Pennsylvania Department of Environmental Protection

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	**NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE**	Application No.	**PA0021652**
Facility Type	**Municipal**		APS ID	**1128145**
Major / Minor	**Minor**		Authorization ID	**1510903**

Applicant and Facility Information

Applicant Name	**Kreamer Municipal Authority**	Facility Name	**Kreamer Municipal Authority Wastewater Treatment Plant**
Applicant Address	PO Box 220	Facility Address	5320 Sr 522
	Kreamer, PA 17833-0220		Kreamer, PA 17833-0220
Applicant Contact	Patricia George	Facility Contact	Todd Mace
Applicant Phone	(570) 837-1440	Facility Phone	(570) 274-1755
Client ID	51644	Site ID	252238
Ch 94 Load Status	Not Overloaded	Municipality	Middlecreek Township
Connection Status	No Limitations	County	Snyder
Date Application Received	December 30, 2024	EPA Waived?	Yes
Date Application Accepted	December 31, 2024	If No, Reason	

Purpose of Application: Renewal of an existing NPDES permit for the discharge of treated sewage.

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		Derek S. Garner / Project Manager	February 24, 2026
x		Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	February 26, 2026

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.165
Latitude	40º 48' 22.61"	Longitude	-76º 57' 58.24"
Quad Name	Freeburg	Quad Code	1230
Wastewater Description:	Sewage Effluent		

Receiving Waters	Middle Creek	Stream Code	17701
NHD Com ID	54965391	RMI	7.99
Drainage Area (mi^2)	147	Yield (cfs/mi^2)	0.165
Q_{7-10} Flow (cfs)	27 (1)	Q_{7-10} Basis	Streamgage No. 01565000
Elevation (ft)	461	Slope (ft/ft)	n/a
Watershed No.	6-A	Chapter 93 Class.	TSF
Existing Use	n/a	Existing Use Qualifier	n/a
Exceptions to Use	n/a	Exceptions to Criteria	n/a
Assessment Status	Impaired		
Cause(s) of Impairment	Siltation		
Source(s) of Impairment	Agriculture		
TMDL Status	n/a	Name	n/a

Nearest Downstream Public Water Supply Intake	Suez Water		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	2,610
PWS RMI	79	Distance from Outfall (mi)	Approx. 50

(1) The Q7-10 of Middle Creek at Outfall 001 was calculated using thirty years of the most recent flow data from USGS Streamgage No. 01554000 (Kishacoquillas Creek at Reedsville, PA). This gage was previously determined to be most representative of Middle Creek at the point of discharge. A Q7-10 of 27 cfs was developed using DFLOW in the USGS Hydrologic Toolbox. Based on the stream gage's drainage area of 164 mi^2 a low-flow yield of 0.165 cfs/mi^2 was developed. Applying the calculated low-flow yield to Outfall 001's drainage area of 147 mi^2 yields a Q7-0 of 24.2 cfs. A Q7-10 of 24.86 cfs was calculated at downstream RMI 7.77 for modeling purposes. Calculations and supporting documentation are attached.

Treatment Facility Summary

The Kreamer Municipal Authority operates a packaged wastewater treatment system manufactured by Areo-Mod, Inc. which uses a SEQUOX BNR activated sludge process to provide biological nitrogen removal. This system consists of a comminutor, a manual auger bar screen, a wet well, a helosieve, a fermentation tank, stage 1 aeration (2 tanks), stage 2 aeration (2 tanks), two clarifiers, a UV disinfection unit, a utility water tank, and an aerobic (sludge) digester. The treatment plant has an annual average design flow of 0.165 MGD, hydraulic design capacity of 0.198 MGD, and an organic design capacity of 334 lb/day. The treatment plant's construction and current operation are covered under WQM Permit No. 5507402, issued May 7, 2007 and subsequently amended December 28, 2007.

