Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0046230**
Facility Type	**Municipal**	APS ID	**1097976**
Major / Minor	**Minor**	Authorization ID	**1456878**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Carmichael Cumberland Joint Sewer Authority**	Facility Name	**Carmichaels Cumberland Joint Sewer Authority**
Applicant Address	PO Box 304 103 Municipal Road	Facility Address	103 Municipal Road
	Carmichaels, PA 15320-0304		Carmichaels, PA 15320-1050
Applicant Contact	Edgar Harris	Facility Contact	Same as Applicant
Applicant Phone	(724) 966-5800	Facility Phone	Same as Applicant
Client ID	45103	Site ID	249315
Ch 94 Load Status	Existing Hydraulic Overload	Municipality	Carmichaels Borough
Connection Status	Self Imposed Connection Prohibition	County	Greene
Date Application Received	September 29, 2023	EPA Waived?	Yes
Date Application Accepted	October 04, 2023	If No, Reason	

Purpose of Application: Application for renewal of an NPDES Permit for treated sewage

Summary of Review

The permittee has applied for a renewal of NPDES Permit No. PA0046230. NPDES Permit No. PA0046230 was previously issued by the PA Department of Environmental Protection (DEP) on April 1, 2019. That permit expired on March 31, 2024.

The Part II permit for this plant (No. 3074401) was issued on June 5, 1974. The plant was permitted to treat an average daily flow of 0.6 MGD. The Part II permit approved construction of one comminutor with bypass bar screen, two aeration tanks, two final settling tanks, two chlorine contact tanks, two gas chlorinators, one sludge holding tank, sludge conditioning tanks and a mechanical sludge dewatering unit. Part II Permit No. 3074401 was amended by way of the final NPDES cover letter dated April 15, 2002 which authorized use of a sulfur dioxide chemical treatment system to reduce total residual chlorine effluent concentrations.

On March 23, 1981, the Department agreed to amend NPDES Permit PA0046230 based on a re-rating which revised the average design flow of the plant from 0.6 MGD to 0.8 MGD. The re-rating approval was based on data contained in the re-rating submission and took into account that flow equalization would be provided to minimize adverse impacts associated with inflow and infiltration problems that were occurring.

Part II Permit 3081402, issued December 30, 1981, approved a controlled diversion to be installed at the sewage treatment plant in lieu of the four-million-gallon equalization basin. Minimal funds caused abandonment of the flow equalization basin and it was never constructed.

Approve	Deny	Signatures	Date
X		Fahmida Amin Fahmida Amin / Environmental Engineering Trainee	April 29, 2025
X		Mahbuba Iasmin Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineering Manager	April 29, 2025

Summary of Review

Two outfalls that previously existed years ago identified as outfalls 002 and 003 acted as STP bypasses. Mr. Harris informed on September 6, 2012 that both outfalls have been plugged to prevent any gravity overflows. The plugs are made of steel with a rubber seal. The rubber boot compresses when a mechanical wing nut is turned. The plugs can be pulled by loosening the wing nuts.

Bypassing the wastewater treatment system is prohibited except:

(1) if the bypass is for essential maintenance to assure efficient operation.

(2) if the bypass is unavoidable to prevent loss of life, personal injury or "severe property damage". Discharge from the treatment plant controlled diversion is subject to the requirements of Part B. 1.G. of the NPDES permit.

Sludge use and disposal description and location(s): Franklin Township Municipal Authority, Greene County.

The receiving stream Muddy Creek, is currently classified as a WWF, located in State Watershed No.19B.

Anti-Backsliding

Section 402(o) of the Clean Water Act (CWA), enacted in the Water Quality Act of 1987, establishes anti-backsliding rules governing two situations. The first situation occurs when a permittee seeks to revise a Technology-Based effluent limitation based on BPJ to reflect a subsequently promulgated effluent guideline which is less stringent. The second situation addressed by Section 402(o) arises when a permittee seeks relaxation of an effluent limitation which is based upon a State treatment standard of water quality standard.

Previous limits can be used pursuant to EPA's anti-backsliding regulation 40 CFR 122.44 ***(l) Reissued permits. (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued. Interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under §122.62). (2) In the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.***

This facility is not seeking to revise the previously permitted effluent limits.

