Pennsylvania Department of Environmental Protection

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0216445**
Wastewater Type	**Sewage**	APS ID	**1132487**
Facility Type	**SFTF**	Authorization ID	**1518423**

NPDES PERMIT FACT SHEET
INDIVIDUAL SFTF/SRSTP

Applicant, Facility and Project Information

Applicant Name	**Paradigm Aviation Inc.**	Facility Name	**Paradigm Aviation Inc. SFTF**
Applicant Address	126 Airport Road Mount Pleasant, PA 15666-4900	Facility Address	126 Airport Road Mount Pleasant, PA 15666-4900
Applicant Contact	Dayna Wahl	Facility Contact	Same as Applicant
Applicant Phone	(724) 887-4413	Facility Phone	Same as Applicant
Client ID	25272	Site ID	237703
SIC Code	4512	Municipality	Bullskin Township
SIC Description	Trans. & Utilities - Air Transportation, Scheduled	County	Fayette
Date Application Received	March 5, 2025	WQM Required	No
Date Application Accepted	March 6, 2025		

Project Description: NPDES Permit Renewal for Discharge of Treated Sewage Effluent.

Summary of Review

The permittee has applied for a renewal of NPDES Permit No. PA0216445, this permit was previously issued by the PA Department of Environmental Protection (DEP) on September 21, 2019, and will expire on September 30, 2025.

Per application, this is a closed collecting system with an existing treatment process consists of a comminutor, an aeration tank, a clarifier, a sludge holding tank and chlorine disinfection.

The receiving stream is UNT to Jacobs Creek, which is classified as a WWF located in State Watershed 19-D.

The previous permit fact sheet explained why this facility was considered a minor non-municipal treatment plant instead of small flow treatment facility as follows “Although this STP is rated at 2,000 gpd, this writer is not issuing a SFTF NPDES permit, but instead a permit for a facility considered a non-municipal plant. The reason is because the plant is not a typical SFTF which typically are designed according to (or similar to) DEP’s Small Flow Treatment Design Manual. Instead, “it is a small package extended aeration plant that requires an operator to operate the plant, i.e. maintaining proper Food/Mass ratios, air requirements, sludge wasting, etc. ”; therefore, WQBELs for Dissolved Oxygen, Ammonia-Nitrogen, Carbonaceous Biochemical Oxygen Demand and Total Residual Chlorine will be developed on this review.

Checking on the effluent monitoring data (table attached to the application) that was sampled for the facility since the last permit issuance and the received Operations compliance report, the facility is in general compliance with no open violations.

The applicant attached invoices that shows consistent maintenance for the treatment system in compliance with the AMR requirements.

Approve	Deny	Signatures	Date
X		Hazim Aldalli Hazim Aldalli / Project Manager	September 5, 2025
X		Mahbuba Iasmin Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineering Manager	September 29, 2025

Summary of Review

The application stated that there were no changes to the facility conditions regarding discharge, receiving stream, or treatment technology. No changes are foreseen for the next five years.
The applicant provides a proof of Act 14, P.L. 834 compliance with the February 18, 2025 letters, no comments received.

Draft permit issuance is recommended.

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 and Stream Data – 2 - Receiving Waters and PWS

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.002
Latitude	40º 6' 20.00"	Longitude	-79º 33' 6.00"
Quad Name	Connellsville	Quad Code	40079A5
Wastewater Description:	Sewage Effluent		
Receiving Waters	Unnamed Tributary to Jacobs Creek (WWF)	Stream Code	37940
NHD Com ID	69915117	RMI	0.53
Drainage Area	0.71	Yield (cfs/mi^2)	0.00735
Q_{7-10} Flow (cfs)	0.00522	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1136	Slope (ft/ft)	0.01
Watershed No.	19-D	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use	None.	Exceptions to Criteria	None.
Assessment Status	Impaired; Aquatic Life, Recreational.		
Cause(s) of Impairment	METALS, ESCHERICHIA COLI (E. COLI), ESCHERICHIA COLI (E. COLI)		
Source(s) of Impairment	ACID MINE DRAINAGE, URBAN RUNOFF/STORM SEWERS, COMBINED SEWER OVERFLOWS.		
TMDL Status		Name	

