pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0052485**
Facility Type	**Non-Municipal**	APS ID	**959961**
Major / Minor	**Minor**	Authorization ID	**1215010**

Applicant and Facility Information

Applicant Name	**Mountain Springs Investors LLC**	Facility Name	**Mountain Springs MHP**
Applicant Address	PO Box 365	Facility Address	3450 Mountain Road
	Shartlesville, PA 19554-0365		Hamburg, PA 19526
Applicant Contact	Sherry Dautrich	Facility Contact	Mike Huey
Applicant Phone	(610) 488-6859	Facility Phone	(610) 488-6859
Client ID	336106	Site ID	261157
Ch 94 Load Status	Not Overloaded	Municipality	Upper Bern Township
Connection Status		County	Berks
Date Application Received	November 28, 2017	EPA Waived?	Yes
Date Application Accepted	February 5, 2018	If No, Reason	

Purpose of Application: Renewal of NPDES Permit to Discharge Sewage Effluent from Minor Sewage Facilities

Summary of Review

Mountain Springs Investors LLC applied for renewal of NPDES permit number PA0052485 for Mountain Springs Mobile Home Park and Camping Resort on Mountain Road in Upper Bern Township, Berks County. This permit is for the discharge of sewage effluent from Mountain Springs MHP treatment facility, which serves the Mountain Springs Mobile Home Park. There is a single outfall (001) to an unnamed tributary to Mill Creek in watershed 3-B in the Delaware River Basin. The current permit became effective on July 1, 2013 and expired on June 30, 2018 and has been administratively extended since then. The application was received on time by the Southcentral Regional Office on November 28, 2017 and accepted as administratively complete on February 5, 2018.

The treatment facility currently consists of a comminutor/bar screen, equalization tank, aeration tank, clarifier, two (2) sand filters, chlorine contact tank, sludge holding tank and an outfall weir. Effluent is then conveyed by gravity in a pipe to the Unnamed Tributary (UNT) to Mill Creek. Chemical treatment throughout the process train consists of sodium hypochlorite for disinfection in the chlorine contact tank and sodium bisulfite for dichlorination of the effluent before it is discharged. Samples are taken by an automatic sampler and manual grab samples from just upstream of the discharge weir. Waste sludge and biosolids are hauled away by a local septic service contractor, and screenings and other solids are dewatered and properly disposed of by a local sanitation service.

The treatment plant serves 89 mobile homes, 119 camp sites, and laundry facilities. The campground also has space for up to 173 camper/RV units, from which the facility will accept sewage for a fee. The renewal application is not proposing any changes to the design hydraulic or organic capacity of the facility. DEP Central Office staff visited the facility on September 4, 2019 to verify the location and condition of the treatment equipment and Outfall 001 (see Attachment D for pictures).

Approve	Deny	Signatures	Date
X		/s/ Zachary R. Steckler, E.I.T. / Project Manager	August 27, 2019
X		/s/ Sean Furjanic, P.E. / Environmental Program Manager	January 10, 2020

Summary of Review

The following changes are being proposed for this permit:

- Outfall 001
  - Reduction of Total Residual Chlorine average monthly and instantaneous maximum limits
  - Increase in monitoring requirements for Fecal Coliform

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.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	.035
Latitude	40º 31' 41.19"	Longitude	-76º 4' 57.13"
Quad Name		Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Mill Creek (TSF, MF)	Stream Code	2193
NHD Com ID	25960884	RMI	0.95
Drainage Area	0.63 mi^2	Yield (cfs/mi^2)	0.0715
Q_{7-10} Flow (cfs)	0.0450	Q_{7-10} Basis	StreamStats
Elevation (ft)	580	Slope (ft/ft)	
Watershed No.	3-B	Chapter 93 Class.	TSF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	PATHOGENS		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	None	Name	
Nearest Downstream Public Water Supply Intake	Borough of Pottstown Water and Sewer Authority		
PWS Waters	Schuylkill River	Flow at Intake (cfs)	381
PWS RMI	57	Distance from Outfall (mi)	44

Drainage Area

The facility discharges to an unnamed tributary to Mill Creek at RMI 0.95, measured from the confluence with the nearest downstream surface water to the discharge point. The approximate drainage area upstream of the discharge was determined to be 0.63 square miles according to USGS PA StreamStats available at https://streamstats.usgs.gov/ss/.