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)	0.8
Latitude	39º 54' 1"	Longitude	-79º 57' 47"
Quad Name	Carmichaels	Quad Code	39079H8
Wastewater Description:	Sewage Effluent		

Receiving Waters	Muddy Creek	Stream Code	21916
NHD Com ID	99415090	RMI	3.94
Drainage Area	25.3	Yield (cfs/mi^2)	0.01693
Q_{7-10} Flow (cfs)	0.429	Q_{7-10} Basis	USGS Streamstats
Elevation (ft)		Slope (ft/ft)	
Watershed No.	19-B	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	**None**		
Source(s) of Impairment	**None**		
TMDL Status	**None**	Name	**None**

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake	Southwestern Pa Water Authority		
PWS Waters	Monongahela river	Flow at Intake (cfs)	9.3
PWS RMI	71.78	Distance from Outfall (mi)	5.65

Changes Since Last Permit Issuance:

Other Comments:

Treatment Facility Summary

Treatment Facility Name: Carmichaels Cumberland Joint Sewer Authority WWTP

WQM Permit No.	Issuance Date
3074401	June 5, 1974
3081402	December 30, 1981

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary with NH3-N removal	Aeration	Gas Chlorine	0.8

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.8	1000	Existing Hydraulic Overload	Sludge holding tank	Transported to Franklin Twp MA WWTP located in Greene County

Changes Since Last Permit Issuance: None

Other Comments:

Operations Compliance Check Summary Report

Facility: CARMICHAELS CUMBERLAND JT SEW AUTH WWTP

NPDES Permit No.: PA0046230

Compliance Review Period: 3/1/20-3/26/25

Inspection Summary:

INSPECTED DATE	INSP TYPE	INSPECTION RESULT DESC
10/24/2023	Administrative/File Review	Violation(s) Noted
11/10/2021	Compliance Evaluation	No Violations Noted
07/21/2020	Administrative/File Review	Viol(s) Noted & Immediately Corrected

Violation Summary:

VIOLATION DATE	VIOLATION TYPE	VIOLATION TYPE DESC	RESOLVED DATE
10/24/2023	92A.47(C)	NPDES - Illegal discharge to waters of the Commonwealth from a sanitary sewer overflow (SSO)	11/27/2023
07/21/2020	92A.44	NPDES - Violation of effluent limits in Part A of permit	07/13/2022

Open Violations by Client ID:

No open violations for Client ID 45103

Enforcement Summary:

ENF TYPE	ENF TYPE DESC	EXECUTED DATE	VIOL PROGRAM NAME	VIOLATIONS	ENF FINALSTATUS	ENF CLOSED DATE
NOV	Notice of Violation	10/24/2023	WPCNP	92A.47(C)	Comply/Closed	11/28/2023

Effluent Violation Summary:

MON PD	PARAMETER	REPORTED VALUE	PERMIT LIMIT	UNIT	STAT_BASE_CODE	FACILITY COMMENT
Dec-23	Total Suspended Solids	305.4	250.2	lbs/day	Weekly Average	
Dec-23	Total Suspended Solids	41.0	37.5	mg/L	Weekly Average	
Jun-21	Fecal Coliform	1860	1000	No./100 ml	Instantaneous Maximum	Fecal coliform maximum exception due to chlorine equipment malfunction, repairs have been completed.
May-20	Fecal Coliform	1940	1000	No./100 ml	Instantaneous Maximum	Fecal Coliform exception due to chlorine equipment malfunction, repairs have been completed.

Unauthorized Discharges:

MON PD	DISCHARGE COMMENT
2/6/2025	One pump plugged up and we were having heavy rain and the second pump could not keep up with the flow.
1/1/2025	Force Main break. 20' of 6" force main split.
6/7/2024	Pumps being repaired
4/1/2024	Due to a heavy rain event (3.81") Lift station flooded.
4/1/2024	Due to a heavy rain event (3.81") Pumps could not handle flow. Actively investigating I & I.
1/9/2024	A heavy rain event caused a hydraulic overload at Schroyers Lift Station on Schroyers Lane.

Compliance Status: There are no open violations or pending enforcements at this time for CCJSA. The facility is currently under a Corrective Action Plan for hydraulic overload and reporting of SSOs was addressed at the time of the last Compliance Evaluation Inspection. Reoccurrence of SSOs will continue to be monitored with additional enforcement action to be pursued as necessary.

