pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0024538**
Facility Type	**Municipal**	APS ID	**997279**
Major / Minor	**Minor**	Authorization ID	**1280109**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Beech Creek Borough Authority Clinton County**	Facility Name	**Beech Creek Borough Authority Sewer System STP**
Applicant Address	PO Box 216	Facility Address	151 Mill Street
	Beech Creek, PA 16822-0216		Beech Creek, PA 16822
Applicant Contact	Veronica Roan, Secretary	Facility Contact	Randy Peters, Operator
Applicant Phone	(570) 962-2291	Facility Phone	(570) 962-2291
Client ID	35862	Site ID	246262
Ch 94 Load Status	Not Overloaded	Municipality	Beech Creek Borough
Connection Status	No Limitations	County	Clinton
Date Application Received	July 10, 2019	EPA Waived?	Yes
Date Application Accepted	July 12, 2019	If No, Reason	

Purpose of Application: Renewal of a NPDES Permit.

Summary of Review

The subject facility is a municipal WWTP serving Beech Creek Borough and neighboring portions of Beech Creek Township in Clinton County. A map of the discharge location is attached.

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.

Approve	Deny	Signatures	Date
X		Keith C. Allison / Project Manager	October 8, 2019
		Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.16
Latitude	41º 4' 17.88"	Longitude	-77º 35' 21.75"
Quad Name	Beech Creek, PA	Quad Code	1025
Wastewater Description:	Sewage Effluent		
Receiving Waters	Beech Creek (CWF, MF)	Stream Code	22596
NHD Com ID	67176466	RMI	1.28
Drainage Area	171 mi^2	Yield (cfs/mi^2)	0.0895
Q_{7-10} Flow (cfs)	15.3	Q_{7-10} Basis	USGS Gage #01547950, Beech Creek @ Monument, PA (1970-2008)
Elevation (ft)	587	Slope (ft/ft)	0.0025
Watershed No.	9-C	Chapter 93 Class.	CWF, MF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	Metals, PH		
Source(s) of Impairment	ACID MINE DRAINAGE		
TMDL Status	Final	Name	Beech Creek (Basin)
Nearest Downstream Public Water Supply Intake	Pennsylvania American Water Company at Milton, PA		
PWS Waters	West Branch Susquehanna River	Flow at Intake (gpd)	8,500,000
PWS RMI	11	Distance from Outfall (mi)	Approx. 63

Changes Since Last Permit Issuance: The stream and drainage characteristics determined for the previous renewal remain valid and are unchanged here.

Other Comments:

Due to the impairment of Beech Creek by AMD, the existing permit required annual monitoring for the Aluminum, Iron, and Manganese, the metals primarily associated with AMD. Per the monitoring from eDMR for these parameters the levels for Aluminum, Iron, and Manganese have averaged 1.49, 0.349, and 0.052 mg/L, respectively. Aluminum is the only of these three parameters which exceed the instream criteria. The Criteria Maximum Concentration for Total Aluminum of 750 µg/L. Therefore, the annual monitoring for Aluminum will remain but the monitoring for Iron and Manganese will be removed in the proposed draft permit. The facility consistently meets its pH limits which are identical to the water quality criteria.

No downstream water supply is expected to be affected by this discharge with the limitations and monitoring proposed.

Treatment Facility Summary

Treatment Facility Name: Beech Creek Borough

WQM Permit No.	Issuance Date	Permit For:
1806402	5/3/06	Dechlorination
1898401	Original- 10/23/98	New construction and rehabilitation of existing facility included new fine screens, recycle pumps for trickling filter, static chlorine mixer, and second chlorine contact tank as well as modification of existing trickling filter and secondary clarifier
	Minor Amendment- 3/25/11	Addition of polymer flocculant and replacement of chlorinator
1895403	10/26/95	Sewer extension
	Amendment No. 1 – 09/18/17	Replacement of Pumps at Keswin Pump Station

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Trickling Filter	Gas Chlorine	0.16

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.16	334	Not Overloaded	Aerobic Digestion	Landfill

Changes Since Last Permit Issuance: No changes have been made at the treatment facility, although the modifications to the Keswin Pump Station occurred as noted above.

