pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0005860**
Facility Type	**Industrial**	APS ID	**957990**
Major / Minor	**Minor**	Authorization ID	**1211624**

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**
Applicant Address	800 W Tampa Street	Facility Address	3032 Route 208
	Springfield, MO 65802		New Wilmington, PA 16142
Applicant Contact	Whitney Christian	Facility Contact	Gary Shivley
Applicant Phone	(417) 829-2852	Facility Phone	(724) 946-8729
Applicant Email	wchristen@dfamilk.com	Facility Email	gshivley@dfamilk.com
Client ID	145118	Site ID	237038
Municipality	Wilmington Township	County	Lawrence
SIC Code	2022	SIC Code	2023
SIC Description	Mfg - Cheese, Natural and Processed	SIC Description	Mfg – Dry, Condensed, Evaporated Prod
Date Application Received	December 18, 2017	EPA Waived?	Yes
Date Application Accepted	January 3, 2018	If No, Reason	---
Purpose of Application	NPDES permit renewal		

Summary of Review

The subject facility has had a history of effluent violations resulting in this NPDES permit renewal being withheld. WQM Permit No. 3796201 A-5 issued on June 23, 2021 is for treatment facility upgrades that should resolve the effluent violations. The final issuance of this permit may be withheld until the Department has verified that the effluent violation issues have been addressed and the associated violations have been resolved.

Wastes are mostly from cheese making and dry whey production. Additional waste sources are cheese packaging wastes from an auxiliary site in New Wilmington and three nearby homes. The cheese packaging wastes do not have any promulgated requirements.

Treated process wastes are discharged to the Shenango River. If not reused settled spills, overflows and storm water are discharged through an un-named tributary of Buchanan Run then to the Shenango River. Storm water mixed with road run-off is discharged to an un-named tributary of the Little Neshannock Creek and finally to the Shenango River.

The client contact is Steve L. Bryant, Wastewater Eng Env Compliance, telephone 816-801-6748, email sbryant@dfamilk.com.

The WWTF operator is O'Brien and Gere.

The site contact is Ann Bratschie-Dyer, EHS Manager, telephone 724-946-8729 extension 7462, email abratsche@dfamilk.com

Public Participation

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

Approve	Deny	Signatures	Date
X		Justin C. Dickey Justin C. Dickey, P.E. / Environmental Engineer Manager	November 4, 2021

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.5
Latitude NPDES	41° 5’ 14.22”	Longitude NPDES	80° 24’ 26.97”
Latitude NHD	41º 5' 13.77"	Longitude NHD	-80º 24' 26.22"
Latitude DP	41º 5' 14.22"	Longitude DP	-80º 24' 26.97"
Quad Name	Edinburg	Quad Code	1002
Wastewater:	IW Process effluent with and without ELG and sewage effluent from facility washrooms.		
Old description	Treated cheese making waste, domestic wastewater, cooling tower & boiler blowdown, & NCCW		

Receiving Waters	Shenango River	Stream Code	35482
NHD Com ID	130025569	RMI	12.75
Drainage Area	766.16	Yield (cfs/mi^2)	0.162
Q_{7-10} Flow (cfs)	124.11	Q_{7-10} Basis	Shenango River
Elevation (ft)	802.14	Slope (ft/ft)	0.00031
Watershed No.	20-A	Chapter 93 Class.	WWF
Existing Use	statewide	Existing Use Qualifier	none
Use Exceptions	none	Criteria Exceptions	none
Comments	River outfall. Monitoring is generally done at the WWTF monitoring outfall 101.		

Assessment Status	Impaired		
Impairment Cause	Aluminum. Iron, Lead and PCB		
Impairment Sources	Other, Source Unknown		
TMDL Status	Final	Name	Shenango River
Comments	Three TMDL proposed for chlordane and PCB, aluminum, iron and lead, and Nutrients. The chlordane and PCB TMDL does not include this facility. The nutrient TMDL was withdrawn. The Toxics Management spreadsheet has added a copper concern.		