Completed by: Amanda Illar **Completed date:** 3/26/25

Compliance History

DMR Data for Outfall 001 (from March 1, 2024 to February 28, 2025)

Parameter	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24
Flow (MGD) Average Monthly	0.9260	0.4311	0.5395	0.3865	0.1942	0.1704	0.2237	0.1543	0.2014	0.2937	0.8270	0.7634
Flow (MGD) Daily Maximum	1.7000	1.0620	1.3320	1.2900	0.7830	0.5170	0.5320	0.7040	0.5080	0.4190	1.8270	1.3420
pH (S.U.) Instantaneous Minimum	7.1	6.8	6.9	6.5	6.2	6.5	6.3	6.3	6.4	6.6	6.7	6.7
pH (S.U.) Instantaneous Maximum	7.6	7.2	8.1	7.4	7.4	7.2	7.3	7.2	7.3	7.2	7.5	7.3
DO (mg/L) Instantaneous Minimum	8.0	7.1	6.5	7.0	6.4	6.0	6.1	6.0	6.0	5.6	6.7	6.3
TRC (mg/L) Average Monthly	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
TRC (mg/L) Instantaneous Maximum	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
CBOD5 (lbs/day) Average Monthly	13.2	13.9	13.9	8.2	3.8	3.6	2.7	2.6	5.9	6.4	24.1	10.5
CBOD5 (lbs/day) Weekly Average	17.9	23.0	23.7	18.0	7.0	8.6	3.5	3.8	8.4	8.4	53.2	15.2
CBOD5 (mg/L) Average Monthly	2.4	3.7	2.9	2.3	2.5	2.3	2.2	2.4	3.3	3.1	3.9	2.1
CBOD5 (mg/L) Weekly Average	3.2	5.7	5.2	3.1	3.4	3.3	2.9	2.7	4.8	4.6	5.4	2.3
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	254.6	265.6	344.3	184.2	149.7	159.1	99.4	96.7	199.6	186.9	264.0	233.4
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	326.1	303.8	514.0	252.2	175.0	316.1	123.1	124.3	316.7	246.8	318.0	339.7
BOD5 (mg/L) Raw Sewage Influent Average Monthly	47.7	74.2	75.3	101.9	108.4	106.3	87.5	95.6	113.8	89.2	54.3	51.7

TSS (lbs/day) Average Monthly	31.4	20.1	23.9	17.3	7.2	8.9	6.1	5.4	9.6	10.9	30.6	25.0
TSS (lbs/day) Raw Sewage Influent Average Monthly	307.1	248.6	493.1	212.8	140.5	169.2	111.7	108.9	224.4	238.2	240.4	268.2
TSS (lbs/day) Raw Sewage Influent Daily Maximum	384.2	400.2	908.6	407.2	164.5	370.8	183.7	188.9	327.7	377.7	297.2	391.3
TSS (lbs/day) Weekly Average	49.8	30.3	41.1	39.1	10.3	21.6	8.7	7.4	16.8	12.8	59.1	38.1
TSS (mg/L) Average Monthly	5.5	5.3	5.0	5.0	5.0	5.4	5.0	5.2	5.0	5.2	5.3	5.0
TSS (mg/L) Raw Sewage Influent Average Monthly	56.5	62.0	98.8	101.5	103.0	104.8	100.5	104.4	122.5	112.0	53.3	67.0
TSS (mg/L) Weekly Average	7.0	6.0	5.0	5.0	5.0	7.0	5.0	6.0	5.0	6.0	6.0	5.0
Fecal Coliform (No./100 ml) Geometric Mean	1	1	3	1	1	1	1	1	1	1	2	1
Fecal Coliform (No./100 ml) Instantaneous Maximum	3	4	28	1	2	1	1	2	1	2	2	2
Total Nitrogen (mg/L) Daily Maximum			0.6									
Ammonia (lbs/day) Average Monthly	1.1	0.5	0.5	0.2	0.1	0.2	0.1	0.1	0.2	0.3	1.1	0.5
Ammonia (mg/L) Average Monthly	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
Total Phosphorus (mg/L) Daily Maximum			2.5									

Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	0.8
Latitude	39º 54' 1.00"	**Longitude**	-79º 57' 47.00"

Wastewater Description: Sewage Effluent

Technology-Based Limitations (TBELs)

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

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
Flow (MGD)	**Report**	**Average Monthly**	**-**	**92a.27, 92a.61**
$CBOD_5$	**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)**
Total Residual Chlorine	**0.5**	**Average Monthly**	**-**	**92a.48(b)(2)**
Ammonia-Nitrogen	**25**	**Average Monthly**	**-**	**BPJ**
Dissolved Oxygen	**4.0**	**Min**	**-**	**BPJ**
pH	**6.0 – 9.0 S.U.**	**Min – Max**	**133.102(c)**	**95.2(1)**
Total Nitrogen	**Report**	**Average Monthly**	**-**	**92a.61**
Total Phosphorus	**Report**	**Average Monthly**	**-**	**92a.61**
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)**

Comments: Impose the above Technology-Based Limitations for TSS, pH and Fecal Coliform.