Other Comments: The treatment, as approved by WQM permit Nos. 1898401, 1806402 and 1895403 consists of influent pump station, screen, trickling filter, flocculation, clarifier, chlorination, sodium bisulfite for dechlorination, aerobic digestion, and sludge drying.

Compliance History

Summary of DMRs:	A review of the DMRs for the past year found one effluent violation for Fecal Coliform of a January 2019 exceedance of the IMax of 10,000 mg/L at 20,224 No./100 ml.
Summary of Inspections:	The facility has been inspected by the Department annually over the past permit term. The most recent inspection on April 19, 2019 by John Springer, WQS identified the January 2019 Fecal Coliform violation, but no operational violations at the time of inspection.

Other Comments: A WMS query found no open violations in eFACTS for the Beech Creek Borough Authority.

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Existing Effluent Limitations and Monitoring Requirements – Outfall 001

Parameter	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	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	Report	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	33	53 Wkly Avg	XXX	25	40	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Suspended Solids	40	60 Wkly Avg	XXX	30	45	60	1/week	8-Hr Composite
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10000	1/week	Grab
Nitrate-Nitrite as N	Report Total Mo	XXX	XXX	Report	XXX	XXX	1/quarter	8-Hr Composite
Total Nitrogen	Report Total Mo	Report Total Annual	XXX	Report	XXX	XXX	1/quarter	Calculation
Ammonia-Nitrogen	Report Total Mo	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Total Kjeldahl Nitrogen	Report Total Mo	XXX	XXX	Report	XXX	XXX	1/quarter	8-Hr Composite
Total Phosphorus	Report Total Mo	Report Total Annual	XXX	Report	XXX	XXX	1/quarter	8-Hr Composite
Total Aluminum	XXX	XXX	XXX	Report	XXX	XXX	1/year	8-Hr Composite
Total Iron	XXX	XXX	XXX	Report	XXX	XXX	1/year	8-Hr Composite
Total Manganese	XXX	XXX	XXX	Report	XXX	XXX	1/year	8-Hr Composite

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.16
Latitude 41º 4' 17.40" **Longitude** -77º 35' 16.38"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

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

Comments: The above limit are applicable and already included in the existing NPDES permit.

Water Quality-Based Limitations

CBOD5, NH3-N & DO

The WQM7.0 model allows the Department to evaluate point source discharges of dissolved oxygen (DO), carbonaceous BOD ($CBOD_5$), and ammonia-nitrogen (NH_3-N) into free-flowing streams and rivers. Conditions have not changed, and the modeling conducted for the previous review remains valid which shows that the existing secondary treatment limits are adequate to protect the receiving stream. See Attachment B.

Total Residual Chlorine

TRC modeling performed for the previous review remains valid and shows that the existing BAT limit of 0.5 mg/L is adequate to protect the receiving stream. See Attachment B.

Toxics Management

No further “Reasonable Potential Analysis” was performed at this time to determine additional parameters as candidates for limitations or monitoring for this minor sewage treatment facility with no industrial dischargers.

Chesapeake Bay/Nutrient Requirements

According to the Pennsylvania’s Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, this facility is considered a Phase 5 Chesapeake Bay sewage discharger, and as such requires no nutrient loading limits. Per a review of the facility DMRs over the past permit term Total Nitrogen has averaged 14.7 mg/L and Total Phosphorus has averaged 2.09 mg/L. Because the nutrients levels in the discharge have adequately been characterized at this time, the existing quarterly monitoring for Total Nitrogen, Total Phosphorus, Nitrate-Nitrite, and TKN will be removed from this draft permit.

Best Professional Judgment (BPJ) Limitations

Comments: No additional BPJ limits are necessary for this discharge at this time beyond the technology and water quality-based limitations noted above.

