

Application Type

Renewal

Facility Type

Non-Municipal

Major / Minor

Minor

Application No.

PA0029335

APS ID

81

Authorization ID

1487715

**NPDES PERMIT FACT SHEET  
INDIVIDUAL SEWAGE**

**Applicant and Facility Information**

Applicant Name	<u>PA Lions Beacon Lodge Camp</u>	Facility Name	<u>Beacon Lodge Camp</u>
Applicant Address	<u>114 Sr103 South</u>	Facility Address	<u>114 Sr 103 South</u>
	<u>Mount Union, PA 17066-9601</u>		<u>Mount Union, PA 17066-9601</u>
Applicant Contact	<u>Kelly McMullen</u>	Facility Contact	<u>Kelly McMullen</u>
Applicant Phone	<u>(814) 542-2511</u>	Facility Phone	<u>(814) 542-2511</u>
Client ID	<u>57000</u>	Site ID	<u>260265</u>
Ch 94 Load Status	<u>Not Overloaded</u>	Municipality	<u>Wayne Township</u>
Connection Status		County	<u>Mifflin</u>
Date Application Received	<u>June 3, 2024</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>June 21, 2024</u>	If No, Reason	
Purpose of Application	<u>NPDES permit renewal</u>		

**Summary of Review**

**1.0 General Discussion**

This fact sheet supports the renewal of an existing NPDES permit for discharge of treated domestic wastewater from PA Lions Beacon Lodge Camp's wastewater treatment plant located in Wayne Township, Mifflin County. The camp is a seasonal recreational camp for blind children and adults. The treatment plant has a hydraulic design capacity of 0.02MGD. PA Lions Beacon Lodge Camp owns and operates the wastewater treatment plant. The discharge goes to Sugar Valley Run (stream code 12745) which is designated in the Pa Code Chapter 93.9 drainage List N as Cold-Water Fishes (CWF) and Migratory Fishes (MF). The use designation for Sugar Valley Run basin was inadvertently omitted from Chapter 93.9n and Sugar Valley Run was classified as UNT to Juniata River with a use designation of High Quality-Cold Water Fishes (HQ-CWF) in error. The CWF designation became effective on September 5, 1998. The existing permit limits were developed to protect the HQ-CWF designation of the Sugar Valley Run which is no longer valid. The current water quality analysis for the permit renewal will treat Sugar Valley Run as CWF, MF. The existing NPDES permit was issued on November 25, 2019, with an effective date of December 1, 2019, and expiration date of November 30, 2024. The applicant submitted permit renewal application to the Department and is 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 Sludge use and disposal description and location(s):**

Sludge is held up in a sludge holding tank and hauled out by a licensed hauler periodically to Shade Gap wastewater treatment plant.

Approve	Deny	Signatures	Date
X		<i>J. Pascal Kwedza</i> J. Pascal Kwedza, P.E. / Environmental Engineer	November 20, 2025
X		Daniel W. Martin Daniel W. Martin, P.E. / Environmental Engineer Manager	December 12, 2025

### Summary of Review

#### 1.2 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.

<b>1.3 Discharge, Receiving Waters and Water Supply Information</b>			
Outfall No.	001	Design Flow (MGD)	.02
Latitude	40° 22' 25.48"	Longitude	-77° 48' 44.35"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Sugar Valley Run	Stream Code	12745
NHD Com ID	66209949	RMI	0.01
Drainage Area	2.7	Yield (cfs/mi <sup>2</sup> )	0.02
Q <sub>7-10</sub> Flow (cfs)	0.057	Q <sub>7-10</sub> Basis	USGS Gage Station
Elevation (ft)	580	Slope (ft/ft)	
Watershed No.	12-A	Chapter 93 Class.	CWF, MF
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		Mifflintown Borough Municipal Authority	
PWS Waters	Juniata River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	39

Changes Since Last Permit Issuance: None

#### **1.3.1 Water Supply Intake**

The nearest downstream water supply intake is approximately 39 miles downstream for Mifflintown Borough Municipal Authority on Juniata River in Juniata County. No impact is expected from this discharge on the intake