Water Quality-Based Limitations (WQBELs)

Pursuant to EPA's approval of Pennsylvania's 2017 Triennial Review of Water Quality Standards and corresponding regulatory changes published in the *Pennsylvania Bulletin* on July 11, 2020, new water quality criteria for ammonia-nitrogen apply to waters of the commonwealth. Therefore, WQBELs for Outfall 001 are being re-evaluated even though there have been no changes to the treatment plant.

WQM 7.0 Water Quality Modeling

DEP's WQM 7.0 version 1.1 model is a Microsoft Access Program used for sewage dischargers to determine whether TBELs are sufficient to meet in-stream water quality criteria for ammonia-nitrogen, carbonaceous biochemical oxygen demand ($CBOD_5$), and dissolved oxygen (DO). To accomplish this, the model simultaneously simulates mixing and degradation of ammonia-nitrogen and mixing and consumption of DO through $CBOD_5$ and ammonia-nitrogen degradation. WQM 7.0 determines the highest pollutant loadings that the stream can assimilate while still meeting water quality criteria under design conditions.

The model is a two-step process. The discharge is first modeled for the summer period (May through October) because warm temperatures are more likely to result in critical loading conditions. Reduced DO levels likely also play a role in ammonia toxicity and solubility of DO decreases at increased water temperature. If summer modeling determines that

WQBELs are appropriate for the summer period, then modeling is completed for the winter period (November through April). This is in accordance with DEP's *Implementation Guidance of Section 93.7 Ammonia Criteria* [Do. No. 391-2000-013] (Ammonia Guidance).

River Mile Index (RMI) was measured in eMAP PA as the distance from the facility's outfall to the mouth of Muddy Creek. Elevation was read by applying a topo map in eMAP PA. Discharge point and downstream drainage areas as well as Q_{7-10} were generated by USGS Stream Stats. USGS Stream Stats output files are included in Attachment 1. In the absence of site-specific data, discharge temperature, stream temperature, and stream pH were assumed to be 20, 25, and 7 in accordance with the Ammonia Guidance. Stream width to depth was assumed to be 10 in accordance with DEP's *Technical Reference Guide (TRG) WQM 7.0 for Windows Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen Version 1* [Doc. No. 391-2000-007]. The previous effluent limitations for ammonia-nitrogen, dissolved oxygen, and $CBOD_5$ were used as the discharge concentrations.

WQM 7.0 modeling inputs are documented in the table below:

Discharge Characteristics		**Basin/Stream Characteristics**	
Parameter	**Value**	**Parameter**	**Value**
River Mile Index (RMI)	3.94	Drainage Area	25.3
Discharge Flow (MGD)	0.8	Q_{7-10} (cfs)	0.429
Discharge Temp (^oC)	20	Low-flow yield (cfs/mi^2)	0.01693
Summer Ammonia-Nitrogen (mg/L)	2.0	Elevation (ft)	1138
Winter Ammonia-Nitrogen (mg/L)	3.5	Stream Width/Depth	10
Summer $CBOD_5$ (mg/L)	15	Stream Temp (^oC)	25
Winter $CBOD_5$ (mg/L)	20	Stream pH (s.u.)	7

The discharge was modeled using WQM 7.0 to evaluate the ammonia-nitrogen, $CBOD_5$, and DO parameters. The modeling confirmed that water quality-based effluent limits are necessary for ammonia-nitrogen, $CBOD_5$, and DO. In accordance with DEP's SOP for *Establishing Effluent Limitations for Individual Sewage Permits* [SOP No. BCW-PMT-033 revised March 24, 2021 Version 1.9], winter ammonia-nitrogen limits are assessed by comparing winter WQM 7.0 output value with one calculated by multiplying the summer limit by a multiplier of three. The more restrictive limit is then imposed. For this facility, the more restrictive limit comes from the winter model. WQM 7.0 output files are included in Attachments 2 and 3.

Permit Limits

The limits imposed, which are provided below, represent the most stringent limitations between the TBELs and WQBELs.