Stream Flow

For the Q_{7-10} calculation, a StreamStats analysis was performed for a point (40.52230, -76.05047) on Mill Creek approximately 2.86 miles downstream from the outfall location (see Attachment C). Because Outfall 001 is located close to the headwaters of the UNT to Mill Creek, a point downstream was needed to meet the minimum drainage area requirement for StreamStats to run a basin analysis. According to StreamStats, the delineated watershed has a Q_{7-10} flow of 0.454 cfs and a drainage area of 6.35 mi^2, which results in a Low Flow Yield (LFY) of 0.0715 cfs/mi^2. This information was used to obtain a Q_{7-10} flow of 0.045 cfs based on a drainage area of 0.63 mi^2 for the outfall point.

$LFY = 0.454\ cfs/6.35\ mi^2 = 0.0715\ cfs/mi^2$
$Q_{7-10} = 0.63 * 0.0715\ cfs = 0.045\ cfs$

Mill Creek

25 Pa Code §93.9 classifies Mill Creek as a TSF/MF waterway. Mill Creek is currently identified on eMAP as impaired for recreational uses due to pathogens of unknown origin. It is currently assessed as attaining uses for aquatic life designations. There is currently no Total Maximum Daily Load (TMDL) developed or planned for Mill Creek, so there is no Waste Load Allocation (WLA) for any pollutants of concern for this facility.

Public Water Supply Intake

The nearest downstream public water supply intake is the Borough of Pottstown Water and Sewer Authority intake located on the Schuylkill River in West Pottsgrove Township, Chester County, approximately 44 miles from the discharge. Considering the distance and nature of the effluent, the discharge is not expected to significantly affect the water supply.

Class A Wild Trout Streams

The receiving stream is not a Class A Wild Trout stream; therefore, no Class A Wild Trout Fishery is impacted by this discharge.

Treatment Facility Summary

Treatment Facility Name: Mountain Springs MHP

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary with Ammonia Reduction	Extended Aeration	Sodium Hypochlorite	0.010

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.035	72.975	Not Overloaded	Aerobic Digestion	Other WWTP

Changes Since Last Permit Issuance: In 2018, the facility increased the number of directly connected camp sites from 90 to 119. Flow monitoring since the expansion has not shown a significant impact on the facility's average flow.

Other Comments: The existing permit effluent limitations are outlined in the table below.

Discharge Parameters	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	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
TRC	XXX	XXX	XXX	0.5	XXX	1.64	1/day	Grab
TSS	XXX	XXX	XXX	30	XXX	60	2/month	Grab
$CBOD_5$	XXX	XXX	XXX	25	XXX	50	2/month	Grab
NH_3-N (5/1 – 10/31)	XXX	XXX	XXX	8.0	XXX	16	2/month	8-Hr Comp
NH_3-N (11/1 – 4/30)	XXX	XXX	XXX	20	XXX	40	2/month	8-Hr Comp
Fecal Coliform (CFU/100 ml) (5/1 – 9/30)	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Fecal Coliform (CFU/100 ml) (10/1 – 4/30)	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/month	Grab

Compliance History

Summary of Inspections

The facility was inspected four times during the preceding permit cycle, most recently on 6/28/2016, with no violations noted at any inspection. The inspection report from 6/28/2016 contained the following notes/recommendations:

- Expand daily operation log to include visual observations, problems and concerns, weather observations
- Update phone list to include regional inspector's phone number
- Update phone list to include DEP 24-Hour Emergency Response: 1-866-825-0208
- Clean unused comminutor bypass bar screen of present rags and debris

Summary of Non-Compliance

All instances of non-compliance with permit effluent limitations during the preceding permit period, and DMR data for the period from 7/1/2018 to 6/30/2019 are summarized in the tables below. At this time, there are no open violations associated with this facility, and the permittee has no history of enforcement actions.

