1.0 General Discussion

This fact sheet supports the re-issuance of an existing NPDES permit for discharge of treated domestic wastewater from Lancaster Family YMCA - Camp Shand. The campground, located in Cornwall Borough, Lebanon County, provides summer camping for children, their counselors, and employees. The treatment plant has a hydraulic design capacity of 0.004MGD. This design flow over three summer months would equate to an annual average flow of 1,000-gpd and about 1,300 gpd if the camping was extended to four months out of the year. The discharge goes to unnamed tributary to Shearers Creek (stream code 08013) which is designated in the Pa Code Chapter 93.9 as High Quality-Cold Water Fishes (HQ-CWF). An SEJ was not requested during planning for the original permit so permit limits were developed for non-degradation impacts to the stream. The facility is permitted to discharge during the summer camping season usually from May to September, however the facility only discharges from June to August. Any wastewater generated during other months are treated by an on-lot subsurface system on site. The existing NPDES permit was issued on November 18, 2013 with an effective date of December 1, 2013 and expiration date of November 30, 2018. The applicant submitted a timely permit renewal application to the Department, and currently operating under the terms and conditions in the existing permit pending Department action on the renewal application. A topographic map showing the discharge location is presented in attachment A

1.1 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*

Approve	Deny	Signatures	Date
X		J. Pascal Kwedza, P.E. / Environmental Engineer	October 29, 2019
		Daniel W. Martin, P.E. / Environmental Engineer Manager	
		Maria D. Bebenek, P.E./Program Manager	

Summary of Review

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.

1.2 Changes to the existing Permit

No changes were made to the existing permit

1.3 Existing Permit Limits and Monitoring Requirements

DISCHARGE LIMITATIONS							MONITORING REQUIREMENTS	
	Mass Units (lbs/day)		Concentrations (mg/l)					
Discharge Parameter	Average Monthly	Maximum Daily	Inst. Minimum	Average Monthly	Maximum Daily	Inst. Maximum	Monitoring Frequency	Sample Type
Flow (mgd)	Monitor & Report	Monitor & Report	XXX	XXX	XXX	XXX	continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
D.O.	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Suspended Solids	XXX	XXX	XXX	20	XXX	40	2/month	8-hour comp
$CBOD_5$	XXX	XXX	XXX	10	XXX	20	2/month	8-hour comp
Fecal Coliform	XXX	XXX	XXX	200	XXX	1,000	2/month	Grab
Ammonia	XXX	XXX	XXX	5.0	XXX	10	2/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4.0	2/month	8-Hr Composite
UV Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Metered

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	.004
Latitude	40º 14' 42.59"	Longitude	-76º 23' 39.13"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Shearers Creek (HQ-CWF)	Stream Code	08013
NHD Com ID	57461703	RMI	1.82
Drainage Area	1.52 mi	Yield (cfs/mi^2)	0.25
Q_{7-10} Flow (cfs)	0.38	Q_{7-10} Basis	USGS Gage Station
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-G	Chapter 93 Class.	HQ-CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	
Background/Ambient Data		Data Source	
pH (SU)			
Temperature (°F)			
Hardness (mg/L)			
Other:			
Nearest Downstream Public Water Supply Intake		Columbia Borough Water Company	
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	34

Changes Since Last Permit Issuance:

Other Comments:

1.4.1 Water Supply Intake

The nearest water supply intake is 34 miles downstream at Columbia Borough on the Susquehanna River by the Columbia Borough Water Company. No impact is expected from this discharge.

2.0 Treatment Facility Summary

Treatment Facility Name: Camp Shand Lancaster Family YMCA

WQM Permit No.	Issuance Date
3809405	February 17, 2010

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Extended Aeration With Solids Removal	Ultraviolet	0.0013

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.004	10	Not Overloaded	Aerobic Digestion	Other WWTP

Changes Since Last Permit Issuance: None

2.1 Treatment Plant Summary

The treatment system is an Orenco Advantex plant with the following units:

- Advantex AX100 1st stage recirculation tank with 2 pods
- 2nd stage recirculation tank with 1 pod
- dose tank with Orenco venturi aspirator, Biotube effluent filter and pump
- 40 gpm UV disinfection unit and meter in Control Building
- pH control with soda ash added to recirculation tanks
- phosphorus reduction with alum added to recirculation tanks

The Plant is constructed to handle initial wastewater flows. A special condition was added to the WQM permit that triggers addition of treatment units as follows: A second 1st stage pod will be added to the treatment system within 180 days following NPDES Discharge Monitoring Reporting(DMR) submittal deadline date when any one of the following conditions apply:

- daily organic loading on monthly DMR exceeds 4 lbs/day
- arithmetic average of the monthly daily organic load for the season exceeds 3.5 lbs/day
- average daily on monthly DMR exceeds 2,500 gpd
- arithmetic average of the monthly daily flows for the season exceeds 2,000 gpd

Compliance History

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

Parameter	SEP-19	AUG-19	JUL-19	JUN-19	MAY-19	APR-19	MAR-19	FEB-19	JAN-19	DEC-18	NOV-18	OCT-18
Flow (MGD) Average Monthly		0.001326	0.00283	0.00131								
Flow (MGD) Daily Maximum		0.004427	0.00811	0.0083								
pH (S.U.) Minimum		5.72	5.96	6.36								
pH (S.U.) Maximum		8.07	7.52	7.19								
DO (mg/L) Minimum		6.6	4.15	7.79								
CBOD5 (mg/L) Average Monthly		5.4	3.7	3.3								
TSS (mg/L) Average Monthly		10.6	4.8	7.4								
Fecal Coliform (CFU/100 ml) Geometric Mean		< 3	< 1	< 1								
Fecal Coliform (CFU/100 ml) Instantaneous Maximum		11	< 1	1								
UV Transmittance (%) Minimum		68.3	42	71.8								
Ammonia (mg/L) Average Monthly		2.37	1.4	0.63								
Total Phosphorus (mg/L) Average Monthly		1.88	1.02	0.69								

Compliance History

Effluent Violations for Outfall 001, from: October 1, 2018 To: August 31, 2019

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
pH	08/31/19	Min	5.72	S.U.	6.0	S.U.
pH	07/31/19	Min	5.96	S.U.	6.0	S.U.
DO	07/31/19	Min	4.15	mg/L	5.0	mg/L

Compliance History

Summary of DMRs:	Discharge Monitoring Reports (DMRs) review for the facility for the last 12 months of operation presented on the table above indicate pH and DO limit violations in July of 2019 and pH violation occurred again in August of 2019. The facility has been struggling to meet permit limits consistently in the past. Current permit violations are appeared to be operations related. The operators have been trying to adjust operations to meet permit limits.
Summary of Inspections:	The facility was inspected 6 times during the past permit cycle. Inspection reports review for the facility during the period indicate permit limits have been met except for the 8/10/2015 inspection where TSS and Fecal Coliform violations occurred. A response to the notice of violation sent for the two inspection violations and previous DMR violations proposed some adjustments to the operations and pump controls. Those actions, addressed TSS, CBOD, NH3-N and Fecal Coliform violations that have been occurring in 2015.

Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	.004
Latitude	40º 14' 42.00"	**Longitude**	-76º 23' 39.00"
Wastewater Description:	Sewage Effluent		

4.1 Basis for Effluent Limitations

In general, the Clean Water Act(AWA) requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits. This discharge goes to an HQ designated stream without SEJ, so the permit limitation will be the more stringent of ABACT, Non-degradation or WQBEL for each pollutant of concern.

4.1.1 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: TRC and weekly averages are not applicable to this discharge.

4.2 Water Quality-Based Limitations

4.2.1 Streamflows

Streamflows for the water quality analysis were determined by correlating with the yield of USGS gauging station No 01578400 on Bowery Run near Quarryville. The runoff rate at the gage = $0.25 ft^3/s\ mi^2$. Q_{30-10}, will be calculated by 1.36 x Q_{7-10}. and Q_{1-10} will be calculated using 0.64 x Q_{7-10}, which were derived the Department in the NH_3 Implementation Guidance. The drainage area at the discharge point taken from the previous factsheet = $1.5\ mi^2$.
The resulting yields are as follows:

- $Q_{7-10} = 0.25 ft^3/s/\ mi^2$ x 1.52mi = $0.38 ft^3/s$
- Q_{30-10} / Q_{7-10} = 1.36
- Q_{1-10} / Q_{7-10} = 0.64

4.2.2 NH_3N Calculations

NH_3N calculations will be based on the Department's Implementation Guidance of Section 93.7 Ammonia Criteria, dated 11/4/97 (ID No. 391-2000-013). The following data is necessary to determine the instream NH_3N criteria used in the attached computer model of the stream:

- STP pH = 7.0 (Default)
- STP Temp = 20°C(Default)
- Stream pH = 7.5 (Conservative as headwaters of mountain stream is typically less)
- Stream Temp = 20°C (Default)
- Background NH_3N = 0
- Discharge flow = 0.004MGD

4.2.3 $CBOD_5$ & NH_3-N:

