pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0111902**
Facility Type	**Industrial**	APS ID	**1106407**
Major / Minor	**Minor**	Authorization ID	**1471148**

NPDES PERMIT FACT SHEET INDIVIDUAL INDUSTRIAL WASTE (IW) AND IW STORMWATER

Applicant and Facility Information

Applicant Name	**Dairy Farmers of America, Inc.**	Facility Name	**Dairy Farmers of America - Middlebury Center**
Applicant Address	1405 N 98th Street	Facility Address	72 Milk Plant Road
	Kansas City, KS 66111-1865		Middlebury Center, PA 16935
Applicant Contact	Kevin Roepe	Facility Contact	Matthew Slater
Applicant Phone	(816) 801-6354	Facility Phone	(570) 376-3862
Client ID	145118	Site ID	241165
SIC Code	2023	Municipality	Middlebury Township
SIC Description	Dry, Condensed, and Evaporated Dairy Products	County	Tioga
Date Application Received	January 30, 2024	EPA Waived?	Yes
Date Application Accepted	January 31, 2024	If No, Reason	
Purpose of Application	Renewal of a NPDES Permit		

Summary of Review

This facility is a dairy processing and dehydrating plant in Middlebury Township, Tioga County.

A draft permit was previously submitted to Dairy Farmers of America on December 19, 2024. A significant error was noted in the previous draft. Specifically, the stream classification for Crooked Creek was noted as a Cold Water Fishery but the stream is actually a Warm Water Fishery. This primarily affected the Thermal Analysis section of the Fact Sheet and the only significant change in this draft is the removal of the final temperature limitations and compliance schedule included in the prior draft permit.

A map of the discharge location is attached.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Approve	Deny	Signatures	Date
✓		Keith C. Allison / Project Manager	January 15, 2024
✓		Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	January 16, 2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.085
Latitude	41º 50' 30.08"	Longitude	-77º 16' 32.22"
Quad Name	Keeneyville, PA	Quad Code	
Wastewater Description:	Noncontact Cooling Water (NCCW)		
Receiving Waters	Norris Brook	Stream Code	31227 – Norris Brook 31189 – Crooked Creek
NHD Com ID	57351571	RMI	0.02 (@Norris Brook) 12.5 (@Crooked Creek)
Drainage Area	25.1 mi^2 (@Norris Brook) 74.2 mi^2 (@Crooked Creek)	Yield (cfs/mi^2)	0.0312
Q_{7-10} Flow (cfs)	0.78 (@Norris Brook) 2.31 (@Crooked Creek)	Q_{7-10} Basis	Gage No. 01518000, Tioga River at Tioga (1940-1977, pre-regulation)
Elevation (ft)	1162	Slope (ft/ft)	0.00177
Watershed No.	4-A	Chapter 93 Class.	TSF – Norris Brook WWF – Crooked Creek
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Norris Brook - Attaining Use(s), Crooked Creek – Impaired (e. coli from Agriculture, rural residential areas, and waterfowl).		
Nearest Downstream Public Water Supply Intake	PA/NY Border		
PWS Waters	Tioga River	Distance from Outfall (mi)	~20

Changes Since Last Permit Issuance: The above stream and drainage characteristics were determined for previous reviews and remain applicable except the Crooked Creek Designated use has been corrected from a Cold Water Fishery to a Warm Water Fishery.

Other Comments:

Because there is no nearer downstream water supply, the Department considers the PA/NY state line to be the nearest public water intake. No downstream water supply is expected at this time to be affected by this discharge with the limitations and monitoring proposed.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	0.195
Latitude	41º 50' 30.01"	Longitude	-77º 16' 32.21"
Quad Name	Keeneyville, PA	Quad Code	
Wastewater Description:	IW Process Effluent with ELG, Sewage Effluent		
Receiving Waters	Norris Brook	Stream Code	31227 – Norris Brook 31189 – Crooked Creek
NHD Com ID	57351571	RMI	0.02 (@Norris Brook) 12.5 (@Crooked Creek)
Drainage Area	25.1 mi^2 (@Norris Brook) 74.2 mi^2 (@Crooked Creek)	Yield (cfs/mi^2)	0.0312
Q_{7-10} Flow (cfs)	0.78 (@Norris Brook) 2.31 (@Crooked Creek)	Q_{7-10} Basis	Gage No. 01518000, Tioga River at Tioga (1940-1977, pre-regulation)
Elevation (ft)	1162	Slope (ft/ft)	0.00177
Watershed No.	4-A	Chapter 93 Class.	TSF – Norris Brook WWF – Crooked Creek
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Norris Brook - Attaining Use(s), Crooked Creek – Impaired (e. coli from Agriculture, rural residential areas, and waterfowl).		
Nearest Downstream Public Water Supply Intake	PA/NY Border		
PWS Waters	Tioga River	Distance from Outfall (mi)	~20

Changes Since Last Permit Issuance: The above stream and drainage characteristics were determined for previous reviews and remain applicable except the Crooked Creek Designated use has been corrected from a Cold Water Fishery to a Warm Water Fishery.

Other Comments:

Because there is no nearer downstream water supply, the Department considers the PA/NY state line to be the nearest public water intake. No downstream water supply is expected at this time to be affected by this discharge with the limitations and monitoring proposed.

Treatment Facility Summary

Treatment Facility Name: Dairy Farmers Of America

WQM Permit No.	Issuance Date	Permit Covered:
5993201-A4	8/3/2017	New EQ tank
5996201-T2	2/28/2011	Dissolved Air Flotation
5990201-T2	2/28/2011	WQ Tank, SBRs, Disinfection & Sludge Dewatering
5990201-A2	7/2/20	Replacement of Dissolved Air Flotation and Sludge press
5990201-A3	8/31/21	Installation of wastewater diversion tank and dechlorination

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial	Secondary	Sequencing Batch Reactor	No Disinfection	0.173

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.23	None specified in WQM permit	Not Overloaded	Dewatering/Belt Filtration	Land Application

Changes Since Last Permit Issuance: The permittee has made the changes under WQM permit amendments 5990201-A2 and 5990201-A3 noted above. WQM Permit No. 5992201 for the former emergency impoundment was cancelled by the Department in 2022.

Other Comments: The treatment for the process wastewater to Outfall 002 begins with an influent diversion manhole from which flows can be sent to either the treatment process or to the wastewater diversion tank. The treatment process consists of flow equalization, flash flocculation with pH treatment, dissolved air flotation clarifiers, SBR feed tank, sequencing batch reactors, chlorination with contact tank, and dechlorination.

Stormwater/No Exposure Certification

The applicant certified in the application that a condition of No Exposure to stormwater exists at the facility. There are two outfalls receiving stormwater runoff, 001 which also receives process and non-process wastewater and 003 which only receives stormwater.

The applicant conducted stormwater sampling on Outfall 003 to demonstrate the no exposure conditions. All parameters were below the Department's benchmark values as listed in the NPDES Application Appendix 1 instructions.

The permit includes stormwater BMPs and the requirement for visual monitoring of stormwater outfalls in Part C of the permit, but without the requirement for periodic sampling of stormwater outfalls.