Preliminary treatment is accomplished by the comminutor followed by pumping to a mechanical auger screen. Secondary treatment consists of an anoxic selector tank which acts as an aerated equalization tank and a flow splitting tank. Nitrification occurs in the two first stage aeration trains. Waste activated sludge is also collected there and pumped to the aerobic digester. The denitrification of the mixed liquor occurs in the two second stage aeration trains. In the two clarifier trains, return activated sludge is collected and returned to the selector tank, where the supernatant is decanted to the UV chamber for disinfection prior to discharge. The waste activated sludge is aerobically digested in the digester.

Compliance History

The wastewater treatment plant was most recently inspected by DEP on July 24, 2025. The inspection report noted that failure lights on the UV control panel were observed and recommended that the facility verify the UV treatment unit is functioning as designed. The outfall and receiving stream were not observed, but effluent discharging over the weir after disinfection was clear.

The following effluent violations occurred during the existing permit's term:

Noncompliance Date	Noncompliance Description	Parameter	Sample Value	Violation Condition	Permit Value	Units	SBC
7/27/2021	Violation of permit condition	Total Suspended Solids	46	>	45	mg/L	Weekly Avg
9/28/2021	Violation of permit condition	Fecal Coliform	2419.6	>	1000	No./100 ml	IMAX
9/20/2022	Violation of permit condition	Fecal Coliform	2419.6	>	1000	No./100 ml	IMAX
12/2/2022	Violation of permit condition	Fecal Coliform	> 2419.6	>	10000	No./100 ml	IMAX
2/27/2023	Violation of permit condition	Fecal Coliform	> 2419.6	>	10000	No./100 ml	IMAX
2/27/2023	Violation of permit condition	Fecal Coliform	> 8	>	2000	No./100 ml	Geo Mean
7/21/2023 (1)	Violation of permit condition	Fecal Coliform	> 2419.6	>	1000	No./100 ml	IMAX
7/21/2023 (1)	Violation of permit condition	Fecal Coliform	> 7	>	200	No./100 ml	Geo Mean
5/20/2024 (1)	Violation of permit condition	Fecal Coliform	> 2419.6	>	10000	No./100 ml	IMAX
5/20/2024 (1)	Violation of permit condition	Fecal Coliform	> 4	>	2000	No./100 ml	Geo Mean
10/21/2024 (1)	Violation of permit condition	Fecal Coliform	> 12	>	200	No./100 ml	Geo Mean
10/21/2024 (1)	Violation of permit condition	Fecal Coliform	> 2419.6	>	1000	No./100 ml	IMAX
5/20/2025	Sample collection less frequent than required	Nitrate-Nitrite as N	---	---	---	---	---
5/20/2025	Sample collection less frequent than required	Total Kjeldahl Nitrogen	---	---	---	---	---
5/20/2025	Sample collection less frequent than required	Total Phosphorus	---	---	---	---	---
6/25/2025	Sample collection less frequent than required	---	---	---	---	---	---
9/23/2025 (1)	Violation of permit condition	Fecal Coliform	30000	>	1000	No./100 ml	IMAX
11/19/2025	Violation of permit condition	Fecal Coliform	36000	>	10000	No./100 ml	IMAX

(1) The permittee attributed each of these violations to lab error.

There are several open violations associated with the Safe Drinking Water program:

Program	Program Specific ID	Inspection ID	Violation ID	Violation Date	Violation Code	Violation
Safe Drinking Water	4550014	3956772	8230744	4/25/2025	B6A	Other violations deemed to be significant deficiencies
Safe Drinking Water	4550014	3956772	8230745	4/25/2025	C4A	Failure to operate and maintain the water system
Safe Drinking Water	4550014	3956772	8230746	4/25/2025	C1A	Failure to meet design and construction standards
Safe Drinking Water	4550014	3956772	8230747	4/25/2025	C1A	Failure to meet design and construction standards
Safe Drinking Water	4550014	3956772	8230748	4/25/2025	C4A	Failure to operate and maintain the water system

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.165
Latitude 40º 48' 22.30" **Longitude** -76º 57' 58.20"
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)

Water Quality-Based Limitations

The following limitations were determined through water quality modeling (output files attached):

Parameter	Average Monthly	Daily Maximum	Minimum
CBOD5	25	---	---
Ammonia-N	25	50	---
Dissolved Oxygen	---	---	3

As indicated by the results above, the existing requirements for CBOD5, ammonia-N, and dissolved oxygen are protective of Middle Creek.