The attached result of WQM 7.0 stream model (attachment B) indicates that, for Camp Shand's discharge of 0.004MGD, an average monthly limit of 25mg/l for CBOD5 and NH_3-N as a monthly average is necessary to protect the aquatic life from toxicity effects. Anti-degradation analysis was done for a discharge of 2000gallons per day when the permit was issued originally. The results of the non-degradation spreadsheet presented in attachment C allow 82.47mg/l CBOD5 and 5.4 mg/l NH_3-N without causing degradation to the stream. The Antidegradation best available combination of technologies (ABACT) requires a summer limit of 10mg/l CBOD5 and 5 mg/l NH_3-N for discharges below 2000gallons. The ABACT limit has been used in the existing permit and will be continued during the current renewal as the more stringent of the WQBEL and the non-degradation limits. Winter limits are not applicable since the STP will only discharge during the summer.

4.2.4 Dissolved Oxygen

The existing permit contains a limit of 5 mg/l for Dissolved Oxygen (DO) based on the minimum stream D.O. criteria for the receiving stream. DEP's Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001, 10/97) suggests that either the adopted minimum stream D.O. criteria for the receiving stream or the effluent level determined through water quality modeling be used for the limit.

4.2.5 Total Suspended Solids(TSS):

There is no water quality criteria for TSS. A limit of 30 mg/l AML is required based on the minimum level of effluent quality attainable by secondary treatment as defined in 40 CFR 133.102b(1) and 25 PA § 92a.47(a)(1). The non-degradation spreadsheet presented in attachment C allows a TSS limit of 2,172 mg/l and an ABACT requirement of 20 mg/l. Therefore, The ABACT requirement of 20 mg/l which was written in the previous permit is again recommended to be continued in the current permit.

4.2.6 Fecal Coliform

The limit in the permit is based on the regulation in 25 PA code § 92a.47.(a)(4), which requires a summer technology limit of 200/100 ml as a geometric mean and an instantaneous maximum not greater than 1,000/100ml. The limit will remain in the permit

4.2.7 Total Residual Chlorine:

No Total Residual Chlorine limits are needed, as UV disinfection is utilized as required by the ABACT. UV transmittance(%) is reported.

4.2.8 Toxics

A reasonable potential (RP) analysis was done for pollutants in the discharge. The discharge consists entirely of domestic wastewater with no pollutants of concern that need further analysis.

4.2.9 Phosphorus & TMDL

Due to the HQ designation of the stream, a Stream Enrichment Risk Analysis (SERA) was conducted when the permit was initially issued. The SERA indicates that the stream is "low risk" and would not require any phosphorus controls. However, a non-degradation analysis determined a 2.7 mg/l is required to meet the antidegradation requirements for a discharge of 5 months/year. A phosphorus limit of 2.0 mg/l was written in the permit and will be continued for this current permit renewal. Downstream of Camp Shad's discharge, stake holders and partners with DEP are developing a TMDL alternative for restoration of Chickies Creek, but Camp Shand discharge is considered a small flow and is exempted from TMDL considerations.

4.2.10 Chesapeake Bay Strategy:

This facility has an annual average flow of less than 2,000 gpd which is exempt from the Bay requirements.

5.0 Other Requirements

5.1 Anti-backsliding

Not applicable to this permit

5.2 Stormwater:

No storm water outfall is associated with this facility

5.3 Biosolids Management

The system does not generate solids that needs removed from the treatment process. Septic tank is pumped annually or as needed.

5.4 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. The ABACT and non-degrading limits in the permit are set to protect the HQ receiving stream. No Exceptional Value Waters are impacted by this discharge.

5.5 Class A Wild Trout Fisheries

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

5.6 303d Listed Streams:

The discharge is not located on a 303d listed stream segment. Chickies Creek downstream of the discharge is listed as impaired for aquatic life due to agricultural siltation.

5.7 Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs).

5.8 Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits are less than the effluent limits. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

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 Permit Expiration Date.