Compliance History

DMR Data for Outfall 001 (from December 1, 2023 to November 30, 2024)

Parameter	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23
Flow (MGD) Average Monthly	0.046547	0.06434	0.038789	0.049237	0.067088	0.066325	0.070074	0.084751	0.071475	0.052489	0.056329	0.052395
Flow (MGD) Daily Maximum	0.100851	0.123717	0.141827	0.128229	0.228028	0.135188	0.120408	0.177488	0.142104	0.098233	0.102535	0.113616
pH (S.U.) Instantaneous Minimum	6.78	6.81	6.57	6.86	6.05	6.19	6.51	6.57	6.85	7.05	6.73	7.01
pH (S.U.) Instantaneous Maximum	7.98	8.12	7.71	7.8	7.56	7.71	7.69	7.74	8.05	8.16	8.03	7.89
Temperature (ºF) Average Monthly	67.4	73.8	75.5	81.1	84.6	83.1	84.2	77.8	72.5	66.2	63.7	63.98
Temperature (ºF) Daily Maximum	85.2	87.3	89.2	89.9	92.8	94.6	93.4	91.0	82.8	83.2	81.3	78.8
BOD5 (mg/L) Average Monthly	2.0	3.0	1.0	6.0	6.0	2.0	2.0	3.0	3.0	6.0	2.0	2.0
BOD5 (mg/L) Daily Maximum	2.4	14.7	2.2	18.0	22.2	2.3	2.0	5.9	4.9	14.6	4.2	2.9

DMR Data for Outfall 002 (from December 1, 2023 to November 30, 2024)

Parameter	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23
Flow (MGD) Average Monthly	0.183278	0.178681	0.174654	0.192414	0.206387	0.222247	0.224135	0.221466	0.204117	0.18297	0.187495	0.212826
Flow (MGD) Daily Maximum	0.24954	0.223084	0.234972	0.246214	0.258822	0.263828	0.281861	0.271678	0.260563	0.231582	0.232137	0.24919
pH (S.U.) Instantaneous Minimum	6.08	6.13	6.12	6.39	6.04	6.06	6.3	6.16	6.67	6.67	7.12	6.99
pH (S.U.) Instantaneous Maximum	7.42	7.22	7.69	7.55	7.64	7.84	7.72	7.81	7.74	7.69	7.8	7.73
DO (mg/L) Instantaneous Minimum	7.0	4.52	4.03	4.31	2.98	4.48	3.57	0.01	3.74	5.16	3.63	4.26

TRC (mg/L) Average Monthly	0.19	0.26	0.36	0.36	0.27	0.27	0.37	0.36	0.14	0.46	0.4	0.38
TRC (mg/L) Instantaneous Maximum	0.71	0.57	0.81	0.67	0.77	0.73	1.31	0.91	0.41	0.83	0.78	1.18
Temperature (ºF) Average Monthly	76.5	76.1	79.1	84.4	88.0	87.4	87.1	81.5	76.8	70.9	70.8	75.3
Temperature (ºF) Daily Maximum	80.6	81.9	84.4	88.7	91.0	94.4	91.5	87.7	80.9	76.1	76.9	81.4
BOD5 (lbs/day) Average Monthly	15.0	4.4	4.8	9.3	9.4	4.3	9.8	7.0	7.0	10.0	12.0	14.0
BOD5 (lbs/day) Daily Maximum	23.0	5.6	7.9	27.0	32.3	8.7	20.2	10.0	22.0	29.0	28.0	23.0
BOD5 (mg/L) Average Monthly	9.0	3.0	3.0	6.0	5.0	2.0	6.0	3.0	4.0	8.0	7.0	8.0
BOD5 (mg/L) Daily Maximum	16.2	3.5	4.9	18.4	17.2	5.1	12.8	4.8	11.6	25.0	16.4	12.9
TSS (lbs/day) Average Monthly	37.0	12.8	16.2	9.2	23.1	12.8	14.6	35.0	9.0	14.0	32.0	30.0
TSS (lbs/day) Daily Maximum	58.0	17.9	8.5	11.2	39.4	19.2	30.0	63.0	17.0	19.0	80.0	57.0
TSS (mg/L) Average Monthly	23.0	8.0	11.0	6.0	13.0	7.0	9.0	18.0	5.0	10.0	19.0	17.0
TSS (mg/L) Daily Maximum	31.0	12.0	16.0	7.0	23.0	9.0	19.0	31.0	9.0	13.0	47.0	32.0
Total Dissolved Solids (lbs/day) Daily Maximum												2818
Total Dissolved Solids (mg/L) Daily Maximum												1170
Fecal Coliform (No./100 ml) Geometric Mean	24.0	1.0	143	5.0	2.0	< 1.0	11.0	< 2.0	49	< 5.0	218.0	9.0
Ammonia (lbs/day) Average Monthly	0.3	0.2	0.2	0.3	3.6	0.6	10.7	0.8	0.2	0.2	0.5	0.03
Ammonia (lbs/day) Daily Maximum	0.5	0.2	0.2	0.4	6.6	0.8	20.5	1.1	0.3	0.3	0.5	0.03
Ammonia (mg/L) Average Monthly	< 0.01	< 0.1	< 0.01	< 0.001	2.0	< 0.001	7.0	< 0.01	0.001	< 0.01	< 0.001	< 0.001
Ammonia (mg/L) Daily Maximum	0.22	0.09	0.32	0.21	3.5	0.43	13.0	0.61	0.19	0.17	0.33	0.15
Total Phosphorus (lbs/day) Average Monthly	16.6	4.1	1.8	3.8	7.9	4.5	3.4	4.8	2.3	1.4	1.4	1.7

Total Phosphorus (lbs/day) Daily Maximum	29.0	5.0	3.0	4.0	9.0	8.0	6.0	5.0	3.0	2.0	2.0	2.0
Total Phosphorus (mg/L) Average Monthly	8.0	2.0	1.0	2.0	5.0	3.0	2.0	3.0	1.0	1.0	1.0	1.0
Total Phosphorus (mg/L) Daily Maximum	13.8	3.0	1.7	2.8	5.6	4.7	3.6	3.0	1.6	1.2	0.99	1.0
Total Antimony (ug/L) Average Quarterly			< 0.03			0.30			< 0.3			< 0.3
Total Antimony (ug/L) Daily Maximum			< 0.03			0.30			< 0.3			< 0.3
Total Cadmium (ug/L) Average Quarterly			< 0.25			0.20			< 0.20			< 0.13
Total Cadmium (ug/L) Daily Maximum			< 0.25			0.2			< 0.20			< 0.13
Dissolved Iron (ug/L) Average Quarterly			24.5			22.5			37.8			35.3
Dissolved Iron (ug/L) Daily Maximum			24.5			22.5			37.8			35.3
Total Thallium (ug/L) Average Monthly	< 0.30	< 0.03	< 0.03	< 0.03	< 0.04	< 0.03	< 0.0004	< 0.03	< 0.03	< 0.017	< 0.08	< 0.08
Total Thallium (ug/L) Daily Maximum	< 0.26	< 0.026	< 0.026	< 0.026	< 0.052	< 0.026	0.00052	< 0.026	< 0.026	< 0.017	< 0.081	< 0.081

Effluent Violations for Outfall 002, from: December 1, 2023 to November 30, 2024

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Ammonia	May 2024	Avg Mo	10.7	lbs/day	6.9	lbs/day
Ammonia	May 2024	Daily Max	20.5	lbs/day	13.8	lbs/day
Ammonia	May 2024	Avg Mo	7.0	mg/L	5.5	mg/L
Ammonia	May 2024	Daily Max	13.0	mg/L	11	mg/L
Total Phosphorus	11/30/24	Avg Mo	16.6	lbs/day	12.5	lbs/day
Total Phosphorus	11/30/24	Daily Max	29.0	lbs/day	25	lbs/day

Compliance History, Cont'd	
Summary of Inspections:	The most recent inspection of the facility by the Department on January 8, 2025 identified eDMR effluent violations but no operations at the time of inspection.
Other Comments:	A query in WMS found an open violation in eFACTS for Dairy Farmers of America, Inc. for a facility in the Southcentral Region for an unauthorized unpermitted discharge.