Low Flow Basis	Shenango River at Sharpsville	Gauge Station	03103500	RMI	55.1		
	Low Flow (cfs)	94.8	Drainage (sq-mi)	584	Yield (cfs/sq-mi)	0.162	
Upstream regulation at 100 cfs at the Pymatuning Reservoir outlet.							

Background/Ambient Data		Data Source
pH (SU)	8.2	Shenango River Metal TMDL
Temperature (°F)	25	WWF default
Hardness (mg/L)	92.3	Application; 472-mg/L at North Branch Little Beaver Creek
BOD5 (mg/L):	1.0	Assumed
Ammonia	0.1	Assumed

Nearest Downstream Public Water Supply Intake	Pa American Water Company New Castle		
PWS Waters	Shenango River	Flow at Intake (cfs)	100
PWS RMI	5.02	Distance from Outfall (mi)	7.73 (application 6.0)

Changes Since Last Permit Issuance: none
Other Comments: 100-cfs is the minimum release flow upstream at the Pymatuning Reservoir Outlet.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	0
Latitude NHD	41º 7' 33.01"	Longitude NHD	-80º 22' 39.99"
Latitude DP	41° 7’ 3.24”	Longitude DP	80° 22’ 31.90”
Quad Name	Edinburg	Quad Code	1002
Wastewater:	Spills, Overflows and Stormwater		
Receiving Waters	Un-named tributary of Buchanan Run	Stream Code	unknown
NHD Com ID	130033494	RMI	0.67
Drainage Area	0.08	Yield (cfs/mi^2)	0
Q_{7-10} Flow (cfs)	0	Q_{7-10} Basis	Dry stream
Elevation (ft)	1228.36	Slope (ft/ft)	0.011
Watershed No.	20-A	Chapter 93 Class.	WWF
Existing Use	statewide	Existing Use Qualifier	none
Exceptions to Use	none	Exceptions to Criteria	none
Comments	10,890-square foot impervious storm water drainage. Normally drains back to the WWTF.		
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	---		
Source(s) of Impairment	---		
TMDL Status	---	Name	---

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

Nearest Downstream Public Water Supply Intake		PA American Water Company New Castle	
PWS Waters	Shenango River	Flow at Intake (cfs)	100
PWS RMI	5.02	Distance from Outfall (mi)	15.5

Changes Since Last Permit Issuance: none

Other Comments 100-cfs is the minimum release flow upstream at the Pymatuning Reservoir Outlet.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	003	Design Flow (MGD)	0
Latitude Old IR	41° 7’ 1 7.32”	Longitude Old IR	80° 21’ 35.28”
Latitude NHD	41º 7' 18.75"	Longitude NHD	-80º 21' 34.58"
Latitude DP	41° 7’ 14.00”	Longitude DP	80° 21’ 38.00”
Quad Name	New Castle North	Quad Code	1003
Wastewater:	Stormwater		

Receiving Waters	Unnamed Tributary to L Neshannock	Stream Code	unknown
NHD Com ID	130032059	RMI	0.03
Drainage Area	0.003	Yield (cfs/mi^2)	0
Q_{7-10} Flow (cfs)	0	Q_{7-10} Basis	Dry stream
Elevation (ft)	1178.19	Slope (ft/ft)	
Watershed No.	20-A	Chapter 93 Class.	TSF
Existing Use	statewide	Existing Use Qualifier	none
Use Exceptions	none	Exceptions to Criteria	none

Comments: Storm water drainage is 61% impervious with a 151,126 square foot total area. Conveyed through an un-named tributary to perennial stream 35542 RMI 2.07. Tributary 35542 is locally called McClure Run. Confluence with Little Neshannock Creek at RMI 2.87 and 948.33-feet elevation.