Parameter	**Limit (mg/l)**	**SBC**	**Model**
Total Residual Chlorine	0.02	Average Monthly	TRC_CALC
CBOD-5 (May 1 – Oct 31)	15	Average Monthly	WQM 7.0
CBOD-5 (Nov 1 – Apr 30)	20	Average Monthly	WQM 7.0
Ammonia Nitrogen (May 1 to Oct 31)	2.0	Average Monthly	WQM 7.0
Ammonia Nitrogen (Nov 1 – Apr 30)	3.5	Average Monthly	WQM 7.0
Dissolved Oxygen	5.0	Minimum	WQM 7.0

According to DEP's SOP for establishing effluent limitations for individual Sewage permits (SOP No. BCW-PMT-033), Section C4. For existing discharges, where the existing TRC limit is at or below 0.1 mg/L, the existing limit may remain in the reissued permit. TRC limits were therefore not remodeled and effluent limit of .02 mg/l will again be imposed in this permit.

Additional Considerations

In accordance with Section I.A. of DEP's SOP for *Establishing Effluent Limitations for Individual Sewage Permits* [SOP No. BCW-PMT-033 Version 1.9], pursuant to EPA's approval of Pennsylvania's 2017 Triennial Review of Water Quality Standards and corresponding regulatory changes published in the Pennsylvania Bulletin on July 11, 2020 and under the authority of 25 Pa. Code § 93.7(a) and § 92.a.61, sewage dischargers will include monitoring for *E. coli*. For new and reissued permit, a monitoring frequency of 1/quarter will be imposed for design flows ≥ 0.05 MGD and < 1MGD.

In accordance with Section I.A of the DEP's SOP for Establishing Effluent Limitations for Individual Sewage Permits [SOP No. BCW-PMT-033 Version 1.9], and under the authority of 25 Pa. Code § 92a.61(b), nutrient monitoring for total nitrogen and total phosphorus will be imposed for sewage facilities with a design flow greater than 2,000 GPD. The intent of this monitoring is to establish the nutrient load of the wastewater and evaluate the impact that load may have on the quality of the receiving stream. The SOP states that if the receiving stream is not impaired for nutrients, then discretion may be used in setting the monitoring frequency. Muddy Creek is not impaired for nitrogen or phosphorus; therefore, a monitoring frequency of 1/year will be imposed.

Monitoring frequency for the proposed effluent limits are based on Table 6-3, Self -Monitoring Requirements for Sewage Dischargers, from DEP's *Technical Guidance for the Development and Specification of Effluent Limitations* [Doc. No. 362-0400-001].

Conventional concentration and mass loading limits are rounded in accordance with the guidelines in Chapter 5 Section C.2. of DEP's *Technical Guidance for the Development and Specification of Effluent Limitations* [Doc. No. 362-0400-001]. Please note that mass loading limits for $CBOD_5$ summer, $CBOD_5$ winter, and TSS have all changed to be consistent with the rounding guidance.

Table 5.3 DEP's *Technical Guidance for the Development and Specification of Effluent Limitations* [Doc. No. 362-0400-001] documents that for Publicly Owned Treatment Works (POTWs), conventional pollutants should receive average monthly, weekly average, and instantaneous maximum concentration limits. These limits have been imposed for $CBOD_5$ summer and winter and TSS. No changes have been made to the type of limit imposed for conventional pollutants during this permit renewal.

Mass Loading Limits

Section IV.C of DEP's SOP for Establishing Effluent Limitations for Individual Sewage Permits [SOP No. BCW-PMT-033 Version 1.9] establishes mass loading limits for POTWs at the discretion of the application manager. Mass loading limitations are imposed for POTWs in accordance with the SOP cited above and Table 5.3 of DEP's *Technical Guidance for the Development and Specification of Effluent Limitations* [Doc. No. 362-0400-001]. For the purposes of permitting limits, mass loading limits for ammonia-nitrogen summer and winter, $CBOD_5$ summer and winter, and TSS will continue to be imposed based on the following equation:

$$mass\ loading\ limit\ \left(\frac{lbs}{day}\right) = average\ annual\ flow\ (MGD) * concentration\ limit\ \left(\frac{mg}{L}\right) * 8.34\ (conversion\ factor)$$

The following mass loading limits are being imposed:

Parameter	Average Monthly (lbs/day)	Average Weekly (lbs/day)
Ammonia-Nitrogen Summer (mg/L)	13.34	N/A
Ammonia-Nitrogen Winter (mg/L)	23.35	N/A
$CBOD_5$ Summer (mg/L)	100.08	150.12
$CBOD_5$ Winter (mg/L)	133.44	200.16
TSS (mg/L)	167	250

Mass loading limits for total nitrogen and total phosphorus are not being imposed at this time because no concentration limits exist for either parameter.