Existing Effluent Limitations and Monitoring Requirements – Outfall 001								
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**	**Daily Maximum**	**Instant. Maximum**		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/day	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Temperature (ºF)	XXX	XXX	XXX	Report	Report	XXX	1/week	I-S
BOD5	XXX	XXX	XXX	20.0	40.0	50	1/week	8-Hr Composite

Existing Effluent Limitations and Monitoring Requirements – Outfall 002

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	Report Inst Min	XXX	XXX	XXX	1/day	Grab
Temperature (ºF)	XXX	XXX	XXX	Report	Report	XXX	1/week	I-S
BOD5	43.2	86.4	XXX	30.0	60.0	75	1/week	8-Hr Composite
TSS	43.2	86.4	XXX	30.0	60.0	75	1/week	8-Hr Composite
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
Total Dissolved Solids	XXX	Report	XXX	XXX	Report	XXX	1/year	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Ammonia Nov 1 - Apr 30	16.3	32.5	XXX	13	26	32	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	6.9	13.8	XXX	5.5	11	13	2/month	8-Hr Composite
Total Phosphorus	12.5	25	XXX	10	20	25	2/month	8-Hr Composite
Total Antimony (ug/L)	XXX	XXX	XXX	Report Avg Qrtly	Report	XXX	1/quarter	8-Hr Composite
Total Cadmium (ug/L)	XXX	XXX	XXX	Report Avg Qrtly	Report	XXX	1/quarter	8-Hr Composite
Dissolved Iron (ug/L)	XXX	XXX	XXX	Report Avg Qrtly	Report	XXX	1/quarter	8-Hr Composite
Total Thallium (ug/L)	XXX	XXX	XXX	2.08	4.16	5.2	2/month	8-Hr Composite

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.085
Latitude 41º 50' 30.00" **Longitude** -77º 16' 33.00"
Wastewater Description: Noncontact Cooling Water (NCCW)

Technology-Based Limitations

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

Parameter	Limit (mg/l)	SBC	Federal Regulation	State Regulation
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)

Comments: The pH limits noted above already are included in the permit for Outfall 001.

Water Quality-Based Limitations

No formal "Reasonable Potential Analysis" was performed for Outfall 001 due to the nature of the discharge water and the lack of toxic pollutants as indicated by the application sampling. BOD_5 is addressed with the analysis of Outfall 002 because the discharges combine prior to discharge into Norris Brook

Temperature

The existing permit has weekly monitoring for Temperature with the only limitation being on increasing the stream temperature by more than 2°F in any one-hour period of 25 Pa. Code §93.7. See under Outfall 002 regarding proposed temperature requirements for the two discharges.

Nutrients/Chesapeake Bay Requirements

Outfall 001 does not show any appreciable levels of nutrients per the sampling information provided in the application.

Best Professional Judgement (BPJ) Limitations

The existing limitation of 20 mg/l for BOD_5 was established previously pursuant to BPJ and will remain. See under Outfall 002 for additional discussion of BOD_5.

Anti-Backsliding

No limits or monitoring for Outfall 001 have been made less stringent consistent with the anti-backsliding requirements of 40 CFR 122.44(l).

Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** 0.195
Latitude 41º 50' 30.10" **Longitude** -77º 16' 31.30"
Wastewater Description: IW Process Effluent with ELG, Sewage Effluent

Outfall 002 is the discharge from the facility's wastewater treatment plant receiving wastewater from both the milk product processing wastewater and the plant's sanitary wastewater.

Technology-Based Limitations

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

Parameter	Limit (mg/l)	SBC	Federal Regulation	State Regulation
BOD_5	30	Average Monthly		92a.47(a)(1)
Total Suspended Solids	30	Average Monthly		92a.47(a)(1)
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) & 93.7
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4) & 93.7
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5) & 93.7
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5) & 93.7
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Comments: The limits noted above already are included in the permit for Outfall 002. $CBOD_5$ and TSS limits above are included in the existing permit due to the inclusion of sewage in the wastewater.

Effluent Limitation Guidelines (ELGs)

The facility is subject to the ELGs at 40 CFR 405 – Dairy Products Processing Point Source Category, specifically the following subcategories: Subpart I – Condensed Milk and Subpart J – Dry Milk. These establish BOD_5 and TSS loading limitations based on the BOD_5 load for the process (see Attachment B). The permittee provided input BOD_5 data for the past five years for each subcategory.

The applicable effluent limitation factors from the ELGs are listed in the following table. Also listed is the average BOD_5 input based on the information provided by the permittee. The total average daily BOD input in the facility is 175,469 lbs/day. Approximately 40% goes to the production of milk powders and 60% is for condensed milk.

Subpart – Category/Citation	Parameter	Daily Max Limit (lbs/100 lbs of BOD_5 input)	Monthly Average Limit (lbs/100 lbs of BOD_5 input)	Average BOD_5 Input (lbs/day)
I – Condensed Milk/ §405.92(a)	BOD_5	0.460	0.230	105,281
	TSS	0.690	0.345	
J – Dry Milk/ §405.102(a)	BOD_5	0.218	0.109	70,187
	TSS	0.328	0.164	

The above factors and input loadings produce the effluent loading limitations in the following table. Conversion of these loadings to concentration limitations using the 0.195 MGD average monthly discharge rate produces the concentration limits listed. These technology-based limits under 40 CFR 405 are less stringent than the limits from 92a which are also included in the table below for comparison. See Attachment C for more detail of the derivation of limits from the above factors.

Limitations pursuant to 40 CFR 405 and 92a.47

Parameter	40 CFR 405 Daily Max Limit (lbs /day)	40 CFR 405 Daily Max Limit (mg/l)	40 CFR 405 Monthly Average Limit (lbs /day)	40 CFR 405 Monthly Average Limit (mg/l)	92a.47 Monthly Average Limit (mg/l)
BOD_5	637	391	318	195	30
TSS	959	588	478	294	30

The BOD5 and TSS limits from 92a will be included in the permit for Outfall 002 as they are the most protective.

Water Quality-Based Limitations

CBOD5 and NH3-N

The WQM7.0 model allows the Department to evaluate point source discharges of dissolved oxygen (DO), carbonaceous BOD ($CBOD_5$), and ammonia nitrogen (NH_3-N) into free-flowing streams and rivers. To accomplish this, the model simulates two basic processes: the mixing and degradation of NH_3-N in the stream and the mixing and consumption of DO in the stream due to the degradation of $CBOD_5$ and NH_3-N. The WQM7.0 modeling was performed (Attachment D) including both 001 and 002 as one outfall since both include BOD_5. Outfall 001 has small quantities of ammonia (2.0 mg/L max) per the application sampling. Outfall 002 has existing water quality-based limits for ammonia of 5.5 mg/L for a monthly average for the months of May through October and 13 mg/L for the rest of the year.

The modeling included the combined flow of the two discharges as well as flow-weighted average of the pollutant concentrations as noted in the table below.

Outfall	Flow (MGD)	BOD_5 (mg/L)	NH_3-N (mg/L)
001	0.085	20	2
002	0.195	30	5.5 (May-October)
Combined	0.280	27.0	4.44

This modeling was performed at the discharge to Crooked Creek due to the short distance (~100 feet) in Norris Brook. The model showed that the technology-based limitations discussed above are adequate. The model considers CBOD impacts so the use of the BOD level in it is more conservative. Therefore, the limits from 92a will be included in the permit as the most protective.

Water Quality Toxics Management

The following parameters were determined through water quality modeling to be candidates for effluent limitations or monitoring in the NPDES permit. The Department's Reasonable Potential Analysis recommends limits when the highest sampling result is greater than 50% of the WQBEL and monitoring when result is greater than 10% of the WQBEL for conservative pollutants. The table below shows the permittee's sample results, the WQ-based monthly average limitation and the Target Quantitation Limit for each parameter. The Department generally assumes that results for pollutants at detection levels greater than the Department's Target Quantitation Limits are potentially present at concentrations near the higher detection level. See Attachment E for the Toxics Management Spreadsheet analysis.