Assessment Status	Impaired		
Cause(s) of Impairment	Flow Alterations, Water/Flow Variability		
Source(s) of Impairment	Channelization, Road Runoff		
TMDL Status		Name	
Comments	unknown		

Background/Ambient Data		Data Source
pH (SU)	---	---
Temperature (°F)	---	---
Hardness (mg/L)	92.3	Application (little Beaver Creek 472-mg/L)
Other:	---	---

Nearest Downstream Public Water Supply Intake	Beaver Falls Municipal Authority		
PWS Waters	Beaver River	Flow at Intake (cfs)	74.88
PWS RMI	5.4	Distance from Outfall (mi)	34.3

Changes Since Last Permit Issuance: none

Other Comments: none

Discharge, Receiving Waters and Water Supply Information

Outfall No.	004	Design Flow (MGD)	0
Latitude Old IR	41º 7' 18.80"	Longitude Old IR	-80º 21' 37.08"
Latitude NHD	41º 7' 18.75"	Longitude NHD	-80º 21' 34.58"
Latitude DP	41º 7' 14.00"	Longitude DP	-80º 21' 40.00"
Quad Name	New Castle North	Quad Code	1003
Wastewater:	Stormwater		

Receiving Waters	Unnamed Tributary to L Neshannock	Stream Code	unknown
NHD Com ID	130032059	RMI	0.0900
Drainage Area	0.0026	Yield (cfs/mi^2)	0
Q_{7-10} Flow (cfs)	0	Q_{7-10} Basis	Dry stream
Elevation (ft)	1180.27	Slope (ft/ft)	0.578
Watershed No.	20-A	Chapter 93 Class.	TSF
Existing Use	statewide	Existing Use Qualifier	none
Exceptions to Use	none	Exceptions to Criteria	none

Comments: Storm water drainage is 98% impervious totaling 143,123 square feet. The outfall is above Outfall 003. Confluence at tributary 35542 (locally called McClure Run) RMI 2.07

Assessment Status	Impaired		
Cause(s) of Impairment	Flow Alterations, Water/Flow Variability		
Source(s) of Impairment	Channelization, Road Runoff		
TMDL Status	unknown	Name	

Background/Ambient Data		Data Source
pH (SU)	---	---
Temperature (°F)	---	---
Hardness (mg/L)	92.3	Application (little Beaver Creek 472-mg/L)
Other:	---	---

Nearest Downstream Public Water Supply Intake	Beaver Falls Municipal Authority		
PWS Waters	Beaver River	Flow at Intake (cfs)	274.88
PWS RMI	5.4	Distance from Outfall (mi)	34.4

Changes Since Last Permit Issuance: none

Other Comments: none

Discharge, Receiving Waters and Water Supply Information

Outfall No.	005	Design Flow (MGD)	0
Latitude	41° 7’ 18.75”	Longitude	80° 21’ 41.04”
Latitude NHD	41° 7’ 13.80”	Longitude NHD	80° 21’ 34.57”
Latitude DP	41º 7' 8.00"	Longitude DP	-80º 21' 37.00"
Quad Name	New Castle North	Quad Code	1003
Wastewater:	Stormwater		

Receiving Waters	Unnamed Tributary to L Neshannock	Stream Code	unknown
NHD Com ID	130032059	RMI	0.15
Drainage Area	0.003	Yield (cfs/mi^2)	0
Q_{7-10} Flow (cfs)	0	Q_{7-10} Basis	Dry stream
Elevation (ft)	120.00	Slope (ft/ft)	
Watershed No.	20-A	Chapter 93 Class.	TSF
Existing Use	Statewide	Existing Use Qualifier	none
Exceptions to Use	none	Exceptions to Criteria	none

Comments: Storm water drainage 33% impervious totalizing 493,487 square feet. This is a drainage swale roadside ditch outfall above Outfalls 003 and 004. Confluence at tributary 35542 (locally McClure Run) RMI 2.08.