Reporting Period End Date	Parameter	Sample Value	Permit Limits	Units	SBC
1/31/2014	Fecal Coliform	12600	10000	CFU/100 ml	Instantaneous Maximum
9/30/2014	Fecal Coliform	> 20000	1000	CFU/100 ml	Instantaneous Maximum
3/31/2015	Total Suspended Solids	450	60	mg/L	Instantaneous Maximum
3/31/2015	Total Suspended Solids	< 68	30	mg/L	Average Monthly
3/31/2015	Carbonaceous Biochemical Oxygen Demand (CBOD5)	70.3	50	mg/L	Instantaneous Maximum
3/31/2015	Fecal Coliform	> 20000	10000	CFU/100 ml	Instantaneous Maximum
6/30/2015	Fecal Coliform	1900	1000	CFU/100 ml	Instantaneous Maximum
2/29/2016	Fecal Coliform	20000	10000	CFU/100 ml	Instantaneous Maximum
4/30/2016	Fecal Coliform	11100	10000	CFU/100 ml	Instantaneous Maximum
7/31/2016	Fecal Coliform	> 20000	1000	CFU/100 ml	Instantaneous Maximum
7/31/2017	Ammonia-Nitrogen	24.5	16	mg/L	Instantaneous Maximum
7/31/2017	Fecal Coliform	6100	1000	CFU/100 ml	Instantaneous Maximum
7/31/2017	Ammonia-Nitrogen	8.57	8	mg/L	Average Monthly
8/31/2017	pH	5.64	6	S.U.	Minimum
7/31/2018	Dissolved Oxygen	4.6	5	mg/L	Minimum
8/31/2018	Fecal Coliform	13100	1000	CFU/100 ml	Instantaneous Maximum
9/30/2018	Fecal Coliform	2000	1000	CFU/100 ml	Instantaneous Maximum
3/31/2019	Fecal Coliform	17200	10000	CFU/100 ml	Instantaneous Maximum

DMR Data for Outfall 001 (from July 1, 2018 to June 30, 2019)

Parameter	JUN-19	MAY-19	APR-19	MAR-19	FEB-19	JAN-19	DEC-18	NOV-18	OCT-18	SEP-18	AUG-18	JUL-18
Flow (MGD) Average Monthly	0.01035	0.01057	0.01214	0.01013	0.00846	0.00936	0.00888	0.01084	0.01018	0.0113	0.01183	0.01027
Flow (MGD) Daily Maximum	0.01603	0.02011	0.09853	0.06043	0.01725	0.02968	0.02056	0.01905	0.01921	0.01828	0.02924	0.01734
pH (S.U.) Minimum	6.54	6.3	7.05	6.94	6.71	6.75	6.2	6.96	6.36	6.19	6.71	6.94
pH (S.U.) Maximum	7.28	7.23	8.02	7.43	7.49	7.1	7.21	7.42	7.19	7.46	7.61	7.94
DO (mg/L) Minimum	6.8	7.0	6.0	5.5	6.8	7.0	7.0	7.1	7.0	5.2	5.6	4.6
TRC (mg/L) Average Monthly	< 0.02	< 0.04	< 0.01	< 0.02	< 0.01	< 0.01	< 0.03	0.03	0.06	< 0.05	< 0.06	0.07
TRC (mg/L) Instantaneous Maximum	0.06	0.21	0.04	0.11	0.03	0.03	0.08	0.18	0.19	0.50	0.13	0.15
CBOD5 (mg/L) Average Monthly	< 2	< 2	< 2.4	2.1	< 2.1	< 2	6.3	< 10	< 2	< 2	< 6.2	< 2.1
CBOD5 (mg/L) Instantaneous Maximum	< 2	< 2	2.7	2.2	2.1	< 2	7.5	18	< 2	< 2	10.4	2.1
TSS (mg/L) Average Monthly	< 4.2	< 4.6	6.4	6.2	5.2	< 7.4	< 14	< 4	< 4.8	< 4	< 9	< 4
TSS (mg/L) Instantaneous Maximum	4.4	5.2	8.4	6.8	5.6	10.8	46	< 4	5.6	< 4	14	< 4
Fecal Coliform (CFU/100 ml) Geometric Mean	5	< 1	< 6	< 131	< 1	< 2	282	102	26	118	114	35
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	11	2	39	17200	< 1	4	585	291	224	2000	13100	45
Ammonia (mg/L) Average Monthly	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.18	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.16
Ammonia (mg/L) Instantaneous Maximum	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.25	< 0.1	< 0.1	< 0.1	< 0.1	0.2	0.22