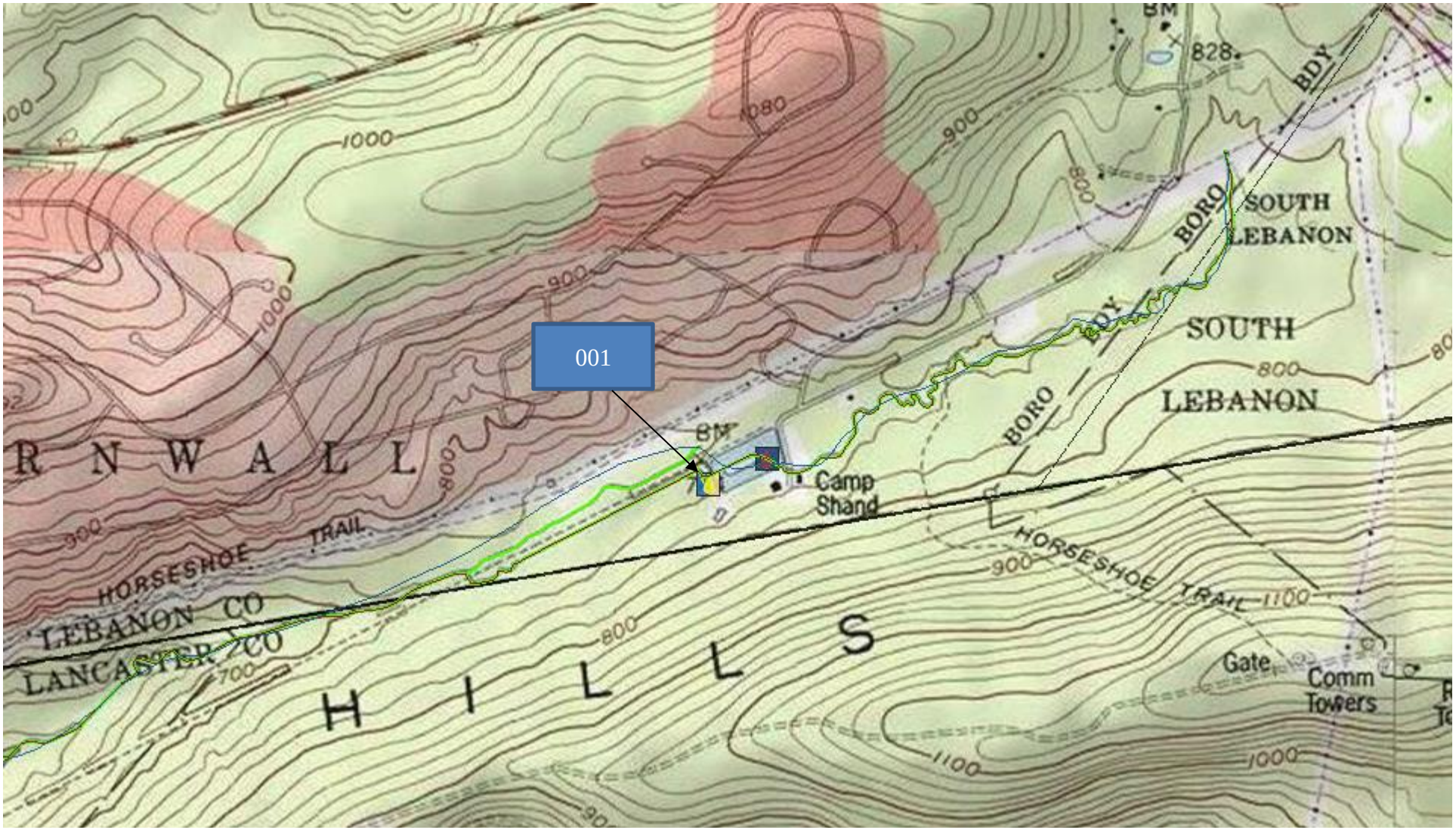
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Daily Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/day	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
CBOD5	XXX	XXX	XXX	10	XXX	20	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	20	XXX	40	2/month	8-Hr Composite
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
UV Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
Ammonia	XXX	XXX	XXX	5.0	XXX	10	2/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4	2/month	8-Hr Composite

Compliance Sampling Location: At outfall 001

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)
☐	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.
☒	Other: SOP Establishing Effluent Limitations for Individual Sewage Permits
☒	Other: SOP New & Reissuance Individual Sewage Permit Applications

Attachments

A. Topographical Map



B. WQM Model Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07G	8013	Trib 08013 to Shearers Creek

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)
1.820	Camp Shand	PA0260134	0.004	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			5

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
07G	8013	Trib 08013 to Shearers Creek	**1.820**	740.00	1.52	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	0.250	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.50	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
Camp Shand	PA0260134	0.0040	0.0040	0.0040	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	5.00	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
07G	8013	Trib 08013 to Shearers Creek	**0.820**	608.00	1.53	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 (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.250	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.50	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	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	5.00	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
07G	8013	Trib 08013 to Shearers Creek

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 (°C)	Analysis pH
Q7-10 Flow												
1.820	0.38	0.00	0.38	.0062	0.02500	.442	6.8	15.4	0.13	0.475	20.00	7.49
Q1-10 Flow												
1.820	0.24	0.00	0.24	.0062	0.02500	NA	NA	NA	0.10	0.607	20.00	7.48
Q30-10 Flow												
1.820	0.52	0.00	0.52	.0062	0.02500	NA	NA	NA	0.15	0.401	20.00	7.49