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

Nearest Downstream Public Water Supply Intake	WEST CNTY MUNI AUTH-MCKEESPORT		
PWS Waters	YOUGHIOGHENY RIVER	Flow at Intake (cfs)	510
PWS RMI	1.33	Distance from Outfall (mi)	>20.0

Changes Since Last Permit Issuance:

- Q_{7-10} flow, elevation, drainage area, and low flow yield were all updated to match USGS Stream Stats new data (see Attachment A).
- DEP updated its WQM 7.0 criteria for Ammonia-Nitrogen (NH_3-N) in 2019. Limits and conditions of this permit need to be redeveloped to an adequate level to protect water quality.
- *E. Coli* monitoring requirements will be introduced to this renewal which is in compliance with DEP SOP No. BCW-PMT-033 revised February 5, 2024

Other Comments: None.

Compliance History	
Summary of DMRs:	Periodic effluent exceedances.
Summary of Inspections:	No open violations or pending enforcements.

Other Comments: Last time this facility was inspected on March 22, 2021, the report listed that “Owner failed to notify DEP within 10 days when the available operator(s) or OIC changed.”

Development of Effluent Limitations

Outfall No. 001 Design Flow (MGD) 0.002
Latitude 40º 6' 20.00" Longitude -79º 33' 6.00"
Wastewater Description: Treated 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)
E. Coli (No./100 ml)	Report	IMAX	-	92a.61
D.O. (mg/L)	4.0	Min	-	BPJ
NH_3-N (mg/L)	25	Average Monthly	-	BPJ
	50	IMAX		
Total N (mg/L)	Report	Average Monthly	-	92a.61
Total P (mg/L)	Report	Average Monthly	-	92a.61

Comments: The existing discharge was evaluated using WQM 7.0 for $CBOD_5$, Ammonia Nitrogen and Dissolved Oxygen.

The Total Suspended Solids, pH, and Fecal Coliform parameters are not evaluated using WQM 7.0. The bases for the proposed technology-based limitations are listed in the above table.

Water Quality-Based Limitations

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

Parameter	Limit (mg/L)	SBC	Model
TRC	0.35	Average Monthly	DEP TRC Cal.
$CBOD_5$ (May1-Oct 31)	25	Average Monthly	WQM7.0
$CBOD_5$ (Nov 1- Apr 30)	25	Average Monthly	WQM7.0
NH_3-N (May1-Oct 31)	4.9	Average Monthly	WQM7.0
NH_3-N (Nov 1- Apr 30)	13.4	Average Monthly	WQM7.0
Dissolved Oxygen	4.0	Minimum	WQM7.0

For Ammonia-Nitrogen, the WQM 7.0 modeling results for summer indicates that an average monthly limit of 4.9 mg/L and a winter average limit of 13.4 mg/L can be nominated for this renewal, the application manager checked this facility performance in regard the new stringent limits for the last two years and found that this facility can meet the newly imposed Ammonia limits as the plant has achieved effluent limits of NH_3-N lower than the proposed limits. No compliance schedule is necessary.

For the Carbonaceous Biochemical Oxygen Demand ($CBOD_5$), the WQM 7.0 model generated a WQBEL AML of 25 mg/L a year around, which shows no change from the current permit limits. Therefore, a year around WQBEL AML of 25 mg/L and an Ins. Max of 50 mg/L with a twice monthly sampling frequency will be imposed for this renewal.

Best Professional Judgment (BPJ) Limitations

A minimum Dissolved Oxygen (DO) limit of 4.0 mg/L was established based on Best Professional Judgment (BPJ) to ensure adequate operation and maintenance as listed in the table under Technology-Based Limitations section.

Anti-Backsliding

The previously imposed limits for pH Effluent Limitation of (6.0 Minimum, and 9.0 Maximum SIU), Fecal Coliform AML Geo Mean seasonal limits of (200 & 2000 CFU/100 ml), and TSS AML, and Ins. Max of (30, and 60 mg/L); will be all unchanged due to Anti-Backsliding as stated in 40 CFR Section 122.44(l).

TN and TP Monitoring

Nutrient monitoring is required to establish the nutrient load from the wastewater treatment facility and the impacts that load may have on the quality of the receiving stream(s). Sewage discharges with design flows > 2,000 gpd require nutrient monitoring. Jacobs Creek segment within the facility is not impaired for nutrients. Per DEP-SOP No. BCW-PMT-033 revised February 5, 2024, no nutrient monitoring will be applied at Outfall 001.