Reasonable Potential Analysis Results

Parameter	Water Quality-based Limit (µg/l)	Max Effluent Sample Result (µg/l)	Treatment Influent Sample Result (µg/l)	Target Quantitation Limit (µg/l)	Screening Recommendation
Total Copper	49.1	9.4	10.3	4	Monitor
Total Silver	13.4	<2.5	<1.1	0.4	Monitor
Total Zinc	420	72.5	103	5	Monitor

Silver is included because the provided sample results were at detection levels higher than the Department's Target Quantitation Limits and were high enough to trigger reasonable potential. Should the permittee conduct an additional round of sampling for Total Silver that shows that they are not detectable at detection levels at the Target QLs 0.4 µg/L or lower the Department will remove the monitoring for Total Silver from the final NPDES permit. The permittee has indicated their intent to obtain these Silver Results meeting the Target QL.

The permit has existing limitations or monitoring for Antimony, Cadmium, Iron, Thallium, and TDS which are no longer necessary based on current sampling and modeling results.

Total Residual Chlorine

The above Total Residual Chlorine limit from 92a.48(b)(2) is applicable to the facility. The Department uses a modeling spreadsheet to determine necessary WQBELs for TRC toxicity based on instream dilution. The attached modeling results (See attachment F) show that the BAT limit of 0.5 mg/l is adequate to protect the receiving waters.

Temperature

The Department uses a modeling spreadsheet to model thermal impacts to receiving streams using the criteria of 25 Pa. Code 93.7 See Attachment G for results of this modeling. The modeling assumed the combination of outfalls 001 and 002.

Below is a table comparing the daily maximum temperature limits determined with the reported daily maximum temperature ranges seen for the past permit term at each outfall for each timeframe. As can be seen limits are achieved for each time period for either outfall. No Part A temperature limitations are necessary and therefore, the final temperature limitations and the compliance schedule in the December 2024 draft permit will be removed in the attached draft permit. The condition regarding increasing the stream temperature by more than 2°F in any one-hour period from 25 Pa. Code §93.7 included in the previous draft is included in Part C. In addition to removing the previously listed Part A temperature limitations the monitoring for both 001 and 002 will return from daily to the existing frequency of 1/week.

Proposed Temperature Limitations

Time Period	Proposed Limitation (ºF)	(Outfall 001) Reported Daily Max Temperatures (ºF)	(Outfall 002) Reported Daily Max Temperatures (ºF)
Jan 1-31	110	67.8 – 85.2	76.9 – 85.1
Feb 1-29	110	66.6 – 83.2	76.1 – 85
Mar 1-31	110	68.0 – 83.9	75.6 – 84.9
Apr 1-15	110	71.4 – 91.0	82.0 – 91.4
Apr 16-30	110	71.4 – 91.0	82.0 – 91.4
May 1-15	110	85.4 – 93.4	83.9 – 91.5
May 16-30	110	85.4 – 93.4	83.9 – 91.5
Jun 1-15	110	87.2 – 94.4	87.2 – 94.4
Jun 16-30	110	87.2 – 94.4	87.2 – 94.4
Jul 1-31	110	82.2 – 97.2	88.6 – 94.6
Aug 1-15	110	78.8 – 93.3	86.8 – 93.1
Aug 16-31	110	78.8 – 93.3	86.8 – 93.1
Sep 1-15	110	79.4 – 87.4	82.8 – 89.0
Sep 16-30	110	79.4 – 87.4	82.8 – 89.0
Oct 1-15	110	71.8 – 89.8	81.4 – 87.4
Oct 16-31	110	71.8 – 89.8	81.4 – 87.4
Nov 1-15	110	68.3 – 83.7	78.5 – 82.3
Nov 16-30	110	68.3 – 83.7	78.5 – 82.3
Dec 1-31	99.8	65.6 – 87.8	78.4 – 82.7

Chesapeake Bay/Nutrient Requirements

A portion of the Chesapeake Bay and many of its tidal tributaries have been listed as impaired under Section 303(d) of the Water Pollution Control Act, 33 U.S.C. §1313(d). Total Nitrogen and Total Phosphorus cap loads have been established for significant dischargers in Pennsylvania to reduce the total nutrient load to the Bay and meet State of Maryland Water Quality Standards. The Dairy Farmers of America plant is considered an existing insignificant Chesapeake Bay industrial discharger per the Phase III Watershed Implementation Plan (WIP) and thus has received no Cap Loads. Per the application, TP averages 2.94 mg/L and the TN averages 25.1 mg/L. However, the existing twice per month monitoring for total phosphorus will remain and annual Total Nitrogen monitoring will be included at 002. Total Phosphorus has an existing limitation of 10 mg/L as a monthly average which will remain.

The Hammond Reservoir, approximately 7 miles downstream of this discharge, is unimpaired.

E. Coli

E. coli monitoring is proposed consistent with recent changes to Chapter 93 of the Department's regulations and current Department policy. Quarterly e. coli monitoring will be included in the draft permit for this 0.195 MGD discharge with a sewage component.

Best Professional Judgment (BPJ) Limitations

Comments: No additional BPJ limitations are needed above the Technology and Water Quality-based limits noted above.

Chemical Additives
The facility uses a number of chemical additives as listed in the application. The permittee has made additional changes in their additive usage as approved by the Department on June 13, 2024 and October 8, 2024.

Anti-Backsliding
Loading limitations for TSS, BOD5, and NH3-N have increased consistent with the increase in discharge flow consistent with the anti-backsliding requirements of 40 CFR 122.44(l). Otherwise, no BPJ or water quality-based limitations have been made less stringent.

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	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/day	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Temperature (deg F) (ºF)	XXX	XXX	XXX	Report	Report	XXX	1/week	I-S
Biochemical Oxygen Demand (BOD5)	XXX	XXX	XXX	20.0	40.0	50	1/week	8-Hr Composite

Compliance Sampling Location: Outfall 001

Other Comments: The above limits and monitoring are unchanged from the existing permit.

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 002, 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	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	Report Inst Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	1.6	XXX	1/day	Grab
Temperature (deg F)	XXX	XXX	XXX	Report	Report	XXX	1/week	I-S
Biochemical Oxygen Demand (BOD5)	48.8	97.6	XXX	30.0	60.0	75	1/week	8-Hr Composite
Total Suspended Solids	48.8	97.6	XXX	30.0	60.0	75	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
Ammonia-Nitrogen Nov 1 - Apr 30	21.1	42.3	XXX	13.0	26.0	32	2/month	8-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	8.9	17.8	XXX	5.5	11.0	13	2/month	8-Hr Composite
Total Phosphorus	12.5	25	XXX	10	20	25	2/month	8-Hr Composite
Copper, Total (ug/L)	XXX	XXX	XXX	Report Avg Qrtly	Report	XXX	1/quarter	8-Hr Composite

Outfall 002 , 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	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Silver, Total (ug/L)	XXX	XXX	XXX	Report Avg Qrtly	Report	XXX	1/quarter	8-Hr Composite
Zinc, Total (ug/L)	XXX	XXX	XXX	Report Avg Qrtly	Report	XXX	1/quarter	8-Hr Composite