Best Professional Judgment (BPJ) Limitations

DEP recommends that influent monitoring for BOD5 and TSS remain in the permit to continue to characterize the wastewater.

DEP recommends quarterly E. Coli reporting per the 2017 Triennial Review of Water Quality Standards, published in the PA Bulletin on July 11, 2020.

DEP recommends that existing monitoring requirements for dissolved oxygen and ammonia-n remain in the permit to continue to characterize the wastewater.

DEP recommends that the permittee continues to report UV light transmittance to ensure operation of the disinfection system.

Chesapeake Bay Requirements

Pennsylvania's Phase 3 Watershed Implementation Plan (WIP) Wastewater Supplement (Revised, April 2, 2025) identifies the BMA WWTP as a Phase 5 facility. Phase 5 facilities that increase design flows after August 29, 2005 are assigned cap loads based on the lesser of a) existing total nitrogen/total phosphorus concentrations at current design average annual flow or b) 7,306 lbs/yr total nitrogen and 974 lbs/yr total phosphorus. In 2006, when the cap loads were established, it was determined that the default values were less than existing loadings and should be established in the permit. There have been no changes to the WIP that would require modifying the existing cap loads. Accordingly, DEP recommends that the existing Chesapeake Bay requirements remain in the permit.

Anti-Backsliding

No limits or monitoring requirements are proposed to be made less stringent than the existing permit's requirements. Accordingly, anti-backsliding does not impact the permit.

Existing Effluent Limitations and Monitoring Requirements

The existing effluent limitations and monitoring requirements are as follows:

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Instantaneous 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	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	Report	XXX	XXX	XXX	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	34	55	XXX	25	40	50	1/week	8-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Total Suspended Solids	41	60	XXX	30	45	60	1/week	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/month	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
Ultraviolet light transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Grab
Ammonia-Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite

Compliance Sampling Location: Outfall 001

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
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Ammonia--N	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Net Total Nitrogen	XXX	7306	XXX	XXX	XXX	XXX	1/year	Calculation
Net Total Phosphorus	XXX	974	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: Outfall 001

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.

<u>Outfall 001,</u> Effective Period: <u>Permit Effective Date</u> through <u>Permit Expiration Date</u>

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Instantaneous 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	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	Report	XXX	XXX	XXX	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	34	55	XXX	25.0	40.0	50	1/week	8-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Total Suspended Solids	41	60	XXX	30	45	60	1/week	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/month	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
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Ultraviolet light transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Grab
Ammonia-Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite

Compliance Sampling Location: Outfall 001

The limitations and monitoring requirements specified below are proposed for the draft permit, to comply with Pennsylvania's Chesapeake Bay Tributary Strategy.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Ammonia--N	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Net Total Nitrogen	XXX	7306	XXX	XXX	XXX	XXX	1/year	Calculation
Net Total Phosphorus	XXX	974	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: Outfall 001