Disinfection

Total Residual Chlorine (TRC) limits are updated based on the DEP preset values entered in the Department Calculation Sheet (see Attachment C) for chlorine stream and discharge demands, which generates an AML of 0.35 mg/L and IMAX of 0.8 mg/L. Checking on the eDMRs, this facility can meet the new WQBELs for TRC. Monthly sampling will be applied at Outfall 001.

Commented [MI1]: These are WQBELs. This sentence needs revision.

Commented [HA2R1]: Please check the revised sentence.

E. Coli

Pursuant to 25 Pa. code § 92a.61(b) annual monitoring for *E. Coli* will be imposed at Outfall (001) to determine if *E. Coli* will be a pollutant of concern, which is consistent with DEP SOP No. BCW-PMT-033 revised February 5, 2024.

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.

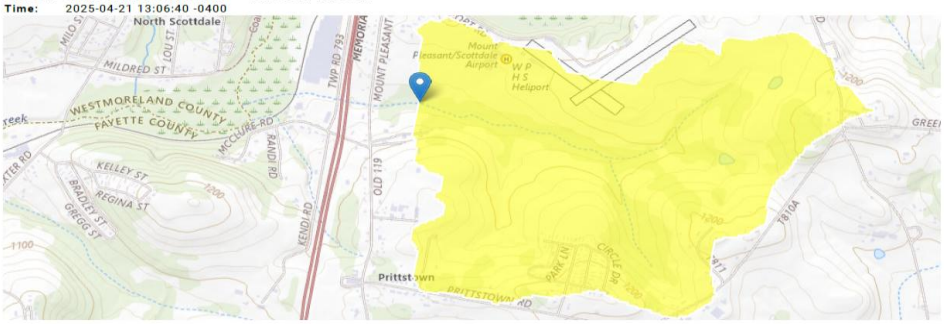
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	0.002	XXX	XXX	XXX	XXX	XXX	1/month	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/month	Grab
Dissolved Oxygen	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/month	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.35	XXX	0.8	1/month	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	25.0	XXX	50.0	1/month	Grab
Total Suspended Solids	XXX	XXX	XXX	30.0	XXX	60.0	1/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/month	Grab
Ammonia-Nitrogen Nov 1 - Apr 30	XXX	XXX	XXX	13.4	XXX	26.8	1/month	Grab
Ammonia-Nitrogen May 1 - Oct 31	XXX	XXX	XXX	4.9	XXX	9.8	1/month	Grab
E.Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab

Compliance Sampling Location: at Outfall 001.
Other Comments: None.

ATTACHMENT A:
USGS StreamStats

StreamStats Report

Region ID: PA
Workspace ID: PA20250421170603846000
Clicked Point (Latitude, Longitude): 40.10621, -79.55211
Time: 2025-04-21 13:06:40 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.71	square miles
ELEV	Mean Basin Elevation	1136	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.71	square miles	2.26	1400
ELEV	Mean Basin Elevation	1136	feet	1050	2580

Low-Flow Statistics Disclaimers [Low Flow Region 4]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

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

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0182	ft^3/s
30 Day 2 Year Low Flow	0.0355	ft^3/s
7 Day 10 Year Low Flow	0.00522	ft^3/s
30 Day 10 Year Low Flow	0.0114	ft^3/s
90 Day 10 Year Low Flow	0.0235	ft^3/s

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: 4.28.1
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

ATTACHMENT B:
WQM 7.0 (Summer)

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
19D	37940	Trib 37940 to Jacobs Creek	**0.530**	1136.00	0.71	0.01000	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	0.007	0.01	0.00	0.000	0.000	0.0	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
Paradigm Av STP	PA0216445	0.0020	0.0020	0.0020	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	4.00	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
19D	37940	Trib 37940 to Jacobs Creek	**0.010**	1126.00	0.86	0.01000	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	0.008	0.01	0.00	0.000	0.000	0.0	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
Paradigm Av STP	PA0216445	0.0000	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	4.00	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
19D	37940	Trib 37940 to Jacobs 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												
0.530	0.01	0.00	0.01	.0031	0.01000	.232	2.19	9.44	0.02	1.936	23.14	7.00
Q1-10 Flow												
0.530	0.00	0.00	0.00	.0031	0.01000	NA	NA	NA	0.01	2.235	22.60	7.00
Q30-10 Flow												
0.530	0.01	0.00	0.01	.0031	0.01000	NA	NA	NA	0.02	1.727	23.48	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	5		