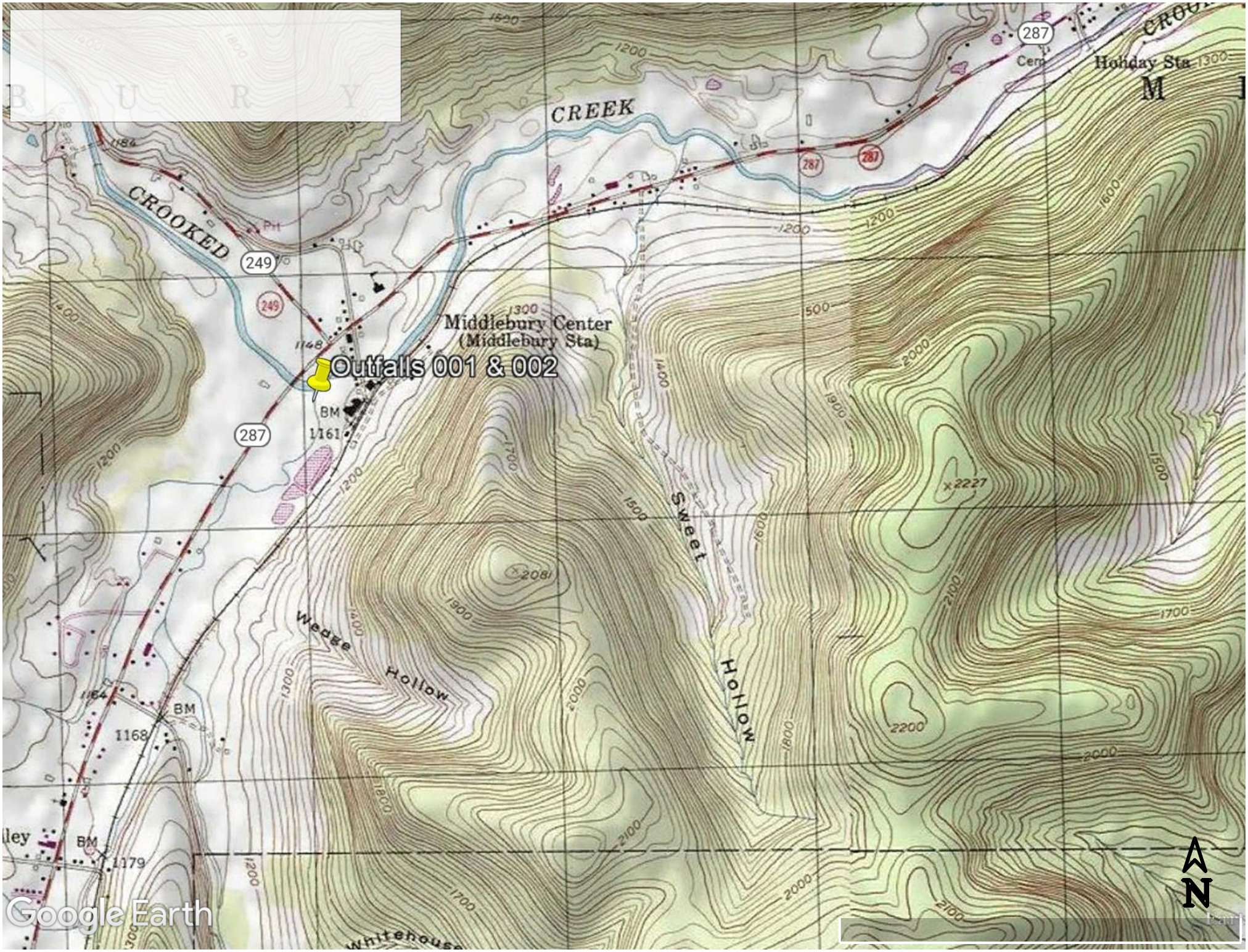
Compliance Sampling Location: Outfall 002

Other Comments: Loading limitations for TSS, BOD5, and NH3-N have changed from the existing permit as mentioned above. Monitoring or limits for TDS, Antimony, Cadmium, and Dissolved Iron have been removed as also mentioned above. In addition, monitoring for Copper, Silver, Zinc and e. coli are new.

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **D**)
☒	Toxics Management Spreadsheet (see Attachment **E**)
☒	TRC Model Spreadsheet (see Attachment **F**)
☒	Temperature Model Spreadsheet (see Attachment **G**)
☒	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☒	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☒	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☒	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 386-2000-010, 3/1999.
☒	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☒	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:

Attachments:

A. Discharge Location Map
B. 40 CFR 405 Excerpt
C. Tech Limits Derivation
D. WQM7.0 Model
E. Toxics Management Spreadsheet
F. TRC Spreadsheet
G. Temperature Model


CREEK
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249
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Middlebury Center
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Outfalls 001 & 002
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Hollow
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Title 40 —Protection of Environment
Chapter I —Environmental Protection Agency
Subchapter N —Effluent Guidelines and Standards
Part 405 —Dairy Products Processing Point Source Category

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Subpart I—Condensed Milk Subcategory

§ 405.90 Applicability; description of the condensed milk subcategory.

The provisions of this subpart are applicable to discharges resulting from the manufacture of condensed whole milk, condensed skim milk, sweetened condensed milk and condensed buttermilk.

§ 405.91 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations and methods of analysis set forth in part 401 of this chapter shall apply to this subpart.

(b) The term "BOD*5* input" shall mean the biochemical oxygen demand of the materials entered into process. It can be calculated by multiplying the fats, proteins and carbohydrates by factors of 0.890, 1.031 and 0.691 respectively. Organic acids (e.g., lactic acids) should be included as carbohydrates. Composition of input materials may be based on either direct analyses or generally accepted published values.

§ 405.92 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Except as provided in §§ 125.30 through 125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT):

(a) For plants condensing more than 100,000 lb/day of milk equivalent (more than 10,390 lb/day of BOD*5* input).

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
	Metric units (kilograms per 1,000 kg of BOD*5* input)	
BOD*5*	3.450	1.380
TSS	5.175	2.070
pH	([1])	([1])
	English units (pounds per 100 lb of BOD*5* input)	
BOD*5*	0.345	0.138
TSS	0.518	.207
pH	([1])	([1])

[1] *Within the range 6.0 to 9.0.*

(b) For plants condensing 100,000 lb/day or less of milk equivalent (less than 10,390 lb/day of BOD*5* input).

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
	Metric units (kilograms per 1,000 kg of BOD*5* input)	
BOD*5*	4.60	2.30
TSS	6.90	.450
pH	([1])	([1])
	English units (pounds per 100 lb of BOD*5* input)	
BOD*5*	0.460	0.230
TSS	0.690	.345
pH	([1])	([1])

[1] *Within the range 6.0 to 9.0.*

(c) For plants in the size range covered by paragraph (b) once-through barometric condenser water may be discharged untreated if the composite net entrainment is below 15 mg/l of BOD*5* for any one day and below 10 mg/l of BOD*5* as the average for thirty consecutive days.

[39 FR 18597, May 28, 1974, as amended at 39 FR 32993, Sept. 13, 1974; 60 FR 33935, June 29, 1995]

§ 405.93 [Reserved]

§ 405.94 Pretreatment standards for existing sources.

Any existing source subject to this subpart that introduces process wastewater pollutants into a publicly owned treatment works must comply with 40 CFR part 403. In addition, the following pretreatment standard establishes the quantity or quality of pollutants or pollutant properties controlled by this section which may be discharged to a publicly owned treatment works by a point source subject to the provisions of this subpart.

Pollutant or pollutant property	Pretreatment standard
pH	No limitation.
BOD*5*	Do.
TSS	Do.

[40 FR 6435, Feb. 11, 1975, as amended at 60 FR 33935, June 29, 1995]

§ 405.95 Standards of performance for new sources.