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .035
Latitude 40º 31' 43.00" **Longitude** -76º 6' 3.00"
Wastewater Description: Sewage

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Water Quality-Based Limitations

Because Water Quality Modeling had not been completed since 2007, the discharge data was run through the WQM 7.0 model and determined that the CBOD5 and NH3-N limitations listed below are technically adequate and appropriate. The table below shows input/output of the WQM 7.0 modeling.

Parameter	Discharge Concentration (mg/L)	Effluent Limitations		
		30-day Average (mg/L)	Maximum (mg/L)	Minimum (mg/L)
$CBOD_5$	25	25	XXX	XXX
NH_3-N	8	8	16	XXX
Dissolved Oxygen	5	XXX	XXX	5

a. Flow
Flow monitoring remains unchanged and is as required by 25 PA Code §§ 92a.27 and 92a.61.

b. pH
The required pH limits remain unchanged and are in accordance with 25 PA Code § 92a.47.

c. Dissolved Oxygen (DO)
The minimum BPJ limit of 5.0 mg/L remains unchanged and is in accordance with 25 PA Code § 93.7 DO_3 for the designated use of TSF/MF.

d. TRC
The Department's TRC calculator was used to calculate the required Total Residual Chlorine limit. Previous TRC modeling used an annual average flow rate for the receiving stream. Due to the intermittent nature of the stream, the $Q_{7\text{-}10}$ flow of 0.045 cfs was used, resulting in an average monthly limit of 0.43 mg/L and an instantaneous maximum of 1.42 mg/L. Because this is more stringent than the BAT limit, this value will be assigned to the permit.

e. $CBOD_5$ / TSS
Based on the Technology Based Limits and the Water Quality Modeling results, the existing $CBOD_5$ is protective of water quality. Accordingly, $CBOD_5$ and TSS limits remain unchanged and are as required by 25 PA Code § 92a.47(a)(1).

f. Ammonia Nitrogen (NH_3-N)
As shown in the WQM 7.0 modeling output, Water Quality Based Effluent Limits (WQBELs) are required for NH_3-N. The modeling output limit supported maintaining the existing monthly average limit of 8.0 mg/L, so that value will be applied to the new permit. Therefore, the Ammonia Nitrogen limit remains unchanged, and is in accordance with 25 PA Code § 93.7(a). While the facility does have one reported incident of noncompliance from August 2017, a review of the eDMR data from the previous permit issuance date to present showed that in that time period, they only exceeded the effluent limit in August 2017, and there was only one other instance that exceeded a concentration of 1.33 mg/L.

g. Fecal Coliform
Per 25 PA Code § 92a.47(a)(5), from October through April, a monthly average discharge limitation for fecal coliform of 2,000 CFU/100 mL as a geometric mean and an instantaneous maximum effluent limitation not greater than 10,000 CFU/100 mL are required. The limits required for the period from May through September are a monthly average of 200 CFU/100 mL as a geometric mean and an instantaneous maximum of 1,000 CFU/100 mL. According to the previous fact sheet, the current permit reduced the sampling method for fecal coliform monitoring from an 8-hour composite to grab sample as a result of improved fecal coliform results over the previous permit period and to be consistent with sampling methods in the DEP Permit Writer's Manual. Based on the number of non-compliance dates and the variability observed in the DMR data from the issuance of the current permit to present, it is recommended that the permit increase sampling from 2 grab samples per month to 4 grab samples per month for fecal coliform to capture a more representative sample for the facility and determine if further action may need to be taken in the future.