StreamStats Output Report

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	8.2139	degrees
BSLOPDRAW	Unadjusted basin slope, in degrees	8.4374	degrees
BSLPDRPA20	Unadjusted basin slope, in degrees, from PA v1	8.7572	degrees
CARBON	Percentage of area of carbonate rock	12.52	percent
CENTROXA83	X coordinate of the centroid, in NAD_1983_Albers, meters	1565470.966	meters
CENTROYA83	Basin centroid horizontal (y) location in NAD 1983 Albers	2129214.49	meters
DRN	Drainage quality index from STATSGO	3.19	dimensionless
DRNAREA	Area that drains to a point on a stream	147	square miles
ELEV	Mean Basin Elevation	940.1	feet
ELEVMAX	Maximum basin elevation	2216.4	feet
FOREST	Percentage of area covered by forest	61.2123	percent
GLACIATED	Percentage of basin area that was historically covered by glaciers	0	percent
IMPNLCD01	Percentage of impervious area determined from NLCD 2001 impervious dataset	0.9921	percent
LC01DEV	Percentage of land-use from NLCD 2001 classes 21-24	7.1717	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	7.2451	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	1.0821	percent
LONG_OUT	Longitude of Basin Outlet	-76.9660665	decimal degrees
MAXTEMP	Mean annual maximum air temperature over basin area from PRISM 1971-2000 800-m grid	60.51	degrees F
OUTLETXA83	X coordinate of the outlet, in NAD_1983_Albers,meters	1581985	meters
OUTLETYA83	Y coordinate of the outlet, in NAD_1983_Albers, meters	2136255	meters
PRECIP	Mean Annual Precipitation	43.2	inches
ROCKDEP	Depth to rock	4.49	feet
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0.98	percent
STRDEN	Stream Density -- total length of streams divided by drainage area	2.125	miles per square mile
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	312.444	miles
URBAN	Percentage of basin with urban development	1.1035	percent

StreamStats Output Report

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	8.2396	degrees
BSLOPDRAW	Unadjusted basin slope, in degrees	8.4633	degrees
BSLPDRPA20	Unadjusted basin slope, in degrees, from PA v1	8.7931	degrees
CARBON	Percentage of area of carbonate rock	12.28	percent
CENTROXA83	X coordinate of the centroid, in NAD_1983_Albers, meters	1565902.479	meters
CENTROYA83	Basin centroid horizontal (y) location in NAD 1983 Albers	2129392.545	meters
DRN	Drainage quality index from STATSGO	3.18	dimensionless
DRNAREA	Area that drains to a point on a stream	151	square miles
ELEV	Mean Basin Elevation	933.9	feet
ELEVMAX	Maximum basin elevation	2216.4	feet
FOREST	Percentage of area covered by forest	61.0616	percent
GLACIATED	Percentage of basin area that was historically covered by glaciers	0	percent
IMPNLCD01	Percentage of impervious area determined from NLCD 2001 impervious dataset	1.0259	percent
LC01DEV	Percentage of land-use from NLCD 2001 classes 21-24	7.2952	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	7.3731	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	1.1184	percent
LONG_OUT	Longitude of Basin Outlet	-76.9619434	decimal degrees
MAXTEMP	Mean annual maximum air temperature over basin area from PRISM 1971-2000 800-m grid	60.51	degrees F
OUTLETXA83	X coordinate of the outlet, in NAD_1983_Albers,meters	1582335	meters
OUTLETYA83	Y coordinate of the outlet, in NAD_1983_Albers, meters	2136265	meters
PRECIP	Mean Annual Precipitation	43.1	inches
ROCKDEP	Depth to rock	4.46	feet
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0.96	percent
STRDEN	Stream Density -- total length of streams divided by drainage area	2.129	miles per square mile
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	321.487	miles
URBAN	Percentage of basin with urban development	1.1545	percent

science for a changing world

Prepared in cooperation with the Pennsylvania Department of Environmental Protection

Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania

Open-File Report 2011–1070

U.S. Department of the Interior
U.S. Geological Survey

Table 1. List of U.S. Geological Survey streamgage locations in and near Pennsylvania with updated streamflow statistics.—Continued

[Latitude and Longitude in decimal degrees; mi^2, square miles]