<b>2.1 Treatment Facility Summary</b>				
<b>Treatment Facility Name:</b> Beacon Lodge Camp				
<b>WQM Permit No.</b>	<b>Issuance Date</b>			
<b>Waste Type</b>	<b>Degree of Treatment</b>	<b>Process Type</b>	<b>Disinfection</b>	<b>Avg Annual Flow (MGD)</b>
Sewage	Secondary	Extended Aeration	Hypochlorite	0.02
<b>Hydraulic Capacity (MGD)</b>	<b>Organic Capacity (lbs/day)</b>	<b>Load Status</b>	<b>Biosolids Treatment</b>	<b>Biosolids Use/Disposal</b>
0.02		Not Overloaded	Dewatering	Other WWTP

Changes Since Last Permit Issuance: None

### **2.1 Treatment Facility**

The treatment plant is a 0.020 MGD facility with a comminutor, Flow Equalization, Aeration Tank and Clarification Tank, Chlorine Contact Tank, sludge Holding tank and sludge drying beds. Effluent is disinfected with chlorine tabs and de-chlorinated before being discharged continuously to Sugar Valley Run.

3.0 Existing Effluent Limitations and Monitoring Requirements

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.28	XXX	0.91	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
Fecal Coliform (No./100 ml)	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
Nitrate-Nitrite	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Calculation
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	9.0	XXX	18	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	3.0	XXX	6	2/month	8-Hr Composite
TKN	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite

**3.1 Compliance History**

**3.1.1 DMR Data for Outfall 001 (from October 1, 2024 to September 30, 2025)**

Parameter	SEP-25	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24
Flow (MGD) Average Monthly	0.001	0.001	0.001	0.001								
Flow (MGD) Daily Maximum	0.004	0.004	0.004	0.004								
pH (S.U.) Daily Minimum	7.35	7.35	7.20	7.20								
pH (S.U.) Daily Maximum	8.2	8.2	8.2	8.2								
DO (mg/L) Daily Minimum	7.17	7.17	7.45	7.35								
TRC (mg/L) Average Monthly	0.26	0.01	< 0.26	< 0.26								
TRC (mg/L) Instantaneous Maximum	0.95	0.02	< 0.92	< 0.92								
CBOD5 (mg/L) Average Monthly	3.00	< 3.00	< 3.00	< 3.00								
TSS (mg/L) Average Monthly	1.60	6.80	< 1.60	1.60								
Fecal Coliform (No./100 ml) Geometric Mean	6.3	< 1.60	< 1.0	< 1.0								
Fecal Coliform (No./100 ml) Instantaneous Maximum	8.2	< 2	< 2.0	< 2								
Ammonia (mg/L) Average Monthly	< 1.000	< 0.2	< 0.1000	< 0.1000								

**3.1.2 Effluent Violations for Outfall 001, from: November 1, 2024 To: September 30, 2025**

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TRC	06/30/25	IMAX	< 0.92	mg/L	.91	mg/L
TRC	07/31/25	IMAX	< 0.92	mg/L	.91	mg/L
TRC	09/30/25	IMAX	0.95	mg/L	.91	mg/L

**3.1.3 Summary of DMRs:**

DMRs review for the facility for the last 12 months of operation, presented on the table above in section 3.1.1 indicates permit limits have been met most of the time except TRC. Three IMAX effluent violations for TRC was noted during the period reviewed and presented in section 3.1.2. The facility has a de-chlorination system and should adjust operations to address TRC effluent violations.

**3.1.4 Summary of Inspections:**

The facility has been inspected a couple of times during the previous permit cycle. No effluent violations were found during plant inspections. The facility was cited in 2023 for non-submission of discharge monitoring reports.

#### 4.0 Development of Effluent Limitations

Outfall No. 001  
Latitude 40° 22' 25.00"  
Wastewater Description: Sewage Effluent

Design Flow (MGD) .02  
Longitude -77° 48' 44.00"

#### 4.1 Basis for Effluent Limitations

In general, the Clean Water Act (CWA) 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.

##### 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 <sub>5</sub>	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: Weekly averages are not applicable to this discharge. The facility operates mainly during summer months; therefore, a winter Fecal Coliform limit is unnecessary. Summer Fecal Coliform limit will apply year-round.