h. Total Nitrogen / Total Phosphorous
DEP's SOP no. BPNPSM-PMT-033 for Establishing Effluent Limitations for Individual Sewage Permits recommends monitoring requirements for Total Phosphorus and Total Nitrogen for all sewage facilities with design flows greater than 2,000 gpd. Therefore, a routine monitoring for Total Nitrogen and Total Phosphorus is recommended to be introduced for this permit renewal.

Anti-Backsliding

Effluent limitations for all parameters are to remain at their current limits or have more stringent limits applied; therefore, the proposed permit limits meet anti-backsliding requirements.

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	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.43	XXX	1.42	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	25	XXX	50	2/month	Grab
Total Suspended Solids	XXX	XXX	XXX	30	XXX	60	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	4/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	4/month	Grab
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab
Ammonia-Nitrogen Nov 1 - Apr 30	XXX	XXX	XXX	20	XXX	40	2/month	8-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	XXX	XXX	XXX	8.0	XXX	16	2/month	8-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	2/month	Grab

Compliance Sampling Location: Outfall 001

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment A)
☐	PENTOXSD for Windows Model (see Attachment)
☒	TRC Model Spreadsheet (see Attachment B)
☐	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: • New and Reissuance Sewage Individual NPDES Permit Applications, 10/13. • Establishing Effluent Limitations for Individual Sewage Permits, BCW-PMT-003, 1/19.
☒	Other: eMapPA, USGS StreamStats (see Attachment C), Site Visit Pictures (see Attachment D)

Attachment A – WQM 7.0 Modeling Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
03B	2187	MILL 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)
0.950	Mountain Sp MHP	PA0052485	0.010	CBOD5	25		
				NH3-N	8	16	
				Dissolved Oxygen			5

Archived Data Inputs WQM 7.0 - Version 1.0b

	SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
	03B	2187	MILL CREEK	**0.950**	580.00	0.63	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	0.072	0.00	0.05	0.000	0.000	75.0	6.00	0.08	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
Mountain Sp MHP	PA0052485	0.0100	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	8.00	0.00	0.00	0.70