Streamgage number	Streamgage name	Latitude	Longitude	Drainage area (mi^2)	Regulated[1]
01561000	Brush Creek at Gapsville, Pa.	39.956	-78.254	36.8	N
01562000	Raystown Branch Juniata River at Saxton, Pa.	40.216	-78.265	756	N
01562500	Great Trough Creek near Marklesburg, Pa.	40.350	-78.130	84.6	N
01563200	Raystown Branch Juniata River below Rays Dam nr Huntingdon, Pa.	40.429	-77.991	960	Y
01563500	Juniata River at Mapleton Depot, Pa.	40.392	-77.935	2,030	Y
01564500	Aughwick Creek near Three Springs, Pa.	40.213	-77.925	205	N
01565000	Kishacoquillas Creek at Reedsville, Pa.	40.655	-77.583	164	N
01565700	Little Lost Creek at Oakland Mills, Pa.	40.605	-77.311	6.52	N
01566000	Tuscarora Creek near Port Royal, Pa.	40.515	-77.419	214	N
01566500	Cocolamus Creek near Millerstown, Pa.	40.566	-77.118	57.2	N
01567000	Juniata River at Newport, Pa.	40.478	-77.129	3,354	Y
01567500	Bixler Run near Loysville, Pa.	40.371	-77.402	15.0	N
01568000	Sherman Creek at Shermans Dale, Pa.	40.323	-77.169	207	N
01568500	Clark Creek near Carsonville, Pa.	40.460	-76.751	22.5	LF
01569000	Stony Creek nr Dauphin, Pa.	40.380	-76.907	33.2	N
01569800	Letort Spring Run near Carlisle, Pa.	40.235	-77.139	21.6	N
01570000	Conodoguinet Creek near Hogestown, Pa.	40.252	-77.021	470	LF
01570500	Susquehanna River at Harrisburg, Pa.	40.255	-76.886	24,100	Y
01571000	Paxton Creek near Penbrook, Pa.	40.308	-76.850	11.2	N
01571500	Yellow Breeches Creek near Camp Hill, Pa.	40.225	-76.898	213	N
01572000	Lower Little Swatara Creek at Pine Grove, Pa.	40.538	-76.377	34.3	N
01572025	Swatara Creek near Pine Grove, Pa.	40.533	-76.402	116	N
01572190	Swatara Creek near Inwood, Pa.	40.479	-76.531	167	N
01573000	Swatara Creek at Harper Tavern, Pa.	40.403	-76.577	337	N
01573086	Beck Creek near Cleona, Pa.	40.323	-76.483	7.87	N
01573160	Quittapahilla Creek near Bellegrove, Pa.	40.343	-76.562	74.2	N
01573500	Manada Creek at Manada Gap, Pa.	40.397	-76.709	13.5	N
01573560	Swatara Creek near Hershey, Pa.	40.298	-76.668	483	N
01574000	West Conewago Creek near Manchester, Pa.	40.082	-76.720	510	N
01574500	Codorus Creek at Spring Grove, Pa.	39.879	-76.853	75.5	Y
01575000	South Branch Codorus Creek near York, Pa.	39.921	-76.749	117	Y
01575500	Codorus Creek near York, Pa.	39.946	-76.755	222	Y
01576000	Susquehanna River at Marietta, Pa.	40.055	-76.531	25,990	Y
01576085	Little Conestoga Creek near Churchtown, Pa.	40.145	-75.989	5.82	N
01576500	Conestoga River at Lancaster, Pa.	40.050	-76.277	324	N
01576754	Conestoga River at Conestoga, Pa.	39.946	-76.368	470	N
01578310	Susquehanna River at Conowingo, Md.	39.658	-76.174	27,100	Y
01578400	Bowery Run near Quarryville, Pa.	39.895	-76.114	5.98	N
01580000	Deer Creek at Rocks, Md.	39.630	-76.403	94.4	N
01581500	Bynum Run at Bel Air, Md.	39.541	-76.330	8.52	N
01581700	Winters Run near Benson, Md.	39.520	-76.373	34.8	N
01582000	Little Falls at Blue Mount, Md.	39.604	-76.620	52.9	N
01582500	Gunpowder Falls at Glencoe, Md.	39.550	-76.636	160	Y
01583000	Slade Run near Glyndon, Md.	39.495	-76.795	2.09	N
01583100	Piney Run at Dover, Md.	39.521	-76.767	12.3	N

RESULTS: USGS 01565000 Kishacoquillas Creek at Reedsville, PA

All available data from Apr 1, 1996 through Mar 31, 2026 are included in analysis.