The following standards of performance establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a new source subject to the provisions of this subpart:

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
	Metric units (kilograms per 1,000 kg of BOD*5* input)	
BOD*5*	0.760	0.380
TSS	0.950	.475
pH	([1])	([1])
	English units (pounds per 100 lb of BOD*5* input)	
BOD*5*	0.076	0.038
TSS	0.095	.048
pH	([1])	([1])

[1] *Within the range 6.0 to 9.0.*

[39 FR 18597, May 28, 1974, as amended at 39 FR 32994, Sept. 13, 1974]

§ 405.96 Pretreatment standards for new sources.

Any new source subject to this subpart that introduces process wastewater pollutants into a publicly owned treatment works must comply with 40 CFR part 403.

[60 FR 33935, June 29, 1995]

§ 405.97 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT).

Except as provided in §§ 125.30 through 125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT): The limitations shall be the same as those specified for conventional pollutants (which are defined in § 401.16) in § 405.92 of this subpart for the best practicable control technology currently available (BPT).

[51 FR 24996, July 9, 1986]

Title 40 —Protection of Environment
Chapter I —Environmental Protection Agency
Subchapter N —Effluent Guidelines and Standards
Part 405 —Dairy Products Processing Point Source Category

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§ 405.104 Pretreatment standards for existing sources.
§ 405.105 Standards of performance for new sources.
§ 405.106 Pretreatment standards for new sources.
§ 405.107 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT).

Subpart J—Dry Milk Subcategory

§ 405.100 Applicability; description of the dry milk subcategory.

The provisions of this subpart are applicable to discharges resulting from the manufacture of dry whole milk, dry skim milk and dry buttermilk.

§ 405.101 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations and methods of analysis set forth in part 401 of this chapter shall apply to this subpart.

(b) The term "BOD*5* input" shall mean the biochemical oxygen demand of the materials entered into process. It can be calculated by multiplying the fats, proteins and carbohydrates by factors of 0.890, 1.031 and 0.691 respectively. Organic acids (e.g., lactic acids) should be included as carbohydrates. Composition of input materials may be based on either direct analysis or generally accepted published values.

§ 405.102 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Except as provided in §§ 125.30 through 125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT):

(a) For milk drying plants with an input equivalent to more than 145,000 lb/day of milk equivalent (more than 15,070 lb/day of BOD*5* input).

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
	Metric units (kilograms per 1,000 kg of BOD*5* input)	
BOD*5*	1.625	0.650

[1] *Within the range 6.0 to 9.0.*

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
TSS	2.438	.975
pH	(1)	(1)
	English units (pounds per 100 lb of BOD*5* input)	
BOD*5*	0.163	0.065
TSS	0.244	.098
pH	(1)	(1)

[1] *Within the range 6.0 to 9.0.*

(b) For milk drying plants with an input equivalent to 145,000 lb/day or less of milk equivalent (less than 15,070 lb/day of BOD*5* input).

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
	Metric units (kilograms per 1,000 kg of BOD*5* input)	
BOD*5*	2.176	1.088
TSS	3.276	1.638
pH	(1)	(1)
	English units (pounds per 100 lb of BOD*5* input)	
BOD*5*	0.218	0.109
TSS	0.328	.164
pH	(1)	(1)

[1] *Within the range 6.0 to 9.0.*

[39 FR 18597, May 28, 1974, as amended at 60 FR 33935, June 29, 1995]

§ 405.103 [Reserved]

§ 405.104 Pretreatment standards for existing sources.

Any existing source subject to this subpart that introduces process wastewater pollutants into a publicly owned treatment works must comply with 40 CFR part 403. In addition, the following pretreatment standard establishes the quantity or quality of pollutants or pollutant properties controlled by this section which may be discharged to a publicly owned treatment works by a point source subject to the provisions of this subpart.

Pollutant or pollutant property	Pretreatment standard
pH	No limitation.
BOD*5*	Do.

Pollutant or pollutant property	Pretreatment standard
TSS	Do.

[40 FR 6435, Feb. 11, 1975, as amended at 60 FR 33935, June 29, 1995]

§ 405.105 Standards of performance for new sources.

The following standards of performance establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a new source subject to the provisions of this subpart.

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
	Metric units (kilograms per 1,000 kg of BOD*5* input)	
BOD*5*	0.036	0.018
TSS	0.450	.225
pH	([1])	([1])
	English units (pounds per 100 lb of BOD*5* input)	
BOD*5*	0.036	0.018
TSS	0.045	.023
pH	([1])	([1])

[1] *Within the range 6.0 to 9.0.*

[39 FR 18597, May 28, 1974, as amended at 39 FR 32993, Sept. 13, 1974]

§ 405.106 Pretreatment standards for new sources.

Any new source subject to this subpart that introduces process wastewater pollutants into a publicly owned treatment works must comply with 40 CFR part 403.

[60 FR 33935, June 29, 1995]

§ 405.107 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT).

Except as provided in §§ 125.30 through 125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT): The limitations shall be the same as those specified for conventional pollutants (which are defined in § 401.16) in § 405.102 of this subpart for the best practicable control technology currently available (BPT).

[51 FR 24996, July 9, 1986]

Dairy Farmers of America
NPDES No. PA0111902
Middlebury Township, Tioga County

Technology Limitations Derivation from 40 CFR 405

		Limitation Factor			Subpart	Subpart
		Daily	Monthly	Production	Daily Limit	Monthly Limit
Subpart		lb BOD per 100 lb BOD input		lbs/day	lbs/day	lbs/day
I	BOD5	0.46	0.23	105281	484.2926	242.1463
	TSS	0.69	0.345	105281	726.4389	363.21945
J	BOD5	0.218	0.109	70187	153.00766	76.50383
	TSS	0.328	0.164	70187	230.21336	115.10668

Flow=	0.195 MGD

		Daily Limit lbs/day	Monthly Limit lbs/day	Daily Limit mg/L	Monthly Limit mg/L
Total	BOD5	637.30026	318.65013	391.9	195.9
Total	TSS	956.65226	478.32613	588.2	294.1

Sample Calculations:

Subpart Limit = Subpart Factor (lbs BOD / 100 lbs BOD input) x Production(lbs BOD/day) = 0.460 x 105,281 = 484.29 lbs/day

Total Limit = ΣSubpart Limits (lbs/day) = 484.2926+153.0077 = 637.30 lbs/day

Concentration Limit = Loading Limit (lbs/day) / Flow (MGD) / 8.34 lbs/gal = 637.30 / (0.195 x 8.34) = 391.9 mg/L

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
04A	31189	CROOKED CREEK	**12.500**	1141.00	74.20	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.031	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
DFA	PA0111602	0.2800	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	27.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	4.44	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
04A	31189	CROOKED CREEK	**9.960**	1117.30	75.20	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.031	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
04A	31189	CROOKED 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												
12.500	2.30	0.00	2.30	.4332	0.00177	.665	31.34	47.16	0.13	1.183	20.79	7.00
Q1-10 Flow												
12.500	1.47	0.00	1.47	.4332	0.00177	NA	NA	NA	0.11	1.448	21.14	7.00
Q30-10 Flow												
12.500	3.13	0.00	3.13	.4332	0.00177	NA	NA	NA	0.15	1.020	20.61	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	0.64	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 D.O.Simulation

SWP Basin	Stream Code	Stream Name
04A	31189	CROOKED CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
12.500	0.280	20.792	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
31.345	0.665	47.164	0.131
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
5.96	0.755	0.70	0.744
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.412	2.245	Tsivoglou	5
Reach Travel Time (days)			
1.183			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.118	5.43	0.64	6.86
0.237	4.95	0.59	6.51
0.355	4.52	0.54	6.33
0.473	4.12	0.49	6.25
0.591	3.75	0.45	6.25
0.710	3.42	0.41	6.31
0.828	3.12	0.38	6.40
0.946	2.84	0.35	6.52
1.065	2.59	0.32	6.66
1.183	2.36	0.29	6.80