Anti-Backsliding

No proposed limitations were made less stringent consistent with the anti-degradation requirements of the Clean Water Act and 40 CFR 122.44(l).

Hauled in Waste
Per the application, the permittee has not accepted any hauled-in waste in the past three years and does not anticipate receiving any over the next permit term.

Biosolids/Sludge Disposal
Wasted sludge is disposed at the Clinton County Solid Waste Authority's Wayne Township Landfill.

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	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	Report Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	33	53	XXX	25	40	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	40	60	XXX	30	45	60	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Ammonia	XXX	XXX	XXX	Report	Report Daily Max	XXX	1/week	8-Hr Composite
Total Aluminum	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	8-Hr Composite

Compliance Sampling Location: Outfall 001

Other Comments: The above limitations and monitoring are unchanged from the existing permit except for the removal of monitoring for nutrient parameters as well as the removal of Iron and Manganese monitoring as noted above. Also, the monitoring for NH3-N has been increased from monthly to weekly consistent with typical requirements for facilities of this size.

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☐	PENTOXSD for Windows Model (see Attachment)
☒	TRC Model Spreadsheet (see Attachment **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: Establishing Effluent Limitations for Individual Sewage Permits
☐	Other:

Attachments:
Discharge Location Map
WQM7.0 Modeling
TRC Modeling

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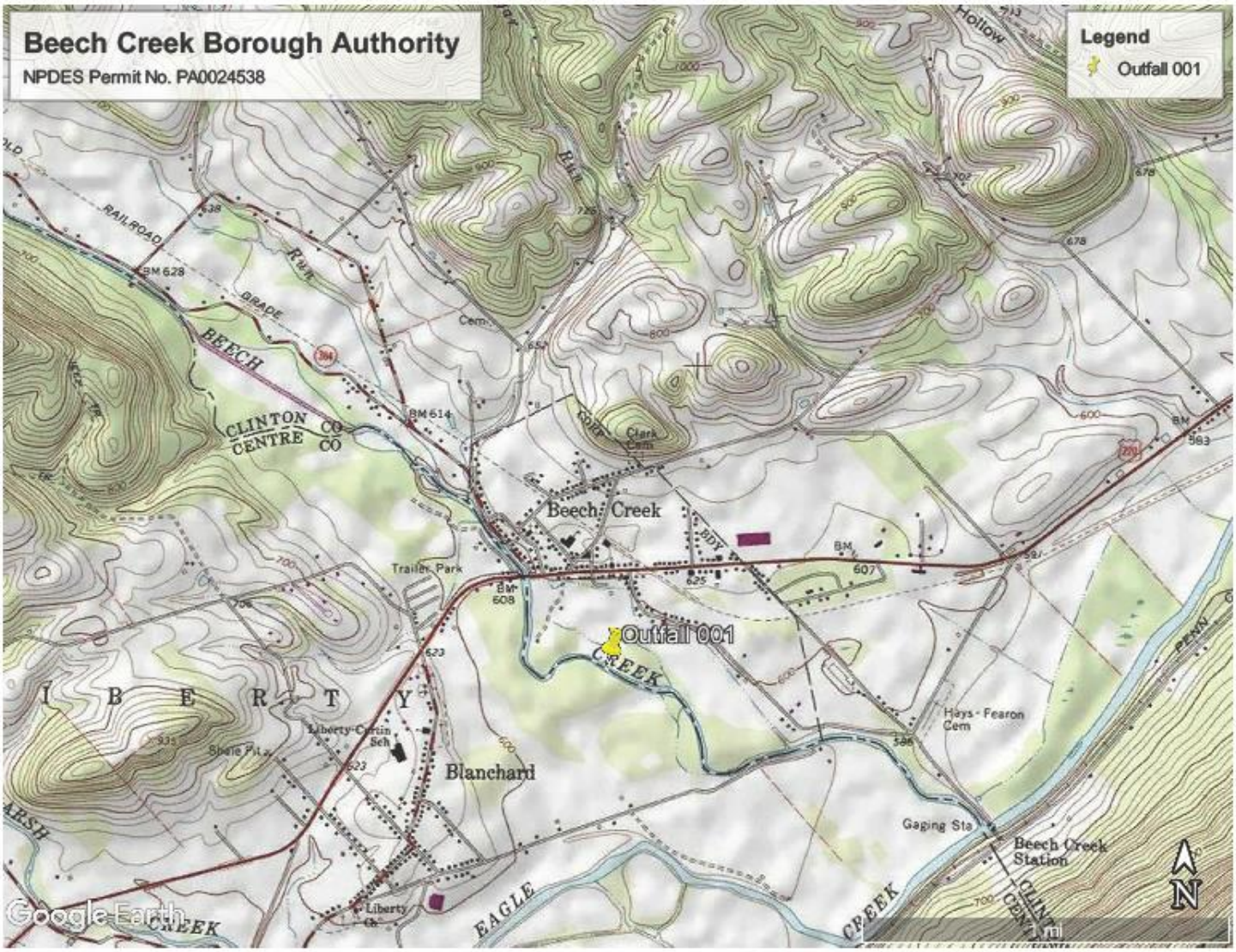