#### 4.2 Water Quality-Based Limitations

##### 4.2.1 WQM 7.0 Stream Model

WQM 7.0 is a water quality model DEP utilizes to establish appropriate effluent limits for CBOD<sub>5</sub>, NH<sub>3</sub>-N and DO in permits. The model simulates mixing and degradation of NH<sub>3</sub>-N in the stream and compares calculated instream NH<sub>3</sub>-N concentrations to NH<sub>3</sub>-N water quality criteria and also simulates mixing and consumption of D.O. in the stream due to the degradation of CBOD<sub>5</sub> and NH<sub>3</sub>N and compares calculated instream D.O. concentrations to D.O. water quality criteria and recommends effluent limits.

##### 4.2.2 Streamflows

Nearest USGS Stream gage is 01564500 on Aughwick Creek near Three Springs, PA. Recent stream flow retrievals resulted in a Q<sub>7-10</sub>, Q<sub>1-10</sub>, and Q<sub>30-10</sub> of 4.2 cfs, 3.6 cfs, and 6.2 cfs respectively at this gage for record period of 1939-2005. These values were obtained from the latest USGS streamflow report from StreamStats version 3.0. The drainage area is reported to be 205 mi<sup>2</sup> at the gage station. The resulted run off rate and ratio calculations are shown below:

- Q<sub>7-10</sub> runoff rate = 4.2/205 = 0.020 cfs/mi<sup>2</sup>

- $Q_{30-10} / Q_{7-10} = 1.48$
- $Q_{1-10} / Q_{7-10} = 0.86$

The drainage area at discharge point calculated from StreamStat version 3.0 = 2.84 mi<sup>2</sup>

The  $Q_{7-10}$  at discharge =  $2.84 \text{ mi}^2 \times 0.02 \text{ ft}^3/\text{s}/\text{mi}^2 = 0.057 \text{ ft}^3/\text{s}$ .

#### **4.2.3 NH<sub>3</sub>N Calculations**

NH<sub>3</sub>N 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<sub>3</sub>N criteria used in the attached computer model of the stream:

- |                                 |  |
|---------------------------------|--|
| • Discharge pH                  | = 7.35 (DMR median from Jul. to Sept.) |
| • Discharge Temperature         | = 25 °C (Default)                      |
| * Stream pH                     | = 7.0 (Default)                        |
| * Stream Temperature            | = 20°C (Default)                       |
| • Background NH <sub>3</sub> -N | = 0.0 (default)                        |
| • Discharge flow                | = 0.02 MGD                             |

#### **4.2.4 CBOD<sub>5</sub>:**

The attached result of WQM 7.0 stream model (attachment B) indicates that, for PA Beacon Lodge's discharge of 0.020 MGD, a limitation of 25 mg/l CBOD<sub>5</sub> as a monthly average limit (AML) and 50 mg/l as instantaneous maximum (IMAX) is adequate to protect the water quality of the stream. This limit is consistent with the existing permit and the STP has been complying with this limitation. Therefore, a limit of 25 mg/l AML, and 50 mg/l IMAX is again recommended for this permit cycle.

#### **4.2.5 NH<sub>3</sub>-N:**

The attached result of WQM 7.0 stream model (attachment B) also indicates that a summer limitation of 6.25 mg/l NH<sub>3</sub>-N as a monthly average is necessary to protect the aquatic life from toxicity effects. However, the existing monthly average summer limit of 3.0 mg/l which was based on measurable change analysis conducted during the past permit renewals due to the HG-CWF designation will remain in the permit since the facilities has been meeting the limitation. Limit for winter months is 3 times the limit for summer months. (9.0 mg/l)

#### **4.2.6 Dissolved Oxygen**

The existing permit contains a limit of 5 mg/l for Dissolved Oxygen (DO). 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. Since the WQM 7.0 model was run using a minimum D.O. of 5.0 mg/l, this limit will be continued in the renewed permit with a daily monitoring requirement.