Influent Monitoring

Section IV.F.2 of DEP's SOP for *New and Reissuance Sewage Individual NPDES Permit Applications* [SOP No. BCW-PMT-002 Version 2.0] establishes influent BOD_5 and TSS for POTWs. The intent of influent BOD_5 and TSS monitoring is to verify compliance with the secondary treatment requirement of 85% removal defined in 40 CFR §133.102. No changes have been made to effluent monitoring during this permit renewal

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) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Average Monthly	Weekly Average	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	0.02	XXX	XXX	0.07	1/day	Grab
$CBOD_5$ Nov 1 - Apr 30	133	200	20.0	30.0	XXX	40.0	1/week	8-Hr Composite
$CBOD_5$ May 1 - Oct 31	100	150	15.0	23.0	XXX	30.0	1/week	8-Hr Composite
BOD_5 Raw Sewage Influent	Report	Report Daily Max	Report	XXX	XXX	XXX	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	Report	XXX	XXX	XXX	1/week	8-Hr Composite
TSS	167	250	25.0	38.0	XXX	50	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
Total Nitrogen	XXX	XXX	XXX	Report Daily Max	XXX	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) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Average Monthly	Weekly Average	Maximum	Instant. Maximum		
Ammonia-Nitrogen Nov 1 - Apr 30	23.4	XXX	3.5	XXX	XXX	7	1/week	8-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	13.3	XXX	2.0	XXX	XXX	4	1/week	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	8-Hr Composite

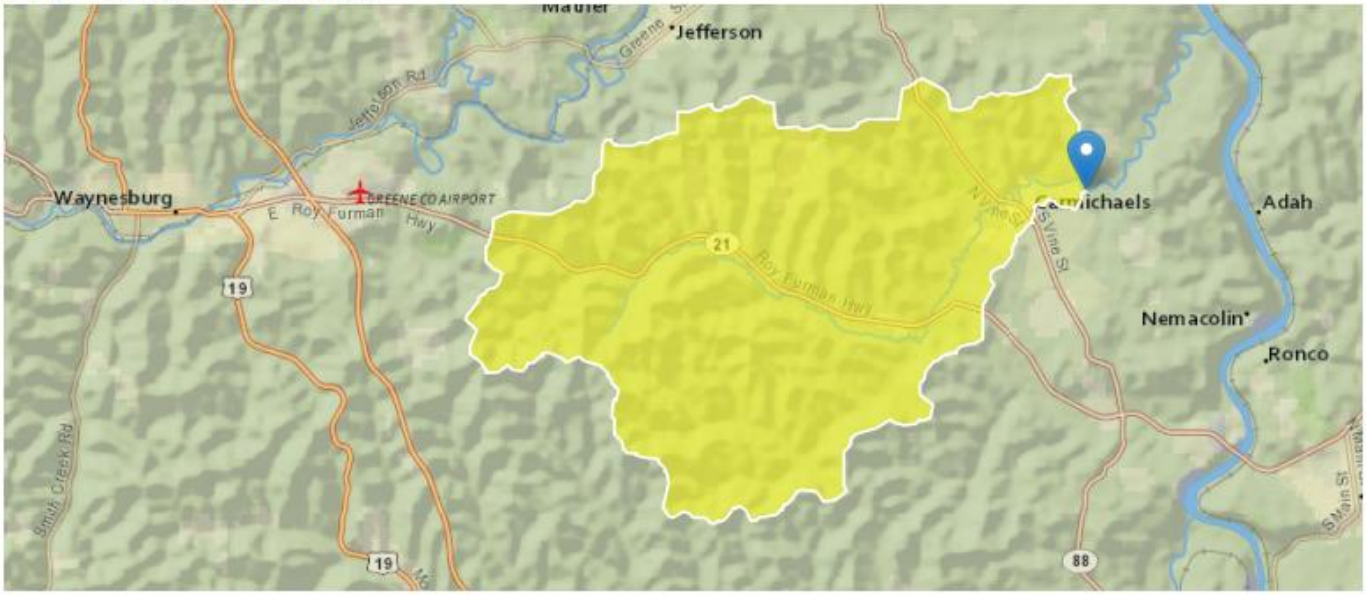
Compliance Sampling Location:

Other Comments:

Attachment 1 – USGS StreamStats Report

StreamStats Report - Upstream

Region ID: PA
Workspace ID: PA20250320154835366000
Clicked Point (Latitude, Longitude): 39.90051, -79.96295
Time: 2025-03-20 11:49:04 -0400



Outlet elevation = 905.74 ft

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	25.1	square miles
ELEV	Mean Basin Elevation	1139	feet
OUTLETXA83	X coordinate of the outlet, in NAD_1983_Albers,meters	-167860.3721	meters
OUTLETYA83	Y coordinate of the outlet, in NAD_1983_Albers, meters	101845.1063	meters

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	25.1	square miles	2.26	1400
ELEV	Mean Basin Elevation	1139	feet	1050	2580

Low-Flow Statistics Flow Report [Low Flow Region 4]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	1.06	ft^3/s	43	43
30 Day 2 Year Low Flow	1.75	ft^3/s	38	38
7 Day 10 Year Low Flow	0.425	ft^3/s	66	66
30 Day 10 Year Low Flow	0.71	ft^3/s	54	54
90 Day 10 Year Low Flow	1.23	ft^3/s	41	41

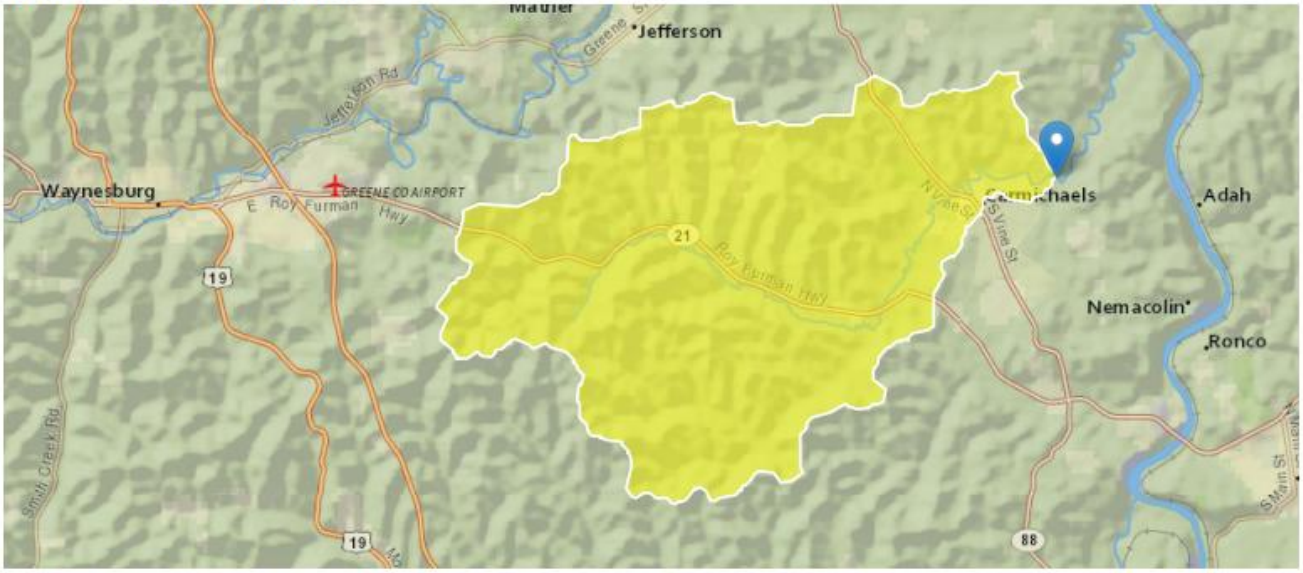
Low-Flow Statistics Citations

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/)

Application Version: 4.28.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

StreamStats Report - Downstream

Region ID: PA
Workspace ID: PA20250320160600266000
Clicked Point (Latitude, Longitude): 39.90173, -79.95727
Time: 2025-03-20 12:06:30 -0400



Outlet elevation = 895.01

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	25.3	square miles
ELEV	Mean Basin Elevation	1138	feet
OUTLETXA83	X coordinate of the outlet, in NAD_1983_Albers,meters	-167364.3713	meters
OUTLETYA83	Y coordinate of the outlet, in NAD_1983_Albers, meters	101962.5667	meters