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	0.64	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
07G	8013	Trib 08013 to Shearers Creek

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
1.820	Camp Shand	6.03	50	6.03	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
1.820	Camp Shand	1.44	25	1.44	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)		
1.82	Camp Shand	25	25	25	25	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07G	8013	Trib 08013 to Shearers Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.820	0.004	20.000	7.485
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
6.802	0.442	15.401	0.129
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.37	0.190	0.40	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.191	24.893	Owens	5
Reach Travel Time (days)			
0.475			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.048	2.35	0.39	8.24
0.095	2.33	0.37	8.24
0.143	2.31	0.36	8.24
0.190	2.28	0.35	8.24
0.238	2.26	0.34	8.24
0.285	2.24	0.33	8.24
0.333	2.22	0.32	8.24
0.380	2.20	0.31	8.24
0.428	2.18	0.30	8.24
0.475	2.16	0.29	8.24

C. Non-Degradation Spreadsheet

NPDES Permit Fact Sheet
Camp Shand Lancaster Family YMCA

NPDES Permit No. PA0260134

Spreadsheet to evaluate Non-Degradation of Water Quality

Case 1 New Discharge Evaluation

Parameter	Discharge	WQ	Stream	Mean	Combined				Non		
	Flow	Objective	Flow	Concentration	Flow	Concentration			degrad		
	Q discharge	C total	Q upstream	C upstream	Q total	C LTA	Units	Multiplier	C AML	Units	
CBOD5	0.0020	0.91	3.1895	0.88	3.1915	47.95	mg/L	1.72	82.47	mg/L	CBOD5
TSS	0.0020	9	3.1895	8	3.1915	1576.85	mg/L	1.72	2712.18	mg/L	TSS
NH3-N	0.0020	0.029	3.1895	0.027	3.1915	3.16	mg/L	1.72	5.44	mg/L	NH3-N
NO2/NO3-N	0.0020	0.51	3.1895	0.49	3.1915	31.87	mg/L	1.72	54.81	mg/L	NO2/NO3-N
Phosphorus	0.0020	0.024	3.1895	0.023	3.1915	1.59	mg/L	1.72	2.74	mg/L	Phosphorus
TRC	0.0020	0	3.1895	0	3.1915	0.00	mg/L	1.72	0.00	mg/L	TRC
Lead Total	0.0020	1.4	3.1895	1.2	3.1915	314.97	ug/L	1.72	541.75	ug/L	Lead Total
Copper Total	0.0020	4.6	3.1895	4.5	3.1915	161.38	ug/L	1.72	277.58	ug/L	Copper Total
Iron Total	0.0020	230	3.1895	199	3.1915	48833.25	ug/L	1.72	83993.19	ug/L	Iron Total
Sulfate	0.0020	25	3.1895	22	3.1915	4728.54	mg/L	1.72	8133.09	mg/L	Sulfate
Aluminum Total	0.0020	115	3.1895	107	3.1915	12657.77	ug/L	1.72	21771.37	ug/L	Aluminum Total
TDS	0.0020	96	3.1895	91	3.1915	7935.23	mg/L	1.72	13648.60	mg/L	TDS
Zinc Total	0.0020	8.7	3.1895	8.2	3.1915	792.62	ug/L	1.72	1363.31	ug/L	Zinc Total
	CFS		Qhm-CFS		CFS						

Q Discharge (4 months) = 0.001315 mgd = 0.00203 cfs

Q Upstream Q_{7-10} = 0.38 cfs = 3.18948 Q_{hm} cfs

Source of information:
WQ Objective: TABLE 3
Upstream Concentration: TABLE 3
Multiplier from LTA to AML @CV of 0.5 TABLE on page 64
$Q_{hm} = 7.43 \times (Q_{7\text{-}10})^{.874}$

ABACT Tech Limits-Sewage cases				
		<2000 gpd	2000 to 50,000 gpd	>50,000gpd
Parameter		Limit	Limit	Limit
CBOD5	5/1 to 10/31	10	10	10
CBOD5	11/1 to 4/30	20	20	10
TSS		20	10	10
NH3-N	5/1 to 10/31	5	3	1.5
NH3-N	11/1 to 4/30	15	9	4.5
Disinfection		UV/ND	UV/ND	UV/ND

Preliminary Limitations are the more stringent of ABACT, Non-degradation or WQBEL for each parameter of concern.