Assessment Status	Impaired		
Cause(s) of Impairment	Flow Alterations, Water/Flow Variability		
Source(s) of Impairment	Channelization, Road Runoff		
TMDL Status	unknown	Name	

Background/Ambient Data		Data Source
pH (SU)	---	---
Temperature (°F)	---	---
Hardness (mg/L)	92.3	Application (little Beaver Creek 472-mg/L)
Other:	---	---

Nearest Downstream Public Water Supply Intake		Beaver Falls Municipal Authority	
PWS Waters	Beaver River	Flow at Intake (cfs)	274.88
PWS RMI	5.4	Distance from Outfall (mi)	34.3

Changes Since Last Permit Issuance: none

Other Comments: none

Treatment Facility Summary

Treatment Facility Name: Dairy Farmers Of American

WQM Permit No.	Modification	Issuance Date
3796201	A5	6/23/2021
3796201	A4	9/16/2016
3796201	A3	7/11/2007
3796201	A2	12/18/2002
3796201	A1	1/11/1999
3796201		4/24/1996
3782206	T1	8/14/1995

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial	Biological (Industrial Waste)	Anaerobic Treatment	Hypochlorite	0.317

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.5	29000	acceptable	Dewatering	Land Application

Changes Since Last Permit Issuance:

Proposed Modifications under WQM Permit No. 3796201 A5 issued June 23, 2021

The existing treatment consists of an influent fine screen, a 500,000 gallon equalization tank, a 1.29 million gallon upflow anaerobic contact reactor with pH control by sodium hydroxide (NaOH) and hydrochloric acid (HCl), a degassing tower, SepaFloc clarification, a 1.29 million gallon aeration tank, a flow splitter box, two 43 foot diameter secondary clarifiers operating in parallel, two 1.29 million gallon anaerobic reactors, dissolved air flotation, sodium hypochlorite disinfection with a contact tank, a belt filter press, and a condensate of whey holding tank.

This amendment proposes to modify WQM Permit 3796201 by replacing the current chlorine contact tank with a new, larger tank to provide the proper retention time for disinfection.

The proposed contact tank will provide a retention time of 36 minutes at a flow rate of 444 gpm. It will have inside dimensions of 50’-8” x 20’ with thirteen 8” baffles spaced 3’ apart, and a water level of 5 feet. A Parshall Flume with an ultrasonic flow meter will be used to control the chlorine dosage. A mixing pump with inline chlorine analyzer, a static mixer, and fiberglass grates will facilitate the mixing of sodium hypochlorite into the influent flow.

The construction will be performed to minimize disruptions in the treatment process.

Facilities prior to 2016:
Storm water/spill control basin; wastewater: plant pump station and force main, screening (static and rotary), flow metering, equalization, flow splitting, high rate anaerobic digestion with lamellar clarifiers, optional parallel/series conventional anaerobic digestion, chemical addition, dissolved air flotation, aeration, settling in two parallel clarifiers, sodium hypochlorite disinfection, sampling, and effluent pumping; and sludge: holding, conditioning, thickening, dewatering, and storage.

Other Comments:

Outfall 001: Static Screening, Equalization, Anaerobic Digestion, Degas, Sepa-Floc Settling, Aeration, Clarification, Anaerobic digestion, Dissolved Air Flotation, Belt dewatering press, disinfection, and pumping to the Shenango River.

Outfall 002: Sedimentation/Retention.

Outfall 003, 004, and 005 – no treatment but in a TMDL basin with road runoff inhibition.

Operation 24 hours/day, 7 days/week, 365 days/year, 12 months/year.

Maximum Daily discharge	0.4700-MGD
Monthly mean discharge	0.3720-MGD
Long Term Discharge	0.3720-MGD
Current Mean Discharge	0.4333-MGD

Boilers

Operation 24 hours/day, 7 days/week, 365 days/year, 12 months/year.

Maximum Daily discharge	0.1300-MGD
Monthly mean discharge	0.0700-MGD
Long Term Discharge	0.0700-MGD

Totals

Operation 24 hours/day, 7 days/week, 365 days/year, 12 months/year.