#### **4.2.7 Total Suspended Solids(TSS):**

There is no water quality criterion for TSS. A limit of 30 mg/l AML will be 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)

#### **4.2.8 Total Residual Chlorine:**

The attached TRC results presented in attachment C utilizes the equations and calculations as presented in the Department's 2003 Implementation Guidance for Residual Chlorine (TRC) (ID # 391-2000-015) for developing chlorine limitations. The results presented in attachment C indicates that a water quality limit of 0.28 mg/l monthly average and IMAX of 0.91 mg/l would be needed to prevent toxicity concerns. The recommend limit is consistent with the existing limit. DMRs indicate the facility is not meeting IMAX limit consistently. The facility has a de-chlorination system and should adjust operations comply with the limits..

#### **4.2.9 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.

#### **4.2.10 Chesapeake Bay Strategy:**

The Department formulated a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). Sewage discharges have been prioritized based on their delivered TN and TP loadings to the Bay. The highest priority (Phases 1, 2, and 3) dischargers received annual loading caps based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. These limits may be achieved through a combination of treatment technology, credits, or offsets if approved by DEP. Phase 4 (0.2 - 0.4mgd) and Phase 5(below 0.2mdg) are required to monitor and report TN series and TP during permit renewal. Any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away. This facility is, classified as a phase 5, and has been monitoring and will continue monitoring Nitrate-Nitrite as N, Total Kjeldahl Nitrogen, Total Nitrogen and Total Phosphorus annually throughout the next permit cycle to collect data.

#### **4.2.11 Coliform and E. Coli**

The existing Fecal Coliform limit is consistent with the technology limits recommended in 92a.47(a)(4) and (a)(5) and will remain in the permit. In March of 2021, EPA approved DEP's Triennial Review of Water Quality Standards, which included a new swimming season criterion for E. coli. As a result, DEP is including monitoring requirements for E. Coli in new and renewed sewage permits above 2000gpd. Monitoring frequency is based on annual average flow as follows: 1/month for design flows  $\geq$  1 MGD, 1/quarter for design flows  $\geq$  0.05 and  $<$  1 MGD and 1/year for design flows of 0.002 and  $<$  0.05 MGD. Your discharge of 0.02 MGD requires 1/year monitoring as included in the permit.

### **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 Special Permit Conditions**

The permit will contain the following special conditions:

Stormwater Prohibition, Approval Contingencies, Proper Waste/solids Management, and Chlorine minimization.

#### **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. No High-Quality Waters are impacted by this discharge. 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.

### **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.

**6.0 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) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.28	XXX	0.91	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
Fecal Coliform (No./100 ml)	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
Nitrate-Nitrite	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Calculation
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	9.0	XXX	18	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	3.0	XXX	6	2/month	8-Hr Composite
TKN	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite

Outfall 001 , Continued (from Permit Effective Date through Permit Expiration Date )