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Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
09C	22596	BEECH CREEK	1.280	587.00	171.00	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	0.090	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
Beech Creek	PA0024538	0.1600	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

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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
09C	22596	BEECH CREEK	0.001	570.00	172.00	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	0.090	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
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

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WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
09C	22596	BEECH 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												
1.280	15.30	0.00	15.30	.2475	0.00252	.836	62.49	74.76	0.30	0.263	20.08	7.00
Q1-10 Flow												
1.280	9.79	0.00	9.79	.2475	0.00252	NA	NA	NA	0.23	0.335	20.12	7.00
Q30-10 Flow												
1.280	20.81	0.00	20.81	.2475	0.00252	NA	NA	NA	0.35	0.222	20.06	7.00

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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	6		

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WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
09C	22596	BEECH 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
1.280	Beech Creek	9.59	50	9.59	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
1.280	Beech Creek	1.91	25	1.91	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)		
1.28	Beech Creek	25	25	25	25	3	3	0	0

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WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
09C	22596	BEECH CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.280	0.160	20.080	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
62.491	0.836	74.761	0.298
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.37	0.214	0.40	0.704
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.160	5.124	Tsivoglou	6
Reach Travel Time (days)			
0.263			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.026	2.35	0.39	8.23
0.053	2.34	0.38	8.23
0.079	2.33	0.38	8.23
0.105	2.31	0.37	8.23
0.131	2.30	0.36	8.23
0.158	2.29	0.36	8.23
0.184	2.27	0.35	8.23
0.210	2.26	0.34	8.23
0.236	2.25	0.34	8.23
0.263	2.24	0.33	8.23

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WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
09C	22596	BEECH 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)
1.280	Beech Creek	PA0024538	0.160	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

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TRC EVALUATION

Client		Date	
15.3	**= Q stream (cfs)**	**0.5**	**= CV Daily**
0.16	**= Q discharge (MGD)**	**0.5**	**= CV Hourly**
30	**= no. samples**	**0.333**	**= 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)**
	= % Factor of Safety (FOS)	**0**	**=Decay Coefficient (K)**

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	**1.3.2.iii**	WLA afc =	6.585	**1.3.2.iii**	WLA cfc =	19.235
PENTOXSD TRG	**5.1a**	LTAMULT afc =	0.373	**5.1c**	LTAMULT cfc =	0.581
PENTOXSD TRG	**5.1b**	LTA_afc=	2.454	**5.1d**	LTA_cfc =	11.182
		WQBEL_afc=	**3.020**		WQBEL_cfc=	13.764

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) =	1.635	

WLA afc	**(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...** **...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	**(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...** **...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	**1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)**