Maximum Daily discharge	0.6000-MGD
Monthly mean discharge	0.4000-MGD
Long Term Discharge	0.4259-MGD

Sludge sent to landfill

Stormwater Sampling Application Data

Pollutant	OUTFALL 003			OUTFALL 004			OUTFALL 005		
	Average Concentration	Maximum Concentration	No. Events Sampled	Average Concentration	Maximum Concentration	No. Events Sampled	Average Concentration	Maximum Concentration	No. Events Sampled
Oil and Grease (mg/L)	< 5	< 5	2	< 5	< 5	2	< 5	< 5	2
BOD5 (mg/L)	12.76	15.9	2	< 4.32	6.64	2	23.1	43	2
COD (mg/L)	<54.5	88.9	2	46.9	54.2	2	82.5	98.4	2
TSS (mg/L)	86.3	134	2	< 9.5	14	2	<22	39	2
Total Phosphorus (mg/L)	0.238	0.252	2	0.144	0.217	2	0.204	0.357	2
pH (S.U.)	7.45 min.	7.56 max	2	7.72 min.	7.72 max.	2	7.21 min.	7.23 max	2
TRC (mg/L)	< 0.01	< 0.01	2	< 0.01	< 0.01	2	< 0.01	< 0.01	2
Fecal Coliform (CFU/100 ml) Geometric Mean	394	773	2	159	200	2	> 3,564	> 6,000	2
Total Kjeldahl Nitrogen (mg/L)	1.2	1.2	2	< 1.1	1.2	2	< 1.0	< 1.0	2
Total Iron (mg/L)	2.05	3.97	2	< 0.135	0.22	2	0.98	1.11	2

Fecal coliform is a minor concern in Outfall 005 as this outfall has the highest values. The results of the December 2020 sampling event (see following table) also shows an elevated fecal coliform value for Outfall 003.

BOD5, TSS, phosphorus, and iron appear elevated.

Stormwater outfall 002 is currently permitted as monitoring “when discharging”.

Compliance History

DMR Data for Outfall 003, 004, and 005 (from September 1, 2020 to August 31, 2021)

Parameter	August 2021 through January 2021	December 2020			November 2020 through September 2020
		Outfall 003	Outfall 004	Outfall 005	
Flow (MGD)	No Sampling Results	0.01880	0.02145	0.05252	No Sampling Results
pH (S.U.) Minimum		6.83	6.51	6.47	
pH (S.U.) Maximum		6.83	6.51	6.47	
TRC (mg/L) Average Monthly / Daily Max		< 0.1	<0.1	<0.1	
BOD5 (mg/L) Average Monthly / Daily Max		8.42	7.27	58	
COD (mg/L) Average Monthly / Daily Max		80.2	39.6	164	
TSS (mg/L) Average Monthly / Daily Max		13.6	< 5	93.2	
Oil and Grease (mg/L) Average Monthly / Daily Max		5.1	< 5	< 5	
Fecal Coliform (CFU/100 ml) Geometric Mean / Daily Max		4200	141	500	
TKN (mg/L) Average Monthly / Daily Max		1.4	1.1	3.4	
Total Phosphorus (mg/L) Average Monthly / Daily Max		0.369	0.225	1.96	
Total Iron (mg/L) Average Monthly / Daily Max		0.77	0.1	0.73	

DMR Data for Outfall 001 (from September 1, 2020 to August 31, 2021)