Attachment B – TRC Model Spreadsheet

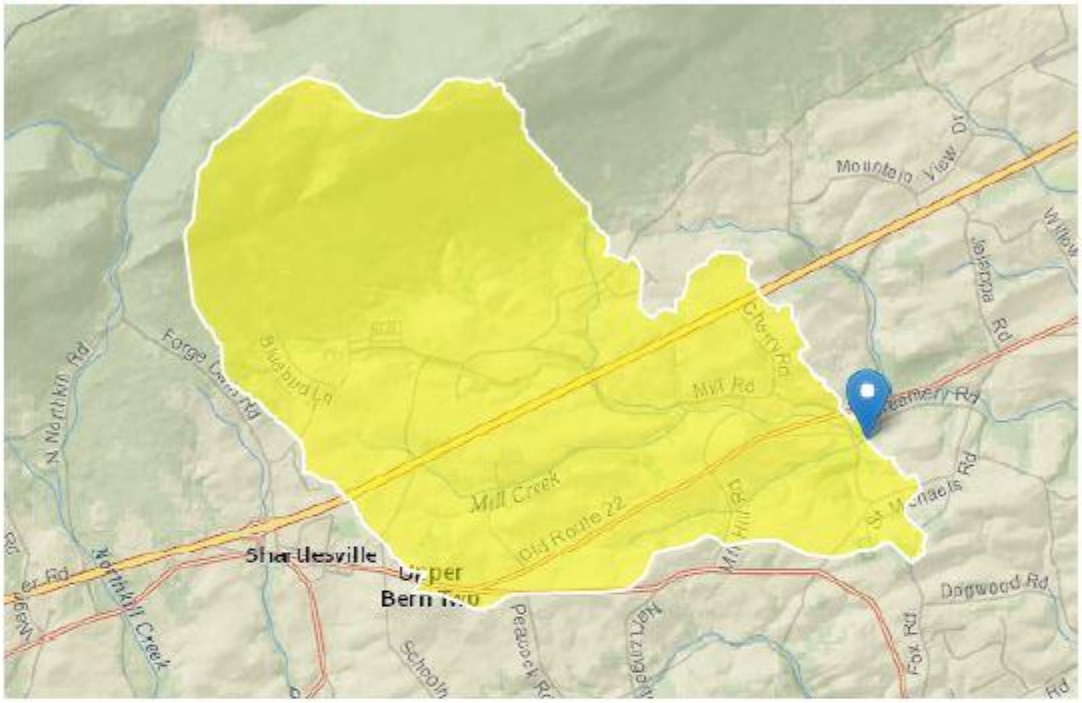
1A	B	C	D	E	F	G
2	**TRC EVALUATION**					
3	Input appropriate values in B4:B8 and E4:E7					
4	0.045	= Q stream (cfs)		0.5	= CV Daily	
5	0.01	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine 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 = 0.947		1.3.2.iii	WLA cfc = 0.916
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= 0.353		5.1d	LTA_cfc = 0.532
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) = 0.434		AFC	
18			INST MAX LIMIT (mg/l) = 1.420			

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)

Attachment C – StreamStats Analysis Report

StreamStats Report for Mill Creek Watershed

Region ID: PA
Workspace ID: PA20190905142836588000
Clicked Point (Latitude, Longitude): 40.52230, -76.05047
Time: 2019-09-05 10:28:53 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	6.35	square miles
PRECIP	Mean Annual Precipitation	48	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.09	miles per square mile
ROCKDEP	Depth to rock	3.7	feet
CARBON	Percentage of area of carbonate rock	0	percent

Parameter Code	Parameter Description	Value	Unit
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0	percent

Low-Flow Statistics Parameters[Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	6.35	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	48	inches	35	50.4
STRDEN	Stream Density	1.09	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	3.7	feet	3.32	5.65
CARBON	Percent Carbonate	0	percent	0	99

Low-Flow Statistics Flow Report[Low Flow Region 2]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp
7 Day 2 Year Low Flow	1.22	ft^3/s	38	38
30 Day 2 Year Low Flow	1.73	ft^3/s	33	33
7 Day 10 Year Low Flow	0.454	ft^3/s	51	51
30 Day 10 Year Low Flow	0.667	ft^3/s	46	46
90 Day 10 Year Low Flow	1.14	ft^3/s	36	36

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

Peak-Flow Statistics Parameters[Peak Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	6.35	square miles	1.72	1280
STORAGE	Percent Storage	0	percent	0	21.2

Peak-Flow Statistics Flow Report[Peak Flow Region 1]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp	Equiv. Yrs.
2 Year Peak Flood	344	ft^3/s	33	33	3
5 Year Peak Flood	605	ft^3/s	31	31	6
10 Year Peak Flood	815	ft^3/s	31	31	9
50 Year Peak Flood	1370	ft^3/s	36	36	13
100 Year Peak Flood	1650	ft^3/s	38	38	13
500 Year Peak Flood	2410	ft^3/s	46	46	14

Peak-Flow Statistics Citations

Roland, M.A., and Stuckey, M.H.,2008, Regression equations for estimating flood flows at selected recurrence intervals for ungaged streams in Pennsylvania: U.S. Geological Survey Scientific Investigations Report 2008-5102, 57p. (http://pubs.usgs.gov/sir/2008/5102/)

Attachment C – Site Visit Pictures

1 - Outfall 001 and UNT to Mill Creek

2 - Overflow Weir & Sample Point