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
04A	31189	CROOKED 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
12.500	DFA	15.25	8.88	15.25	8.88	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
12.500	DFA	1.81	4.44	1.81	4.44	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)		
12.50	DFA	27	27	4.44	4.44	3	3	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
04A	31189	CROOKED 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)
12.500	DFA	PA0111602	0.280	CBOD5	27		
				NH3-N	4.44	8.88	
				Dissolved Oxygen			3

Discharge Information

Instructions | Discharge | Stream

Facility: **Dairy Farmers of America** NPDES Permit No.: **PA0111902** Outfall No.: **002**

Evaluation Type **Major Sewage / Industrial Waste** Wastewater Description: **Dairy Process Wastewater**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.195	106	7.1						

					0 if left blank		*0.5 if left blank*		*0 if left blank*			*1 if left blank*	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		1350									
	Chloride (PWS)	mg/L		99.8									
	Bromide	mg/L	<	0.5									
	Sulfate (PWS)	mg/L		420									
	Fluoride (PWS)	mg/L	<	0.01									
Group 2	Total Aluminum	µg/L		223									
	Total Antimony	µg/L	<	0.3									
	Total Arsenic	µg/L	<	2.5									
	Total Barium	µg/L		104									
	Total Beryllium	µg/L	<	0.5									
	Total Boron	µg/L	<	50									
	Total Cadmium	µg/L	<	0.13									
	Total Chromium (III)	µg/L	<	2.5									
	Hexavalent Chromium	µg/L	<	1									
	Total Cobalt	µg/L	<	2.5									
	Total Copper	µg/L		9.4									
	Free Cyanide	µg/L		0.01									
	Total Cyanide	µg/L		0.01									
	Dissolved Iron	µg/L		78.1									
	Total Iron	µg/L		63.7									
	Total Lead	µg/L		0.76									
	Total Manganese	µg/L		106									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L	<	2.5									
	Total Phenols (Phenolics) (PWS)	µg/L	<	0.05									
	Total Selenium	µg/L	<	2.5									
	Total Silver	µg/L	<	2.5									
	Total Thallium	µg/L	<	0.026									
	Total Zinc	µg/L		72.5									
	Total Molybdenum	µg/L	<	2.5									
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										
	Carbon Tetrachloride	µg/L	<										

Group 3	Chlorobenzene	µg/L											
	Chlorodibromomethane	µg/L	<										
	Chloroethane	µg/L	<										
	2-Chloroethyl Vinyl Ether	µg/L	<										
	Chloroform	µg/L	<										
	Dichlorobromomethane	µg/L	<										
	1,1-Dichloroethane	µg/L	<										
	1,2-Dichloroethane	µg/L	<										
	1,1-Dichloroethylene	µg/L	<										
	1,2-Dichloropropane	µg/L	<										
	1,3-Dichloropropylene	µg/L	<										
	1,4-Dioxane	µg/L	<										
	Ethylbenzene	µg/L	<										
	Methyl Bromide	µg/L	<										
	Methyl Chloride	µg/L	<										
	Methylene Chloride	µg/L	<										
	1,1,2,2-Tetrachloroethane	µg/L	<										
	Tetrachloroethylene	µg/L	<										
	Toluene	µg/L	<										
	1,2-trans-Dichloroethylene	µg/L	<										
	1,1,1-Trichloroethane	µg/L	<										
	1,1,2-Trichloroethane	µg/L	<										
	Trichloroethylene	µg/L	<										
	Vinyl Chloride	µg/L	<										
Group 4	2-Chlorophenol	µg/L	<										
	2,4-Dichlorophenol	µg/L	<										
	2,4-Dimethylphenol	µg/L	<										
	4,6-Dinitro-o-Cresol	µg/L	<										
	2,4-Dinitrophenol	µg/L	<										
	2-Nitrophenol	µg/L	<										
	4-Nitrophenol	µg/L	<										
	p-Chloro-m-Cresol	µg/L	<										
	Pentachlorophenol	µg/L	<										
	Phenol	µg/L	<										
	2,4,6-Trichlorophenol	µg/L	<										
Group 5	Acenaphthene	µg/L	<										
	Acenaphthylene	µg/L	<										
	Anthracene	µg/L	<										
	Benzidine	µg/L	<										
	Benzo(a)Anthracene	µg/L	<										
	Benzo(a)Pyrene	µg/L	<										
	3,4-Benzofluoranthene	µg/L	<										
	Benzo(ghi)Perylene	µg/L	<										
	Benzo(k)Fluoranthene	µg/L	<										
	Bis(2-Chloroethoxy)Methane	µg/L	<										
	Bis(2-Chloroethyl)Ether	µg/L	<										
	Bis(2-Chloroisopropyl)Ether	µg/L	<										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<										
	4-Bromophenyl Phenyl Ether	µg/L	<										
	Butyl Benzyl Phthalate	µg/L	<										
	2-Chloronaphthalene	µg/L	<										
	4-Chlorophenyl Phenyl Ether	µg/L	<										
	Chrysene	µg/L	<										
	Dibenzo(a,h)Anthrancene	µg/L	<										
	1,2-Dichlorobenzene	µg/L	<										
	1,3-Dichlorobenzene	µg/L	<										
	1,4-Dichlorobenzene	µg/L	<										
	3,3-Dichlorobenzidine	µg/L	<										
	Diethyl Phthalate	µg/L	<										
	Dimethyl Phthalate	µg/L	<										
	Di-n-Butyl Phthalate	µg/L	<										
	2,4-Dinitrotoluene	µg/L	<										
	2,6-Dinitrotoluene	µg/L	<										

	Di-n-Octyl Phthalate	µg/L	<											
	1,2-Diphenylhydrazine	µg/L	<											
	Fluoranthene	µg/L	<											
	Fluorene	µg/L	<											
	Hexachlorobenzene	µg/L	<											
	Hexachlorobutadiene	µg/L	<											
	Hexachlorocyclopentadiene	µg/L	<											
	Hexachloroethane	µg/L	<											
	Indeno(1,2,3-cd)Pyrene	µg/L	<											
	Isophorone	µg/L	<											
	Naphthalene	µg/L	<											
	Nitrobenzene	µg/L	<											
	n-Nitrosodimethylamine	µg/L	<											
	n-Nitrosodi-n-Propylamine	µg/L	<											
	n-Nitrosodiphenylamine	µg/L	<											
	Phenanthrene	µg/L	<											
	Pyrene	µg/L	<											
	1,2,4-Trichlorobenzene	µg/L	<											
Group 6	Aldrin	µg/L	<											
	alpha-BHC	µg/L	<											
	beta-BHC	µg/L	<											
	gamma-BHC	µg/L	<											
	delta BHC	µg/L	<											
	Chlordane	µg/L	<											
	4,4-DDT	µg/L	<											
	4,4-DDE	µg/L	<											
	4,4-DDD	µg/L	<											
	Dieldrin	µg/L	<											
	alpha-Endosulfan	µg/L	<											
	beta-Endosulfan	µg/L	<											
	Endosulfan Sulfate	µg/L	<											
	Endrin	µg/L	<											
	Endrin Aldehyde	µg/L	<											
	Heptachlor	µg/L	<											
	Heptachlor Epoxide	µg/L	<											
	PCB-1016	µg/L	<											
	PCB-1221	µg/L	<											
	PCB-1232	µg/L	<											
	PCB-1242	µg/L	<											
	PCB-1248	µg/L	<											
	PCB-1254	µg/L	<											
	PCB-1260	µg/L	<											
	PCBs, Total	µg/L	<											
	Toxaphene	µg/L	<											
	2,3,7,8-TCDD	ng/L	<											
Group 7	Gross Alpha	pCi/L												
	Total Beta	pCi/L	<											
	Radium 226/228	pCi/L	<											
	Total Strontium	µg/L	<											
	Total Uranium	µg/L	<											
	Osmotic Pressure	mOs/kg												