Parameter	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20
Flow (MGD) Average Monthly	0.453933	0.470406	0.46153	0.476347	0.449853	0.447851	0.450871	0.462331	0.467188	0.43042	0.419962	0.413885
Flow (MGD) Daily Maximum	0.5455416	0.562403	0.536347	0.572796	0.525373	0.513203	0.553934	0.533908	0.535587	0.499646	0.483402	0.473597
pH (S.U.) Minimum	7.78	7.71	7.85	7.55	7.66	8.03	7.75	7.53	7.46	7.54	7.51	7.66
pH (S.U.) Instantaneous Maximum	8.33	8.24	8.29	8.19	8.34	8.45	8.13	8.10	7.94	8.58	8.19	8.18
TRC (mg/L) Average Monthly	0.47	0.45	0.4462	0.35	0.40	0.44	0.46	0.46	0.42	0.46	0.44	0.46
TRC (mg/L) Instantaneous Maximum	1.2	0.89	0.75	0.71	1.07	0.96	1.04	0.86	0.96	1.09	0.71	0.71
BOD5 (lbs/day) Average Monthly	83	104	29.52	148	98	71	53	< 22	9.0	11	< 9	< 13
BOD5 (lbs/day) Daily Maximum	46.4	169	47.3	269	148	179	87	40	14.0	23	12	35
BOD5 (mg/L) Average Monthly	21.72	27.5	29.52	35	25.9	22.75	13.5	< 5.27	2.24	3.13	< 2.57	< 3.69
BOD5 (mg/L) Daily Maximum	166	42	47.3	61	38	65	21.6	9.65	3.22	6.52	3.64	9.54
TSS (lbs/day) Average Monthly	47	83	23.96	61	60	72	47	61	49.0	52	81	60
TSS (lbs/day) Daily Maximum	80	113	36	99	90	148	63	89	77.0	96	125	112
TSS (mg/L) Average Monthly	11.7	21.9	23.96	14.6	15.8	22.4	12.2	14.9	12.6	14.8	23.6	18
TSS (mg/L) Daily Maximum	8.3	28	36	23	23.2	54	15.2	21.6	19.2	26.8	37.6	30.8
Fecal Coliform (CFU/100 ml) Geometric Mean	< 1	6	13.82	> 1603	> 2737	501	> 582	98	21	90	297	> 662
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	5	45	220	6100	12200	8200	> 6000	600	143	480	745	9900

Compliance History

Effluent Violations for Outfall 001, from: October 1, 2020 To: August 31, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	04/30/21	Geo Mean	> 2737	CFU/100 ml	2000	CFU/100 ml
Fecal Coliform	05/31/21	Geo Mean	> 1603	CFU/100 ml	200	CFU/100 ml
Fecal Coliform	05/31/21	IMAX	6100	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform	04/30/21	IMAX	12200	CFU/100 ml	10000	CFU/100 ml

Summary of Inspections: A compliance evaluation inspection (CEI) was conducted on June 16, 2020.

Other Comments:

Notice of Violation dated 5/13/2015 for effluent violations, CACP dated 11/30/2017.
Notice of Violation dated 9/19/2019 for effluent violations, response received 2/10/2020.
Notice of Violation dated 1/22/2021 for effluent violations, this violation remains open and unsettled due to ongoing effluent violations.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .5
Latitude 41º 5' 14.22" **Longitude** -80º 24' 26.97"
Wastewater Description: IW Process effluent with and without ELG and sewage effluent from facility washrooms.

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
$CBOD_5$	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)

In accordance with 40 CFR §125.3, technology-based treatment requirements represent the minimum level of control that must be imposed to meet the best practicable control technology currently available (BPT) for conventional and other pollutants (i.e., some metals), best conventional pollutant control technology (BCT) for conventional pollutants, and available technology economically achievable (BAT) for toxic and other non-conventional pollutants. Where no technology-based effluent guidelines are available, case-by-case effluent limitations must be established under Section 402(a)(1)(B) of the Clean Water Act.

1) BOD5, Total Suspended Solids & pH
Pursuant to 40 CFR §122.44(a)(1) and Subpart A of 40 CFR §125, the discharge from Fairview Swiss Cheese must meet technology-based requirements established based on effluent limitations guidelines and standards (ELGs) found in 40 CFR §405 (Dairy Products Processing Point Source Category), other federal and state standards in 40 CFR §133.102 and 25 Pa. Code §§92a.48, and 95.2, and/or a case-by-case determination using Best Professional Judgment (BPJ). Each of Fairview Swiss Cheese's industrial processes is currently regulated by the following ELGs:

a) Natural and Process Cheese Making (40 CFR §405.62(a))