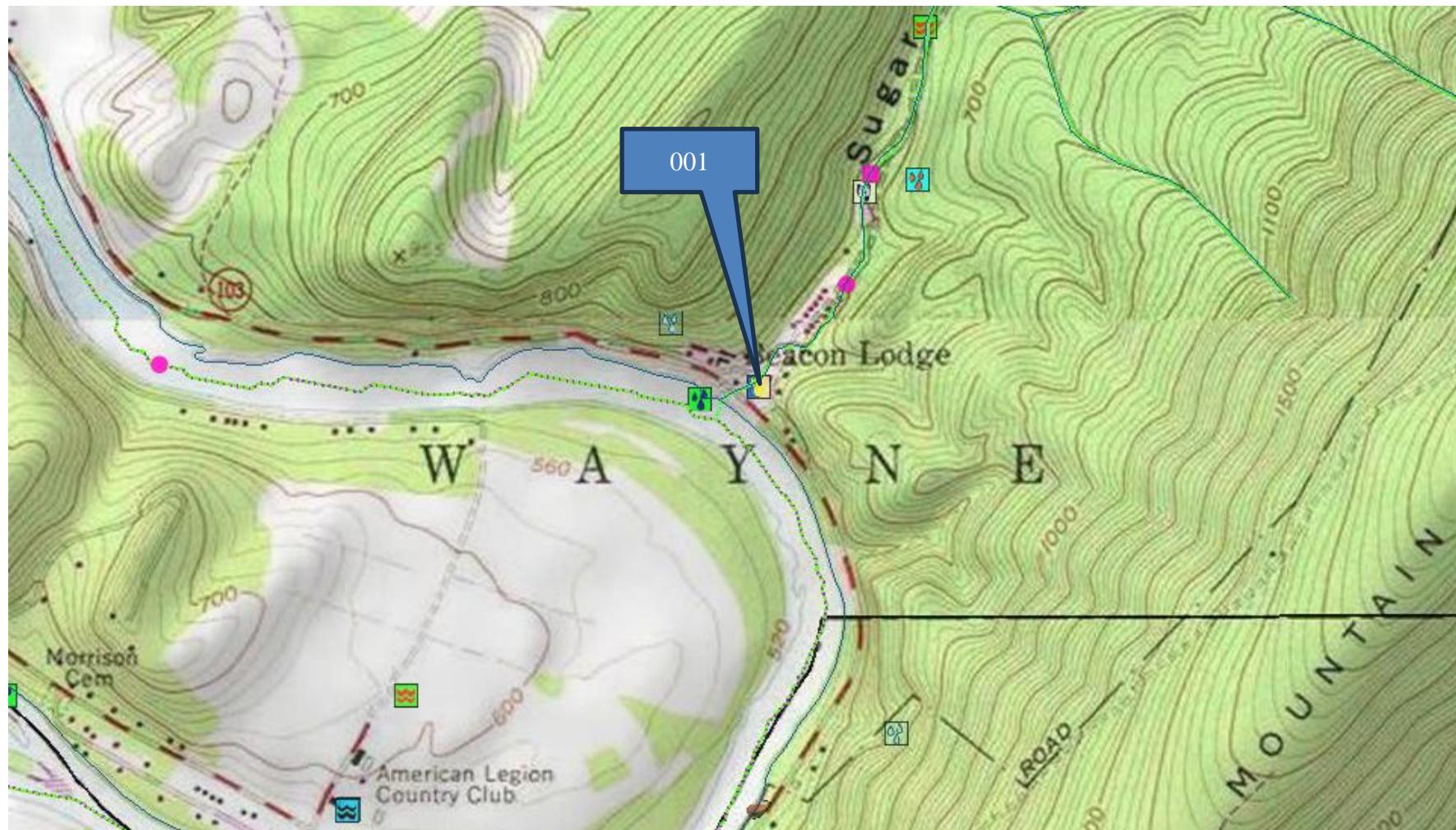
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite

Compliance Sampling Location: 001

7.0 Tools and References Used to Develop Permit	
<input checked="" type="checkbox"/>	WQM for Windows Model (see Attachment <b>B</b> )
<input type="checkbox"/>	Toxics Management Spreadsheet (see Attachment [REDACTED])
<input checked="" type="checkbox"/>	TRC Model Spreadsheet (see Attachment <b>C</b> )
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment [REDACTED])
<input checked="" type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
<input type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 386-2000-002, 9/08.
<input type="checkbox"/>	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
<input type="checkbox"/>	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
<input checked="" type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
<input type="checkbox"/>	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
<input checked="" type="checkbox"/>	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
<input type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
<input checked="" type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
<input checked="" type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
<input checked="" type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
<input type="checkbox"/>	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, 386-2000-020, 10/97.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
<input type="checkbox"/>	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, 386-2000-010, 3/1999.
<input type="checkbox"/>	Design Stream Flows, 386-2000-003, 9/98.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
<input checked="" type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input checked="" type="checkbox"/>	SOP: Establishing effluent limits for individual sewage permits.
<input type="checkbox"/>	Other: [REDACTED]

Attachments

A. Topographical Map



B. WQM Model Results

**WQM 7.0 Effluent Limits**

SWP Basin	Stream Code	Stream Name					
		12A	12745	SUGAR VALLEY 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)
0.100	PA Beacon Lodge	PA0029335	0.020	CBOD5	25		
				NH3-N	6.25	12.5	
				Dissolved Oxygen			5