Stream / Surface Water Information

Dairy Farmers of America, NPDES Permit No. PA0111902, Outfall 002

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Crooked Creek**

No. Reaches to Model: **1**

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	031189	12.5	1141	74.2			Yes
End of Reach 1	031189	9.96	1117.3	75.2			Yes

Q *7-10*

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	12.5	0.0312										100	7		
End of Reach 1	9.96	0.0312													

Q *h*

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	12.5														
End of Reach 1	9.96														

Model Results

Dairy Farmers of America, NPDES Permit No. PA0111902, Outfall 002

Instructions | *Results* | RETURN TO INPUTS | SAVE AS PDF | PRINT | (●) All ( ) Inputs ( ) Results ( ) Limits

☑ ***Hydrodynamics***

Q 7-10

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
12.5	2.32		2.32	0.302	0.002	0.661	30.902	46.729	0.128	1.212	45.317
9.96	2.35		2.34624								

Q h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
12.5	15.47		15.47	0.302	0.002	1.458	30.902	21.197	0.35	0.443	17.019
9.96	15.656		15.66								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.575 Analysis Hardness (mg/l): 101.11 Analysis pH: 7.02

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	4,061	
Total Antimony	0	0		0	1,100	1,100	5,957	
Total Arsenic	0	0		0	340	340	1,841	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	113,719	
Total Boron	0	0		0	8,100	8,100	43,863	
Total Cadmium	0	0		0	2.035	2.16	11.7	Chem Translator of 0.944 applied
Total Chromium (III)	0	0		0	574.929	1,819	9,852	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	88.2	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	514	
Total Copper	0	0		0	13.579	14.1	76.6	Chem Translator of 0.96 applied

Free Cyanide	0	0		0	22	22.0	119	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	65.361	82.8	448	Chem Translator of 0.789 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	8.92	Chem Translator of 0.85 applied
Total Nickel	0	0		0	472.621	474	2,564	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	3.278	3.86	20.9	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	352	
Total Zinc	0	0		0	118.280	121	655	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 45.317 PMF: 1 Analysis Hardness (mg/l): 100.69 Analysis pH: 7.01

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	1,908	
Total Arsenic	0	0		0	150	150	1,301	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	35,564	
Total Boron	0	0		0	1,600	1,600	13,879	
Total Cadmium	0	0		0	0.247	0.27	2.36	Chem Translator of 0.909 applied
Total Chromium (III)	0	0		0	74.534	86.7	752	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	90.2	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	165	
Total Copper	0	0		0	9.009	9.38	81.4	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	45.1	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	13,011	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.536	3.21	27.8	Chem Translator of 0.79 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	7.86	Chem Translator of 0.85 applied
Total Nickel	0	0		0	52.311	52.5	455	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	43.3	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	113	
Total Zinc	0	0		0	118.831	121	1,045	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 45.317 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	48.6	
Total Arsenic	0	0		0	10	10.0	86.7	
Total Barium	0	0		0	2,400	2,400	20,818	
Total Boron	0	0		0	3,100	3,100	26,890	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	4	4.0	34.7	
Dissolved Iron	0	0		0	300	300	2,602	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	8,674	
Total Mercury	0	0		0	0.050	0.05	0.43	
Total Nickel	0	0		0	610	610	5,291	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	2.08	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 17.019 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	

Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Copper	Report	Report	Report	Report	Report	µg/L	49.1	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Silver	Report	Report	Report	Report	Report	µg/L	13.4	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	420	AFC	Discharge Conc > 10% WQBEL (no RP)

☐ ***Other Pollutants without Limits or Monitoring***

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

2.31	= Q stream (cfs)	0.5	= CV Daily
0.195	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	0.575	= 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 = 1.424	1.3.2.iii	WLA cfc = 2.392
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.530	5.1d	LTA_cfc = 1.391

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

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

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Instructions | ***Inputs***

Facility: **Dairy Farmers of America**

Permit No.: **PA0111902**

Stream Name: **Crooked Creek**

Analyst/Engineer: **K. Allison**

Stream Q7-10 (cfs)*: **2.3**

Outfall No.: **002**

Analysis Type*: **WWF**

Facility Flows

Semi-Monthly Increment	Intake (Stream) (MGD)*	Intake (External) (MGD)*	Consumptive Loss (MGD)*	Discharge Flow (MGD)
Jan 1-31		0.31		0.31
Feb 1-29		0.31		0.31
Mar 1-31		0.31		0.31
Apr 1-15		0.31		0.31
Apr 16-30		0.31		0.31
May 1-15		0.31		0.31
May 16-31		0.31		0.31
Jun 1-15		0.31		0.31
Jun 16-30		0.31		0.31
Jul 1-31		0.31		0.31
Aug 1-15		0.31		0.31
Aug 16-31		0.31		0.31
Sep 1-15		0.31		0.31
Sep 16-30		0.31		0.31
Oct 1-15		0.31		0.31
Oct 16-31		0.31		0.31
Nov 1-15		0.31		0.31
Nov 16-30		0.31		0.31
Dec 1-31		0.31		0.31

Stream Flows

Q7-10 Multipliers (Default Shown)	PMF	Seasonal Stream Flow (cfs)	Downstream Stream Flow (cfs)
3.2	1.00	7.39	7.87
3.5	1.00	8.09	8.56
7	1.00	16.17	16.65
9.3	1.00	21.48	21.96
9.3	1.00	21.48	21.96
5.1	1.00	11.78	12.26
5.1	1.00	11.78	12.26
3	1.00	6.93	7.41
3	1.00	6.93	7.41
1.7	1.00	3.93	4.41
1.4	1.00	3.23	3.71
1.4	1.00	3.23	3.71
1.1	1.00	2.54	3.02
1.1	1.00	2.54	3.02
1.2	1.00	2.77	3.25
1.2	1.00	2.77	3.25
1.6	1.00	3.70	4.18
1.6	1.00	3.70	4.18
2.4	1.00	5.54	6.02

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Thermal Limits Spreadsheet
Version 1.0, April 2024

Instructions | ***WWF Results***

Recommended Limits for Case 1 or Case 2

Semi-Monthly Increment	**WWF** Target Maximum Stream Temp. (ºF)	**Case 1** Daily WLA (Million BTUs/day)	**Case 2** Daily WLA (ºF)
Jan 1-31	40	N/A -- Case 2	110.0
Feb 1-29	40	N/A -- Case 2	110.0
Mar 1-31	46	N/A -- Case 2	110.0
Apr 1-15	52	N/A -- Case 2	110.0
Apr 16-30	58	N/A -- Case 2	110.0
May 1-15	64	N/A -- Case 2	110.0
May 16-31	72	N/A -- Case 2	110.0
Jun 1-15	80	N/A -- Case 2	110.0
Jun 16-30	84	N/A -- Case 2	110.0
Jul 1-31	87	N/A -- Case 2	110.0
Aug 1-15	87	N/A -- Case 2	110.0
Aug 16-31	87	N/A -- Case 2	110.0
Sep 1-15	84	N/A -- Case 2	110.0
Sep 16-30	78	N/A -- Case 2	110.0
Oct 1-15	72	N/A -- Case 2	110.0
Oct 16-31	66	N/A -- Case 2	110.0
Nov 1-15	58	N/A -- Case 2	110.0
Nov 16-30	50	N/A -- Case 2	110.0
Dec 1-31	42	N/A -- Case 2	99.8