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	25.3	square miles	2.26	1400
ELEV	Mean Basin Elevation	1138	feet	1050	2580

Low-Flow Statistics Flow Report [Low Flow Region 4]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	1.07	ft^3/s	43	43
30 Day 2 Year Low Flow	1.76	ft^3/s	38	38
7 Day 10 Year Low Flow	0.429	ft^3/s	66	66
30 Day 10 Year Low Flow	0.716	ft^3/s	54	54
90 Day 10 Year Low Flow	1.24	ft^3/s	41	41

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/)

Attachment 2 – WQM 7.0 Version 1.1 – Summer Period

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
	19B	41014	MUDDY CREEK	**3.940**	905.74	25.10	0.00500	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	0.017	0.00	0.00	0.000	0.000	10.0	0.00	0.00	25.00	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
Carmichael STP	PA0046230	0.8000	0.8000	0.8000	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	15.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.38	0.00	0.00
NH3-N	2.00	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
19B	41014	MUDDY CREEK	**3.560**	895.01	25.11	0.00500	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	0.017	0.00	0.00	0.000	0.000	10.0	0.00	0.00	25.00	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	0.00	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	8.38	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
19B	41014	MUDDY 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												
3.940	0.42	0.00	0.42	1.2376	0.00500	.574	21.09	36.76	0.14	0.169	21.28	7.00
Q1-10 Flow												
3.940	0.27	0.00	0.27	1.2376	0.00500	NA	NA	NA	0.13	0.178	20.90	7.00
Q30-10 Flow												
3.940	0.58	0.00	0.58	1.2376	0.00500	NA	NA	NA	0.14	0.161	21.59	7.00

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19B	41014	MUDDY 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
3.940	Carmichael STP	15.56	4	15.56	4	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
3.940	Carmichael STP	1.7	2	1.7	2	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)		
3.94	Carmichael STP	15	15	2	2	5	5	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19B	41014	MUDDY 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)
3.940	Carmichael STP	PA0046230	0.800	CBOD5	15		
				NH3-N	2	4	
				Dissolved Oxygen			5

Attachment 3 – WQM 7.0 Version 1.1 – Winter Period

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
19B	41014	MUDDY CREEK	**3.940**	905.74	25.10	0.00500	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	0.017	0.00	0.00	0.000	0.000	10.0	0.00	0.00	5.00	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
Carmichael STP	PA0046230	0.8000	0.8000	0.8000	0.000	15.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	20.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.38	0.00	0.00
NH3-N	3.50	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
19B	41014	MUDDY CREEK	**3.560**	895.01	25.11	0.00500	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	0.017	0.00	0.00	0.000	0.000	10.0	0.00	0.00	5.00	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	15.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	20.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.38	0.00	0.00
NH3-N	3.50	0.00	0.00	0.70

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
19B	41014	MUDDY 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												
3.940	0.42	0.00	0.42	1.2376	0.00500	.574	21.09	36.76	0.14	0.169	12.45	7.00
Q1-10 Flow												
3.940	0.27	0.00	0.27	1.2376	0.00500	NA	NA	NA	0.13	0.178	13.20	7.00
Q30-10 Flow												
3.940	0.58	0.00	0.58	1.2376	0.00500	NA	NA	NA	0.14	0.161	11.82	7.00

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19B	41014	MUDDY 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
3.940	Carmichael STP	24.1	7	24.1	7	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
3.940	Carmichael STP	3.2	3.5	3.2	3.5	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)		
3.94	Carmichael STP	20	20	3.5	3.5	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19B	41014	MUDDY CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
3.940	0.800	12.447	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
21.086	0.574	36.764	0.137
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
15.41	1.446	2.61	0.391
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.863	5.458	Tsivoglou	5
Reach Travel Time (days)			
0.169			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.017	15.14	2.59	5.83
0.034	14.88	2.57	5.81
0.051	14.63	2.56	5.80
0.068	14.38	2.54	5.80
0.085	14.13	2.52	5.80
0.101	13.89	2.51	5.81
0.118	13.65	2.49	5.82
0.135	13.42	2.47	5.84
0.152	13.19	2.46	5.87
0.169	12.96	2.44	5.90

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19B	41014	MUDDY 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)
3.940	Carmichael STP	PA0046230	0.800	CBOD5	20		
				NH3-N	3.5	7	
				Dissolved Oxygen			5