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation	Drainage Area	Slope	PWS Withdrawal	Apply FC
			(ft)	(sq mi)	(ft/ft)	(mgd)		
12A	12745	SUGAR VALLEY RUN	0.100	580.00	2.84	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD	Rch Width	Rch Depth	Tributary Temp	Stream pH	Temp	pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.020	0.00	0.00	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
PA Beacon Lodge	PA0029335	0.0200	0.0200	0.0200	0.000	25.00	7.35
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
12A	12745	SUGAR VALLEY RUN			0.010	575.00	2.92	0.00000	0.00	<input checked="" type="checkbox"/>
<b>Stream Data</b>										
Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio (ft)	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Stream Temp (°C)
Q7-10	0.020	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00
Q1-10		0.00	0.00	0.000	0.000					0.00
Q30-10		0.00	0.00	0.000	0.000					0.00
<b>Discharge Data</b>										
		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	25.00	7.00	
<b>Parameter Data</b>										
				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						
12A			12745			SUGAR VALLEY RUN						
RMI	Stream Flow	PWS With	Net Stream Flow	Disc Analysis Flow	Reach Slope	Depth	Width	W/D Ratio	Velocity	Reach Trav Time	Analysis Temp	Analysis pH
	(cfs)	(cfs)	(cfs)	(cfs)	(ft/ft)	(ft)	(ft)		(fps)	(days)	(°C)	
<b>Q7-10 Flow</b>												
0.100	0.06	0.00	0.06	.0309	0.01052	.345	5.6	16.23	0.05	0.121	21.76	7.09
<b>Q1-10 Flow</b>												
0.100	0.05	0.00	0.05	.0309	0.01052	NA	NA	NA	0.04	0.128	21.94	7.10
<b>Q30-10 Flow</b>												
0.100	0.08	0.00	0.08	.0309	0.01052	NA	NA	NA	0.05	0.104	21.35	7.07

### WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	<input checked="" type="checkbox"/>
WLA Method	EMPR	Use Inputted W/D Ratio	<input type="checkbox"/>
Q1-10/Q7-10 Ratio	0.86	Use Inputted Reach Travel Times	<input type="checkbox"/>
Q30-10/Q7-10 Ratio	1.48	Temperature Adjust Kr	<input checked="" type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	5		

**WQM 7.0 Wasteload Allocations**

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>
12A	12745	SUGAR VALLEY 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
0.100 PA Beacon Lodg		12.93	33.34	12.93	33.34	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
0.100 PA Beacon Lodg		1.68	6.25	1.68	6.25	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)		
0.10 PA Beacon Lodge		25	25	6.25	6.25	5	5	0	0

### WQM 7.0 D.O.Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>		
12A	12745	SUGAR VALLEY RUN		
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>	<u>Analysis pH</u>	
0.100	0.020	21.763	7.094	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>	
5.596	0.345	16.225	0.045	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>	<u>Reach Kn (1/days)</u>	
10.11	1.291	2.20	0.802	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>	<u>Reach DO Goal (mg/L)</u>	
7.099	20.446	Owens	6	
<u>Reach Travel Time (days)</u>	<u>Subreach Results</u>			
0.121	TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
	0.012	9.94	2.18	7.18
	0.024	9.77	2.16	7.24
	0.036	9.61	2.14	7.29
	0.048	9.45	2.12	7.34
	0.060	9.29	2.10	7.38
	0.073	9.13	2.08	7.42
	0.085	8.98	2.06	7.45
	0.097	8.83	2.04	7.48
	0.109	8.68	2.02	7.51
	0.121	8.54	2.00	7.53

C. TRC Calculations

TRC EVALUATION					
Input appropriate values in A3:A9 and D3:D9					
0.057	= Q stream (cfs)		0.5	= CV Daily	
0.02	= 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.ii	WLA_afc = 0.607	1.3.2.iii	WLA_cfc = 0.584	
PENTOXSD TRG	5.1a	LTAMULT_afc = 0.373	5.1c	LTAMULT_cfc = 0.581	
PENTOXSD TRG	5.1b	LTA_afc = 0.226	5.1d	LTA_cfc = 0.339	
Effluent Limit Calculations					
PENTOXSD TRG	5.1f	AML MULT = 1.231			
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.278		AFC	
		INST MAX LIMIT (mg/l) = 0.910			
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)			