Flow Statistic	Flow Value	Percentile	1-day Excur. per 3 yr.
1Q10	26.374	0.47%	1.5
7Q10	27.002	0.76%	1.5
30Q10	29.614	1.64%	2.6
Harmonic Mean	108.98	35.58%	N/A
Harmonic Mean, Adjusted	108.98	27.73%	N/A

Low-Flow (Q_{7-10}) Calculation

Facility: **Kreamer Municipal Authority WWTP**
NPDES Permit No. **PA0021652**

Gage Information

Drainage Area: **164** mi²
Q_{7-10}: **27** cfs
LFY: **0.165** cfsm

Outfall Information

Drainage Area: **147** mi²
Q_{7-10}: **24.2** cfs

Downstream Locations

RMI: **7.77**
Drainage Area: **151** mi²
Q_{7-10}: **24.86** cfs

RMI:
Drainage Area: mi²
Q_{7-10}: cfs

RMI:
Drainage Area: mi²
Q_{7-10}: cfs

RMI:
Drainage Area: mi²
Q_{7-10}: cfs

RMI:
Drainage Area: mi²
Q_{7-10}: cfs

RMI:
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Q_{7-10}: cfs

RMI:
Drainage Area: mi²
Q_{7-10}: cfs

RMI:
Drainage Area: mi²
Q_{7-10}: cfs

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
06A	17701	MIDDLE CREEK	**7.990**	461.00	147.00	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 (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
Q7-10	0.165	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 (ºC)	Disc pH
Kreamer MA WWTP	PA0021652	0.1650	0.1650	0.1650	0.000	25.00	7.00

Parameter Data

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

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
06A	17701	MIDDLE CREEK	**7.770**	460.00	151.00	).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 (ºC)	Tributary pH	Stream Temp (ºC)	Stream pH
Q7-10	0.165	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 (ºC)	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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	**Stream Code**	**Stream Name**
06A	**17701**	**MIDDLE 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 (ºC)	Analysis pH
Q7-10 Flow												
7.990	24.26	0.00	24.26	.2553	0.00086	.885	76.24	86.14	0.36	0.037	20.05	7.00
Q1-10 Flow												
7.990	24.01	0.00	24.01	.2553	0.00086	NA	NA	NA	0.36	0.037	20.05	7.00
Q30-10 Flow												
7.990	26.68	0.00	26.68	.2553	0.00086	NA	NA	NA	0.38	0.035	20.05	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.99	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.1	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
06A	17701	MIDDLE 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
7.990	Kreamer MA WW	16.69	50	16.69	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
7.990	Kreamer MA WW	1.88	25	1.88	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)		
7.99	Kreamer MA WWTP	25	25	25	25	3	3	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
06A	17701	MIDDLE CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
7.990	0.165	20.052	7.000
Reach Width (ft)	Reach Depth (ft)	Reach WDRatio	Reach Velocity (fps)
76.235	0.885	86.138	0.363
Reach CBOD5 (mg/L)	Reach Kc (1/days)	Reach NH3-N (mg/L)	Reach Kn (1/days)
2.24	0.170	0.26	0.703
Reach DO (mg/L)	Reach Kr (1/days)	Kr Equation	Reach DO Goal (mg/L)
8.188	2.137	Tsivoglou	6
Reach Travel Time (days)			
0.037			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.004	2.24	0.26	8.19
0.007	2.24	0.26	8.19
0.011	2.24	0.26	8.20
0.015	2.23	0.26	8.20
0.019	2.23	0.26	8.20
0.022	2.23	0.26	8.20
0.026	2.23	0.26	8.20
0.030	2.23	0.25	8.21
0.033	2.23	0.25	8.21
0.037	2.23	0.25	8.21

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
06A	17701	MIDDLE 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)
7.990	Kreamer MA WWTP	PA0021652	0.165	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3