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WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19D	37940	Trib 37940 to Jacobs Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.530	0.002	23.139	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
2.186	0.232	9.437	0.016
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
10.56	0.744	1.85	0.891
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.664	22.284	Owens	5
Reach Travel Time (days)			
1.936			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.194	8.94	1.56	7.79
0.387	7.57	1.31	7.79
0.581	6.41	1.10	7.79
0.774	5.43	0.93	7.79
0.968	4.60	0.78	7.79
1.162	3.89	0.66	7.79
1.355	3.29	0.55	7.79
1.549	2.79	0.46	7.79
1.742	2.36	0.39	7.79
1.936	2.00	0.33	7.79

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WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19D	37940	Trib 37940 to Jacobs 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
0.530	Paradigm Av STP	13.52	28.11	13.52	28.11	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
0.530	Paradigm Av STP	1.51	4.97	1.51	4.97	1	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
0.53	Paradigm Av STP	25	25	4.97	4.97	4	4	0	0

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WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19D	37940	Trib 37940 to Jacobs 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)
0.530	Paradigm Av STP	PA0216445	0.002	CBOD5	25		
				NH3-N	4.97	9.94	
				Dissolved Oxygen			4

ATTACHMENT B:
WQM 7.0 (Winter)

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
19D	37940	Trib 37940 to Jacobs Creek	**0.530**	1136.00	0.71	0.01000	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	0.015	0.01	0.00	0.000	0.000	0.0	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
Paradigm Av STP	PA0216445	0.0020	0.0020	0.0020	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	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	12.51	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
19D	37940	Trib 37940 to Jacobs Creek	**0.010**	1126.00	0.86	0.01000	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	0.015	0.01	0.00	0.000	0.000	0.0	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
Paradigm Av STP	PA0216445	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	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	12.51	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
19D	37940	Trib 37940 to Jacobs 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												
0.530	0.01	0.00	0.01	.0031	0.01000	.232	2.19	9.44	0.02	1.936	8.72	7.00
Q1-10 Flow												
0.530	0.00	0.00	0.00	.0031	0.01000	NA	NA	NA	0.01	2.235	9.81	7.00
Q30-10 Flow												
0.530	0.01	0.00	0.01	.0031	0.01000	NA	NA	NA	0.02	1.727	8.04	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	5		

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WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
19D	37940	Trib 37940 to Jacobs Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.530	0.002	8.721	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
2.186	0.232	9.437	0.016
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
10.56	1.119	5.00	0.294
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
9.343	15.830	Owens	5
Reach Travel Time (days)			
1.936			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.194	9.28	4.73	10.44
0.387	8.16	4.47	10.44
0.581	7.17	4.22	10.44
0.774	6.30	3.99	10.44
0.968	5.54	3.76	10.44
1.162	4.87	3.56	10.44
1.355	4.28	3.36	10.44
1.549	3.76	3.17	10.44
1.742	3.31	3.00	10.44
1.936	2.91	2.83	10.44

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WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
19D	37940	Trib 37940 to Jacobs 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
0.530	Paradigm Av STP	24.1	50	24.1	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
0.530	Paradigm Av STP	4.08	13.45	4.08	13.45	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
0.53	Paradigm Av STP	25	25	13.45	13.45	4	4	0	0

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WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
19D	37940	Trib 37940 to Jacobs 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)
0.530	Paradigm Av STP	PA0216445	0.002	CBOD5	25		
				NH3-N	13.45	26.9	
				Dissolved Oxygen			4

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ATTACHMENT C:
DEP TRC Calculation Sheet

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.00522	= Q stream (cfs)	0.5	= CV Daily
0.002	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 0.557	1.3.2.iii	WLA cfc = 0.536
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.208	5.1d	LTA_cfc = 0.311

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.357	AFC
		INST MAX LIMIT (mg/l) = 0.836	

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)**