	Effluent Limitations (pounds per 100lb of BOD5 input)	
Parameter	**Daily Maximum**	**30-day Average**
BOD5	0.073	0.029
TSS	0.109	0.044
pH	6 to 9 SU	

b) Dry Whey – Fluid Products (40 CFR §405.122(a))

	Effluent Limitations (pounds per 100lb of BOD5 input)	
Parameter	**Daily Maximum**	**30-day Average**
BOD5	0.1	0.04
TSS	0.15	0.06
pH	6 to 9 SU	

c) Condensed Whey (40 CFR §405.112(a))

Parameter	Effluent Limitations (pounds per 100lb of BOD5 input)	
	Daily Maximum	**30-day Average**
BOD5	0.1	0.04
TSS	0.15	0.06
pH	6 to 9 SU	

The primary product is cheese. ELGs for dairy products express effluent limitations in terms of the "BOD5 input" which is defined as the biochemical oxygen demand of the materials entered into process. EPA's technical guidance indicated that the BOD5 content values of any given daily raw material can be determined by standard laboratory analysis and are reasonably consistent throughout most of the typical dairy and other raw materials.

The effluent limitations are based on the guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

The EPA development document for ELGs for diary product processing finalized in 1974 has consistently provided examples of calculating technical-based effluent limits (TBELs) using the average volume of raw materials being processed. Both EPA Permit Writer's Manual as well as DEP technical guidance no. 362-0400-001 also recommend generally using average values to calculate TBELs. Based on this, average raw milk equivalent data was considered. The raw milk equivalent is converted to the equivalent BOD5 input.

Average Annual Production from previous 5-years of Application Data (2012-2016):

a) Natural and Process Cheese Making (40 CFR §405.62(a)) – 376,143 lbs/day of BOD5 input.
b) Dry Whey (40 CFR §405.122(a)) – 299,333 lbs/day of BOD5 input.
c) Condensed Whey (40 CFR §405.112(a)) – 320,726 lbs/day of BOD5 input.

The Department also considers the anticipated average annual production for the next 5-years. The application stated that an increased average annual production is assumed to increase by 5% over the average BOD5 input for the 2016 and 2015 years. Therefore, the following anticipated average annual production data was utilized in the ELG calculations.

a) Natural and Process Cheese Making (40 CFR §405.62(a)) – 440,798 lbs/day of BOD5 input.
b) Dry Whey (40 CFR §405.122(a)) – 352,500 lbs/day of BOD5 input.
c) Condensed Whey (40 CFR §405.112(a)) – 377,692 lbs/day of BOD5 input.

Consequently, the following TBELs have been calculated (Calculation Worksheets are included as Attachment D):

Parameter	Limitations				
	Allowable Mass Loadings (lbs/day)		Allowable Concentrations (mg/l)		
	Max Daily	Average Monthly	Average Monthly	Max Daily	Inst. Max.
BOD_5	*(1051.98)*[1] 1,050	*(419.91)*[1] 420	*(100.70)*[1] 100	*(252.27)*[1] 250	*(200)*[2] 150
TSS	*(1575.76)*[1] 1,575	*(632.07)*[1] 630	*(151.57)*[1] 150	*(377.88)*[1] 375	*(300)*[2] 225
pH	---	---	6 to 9 S.U.		

1. The number in parenthesis is the calculated number from the spreadsheet prior to rounding.

2. The 150 mg/L BOD_5 and 225 mg/L TSS IMAX limits are being maintained from previous permit cycles to avoid backsliding. The Department does not expect there to be any issues with meeting this limit. This limit is strictly for compliance purposes and is not reportable on DMRs.

Water Quality-Based Limitations

A "Reasonable Potential Analysis" (Attachment B) determined the following parameters were candidates for limitations: Total Copper

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

Parameter	Limit (mg/l)	SBC	Model
Total Copper	Report	Average Monthly	Toxic Management Spreadsheet, Version 1.3
Total Copper	Report	Daily Maximum	Toxic Management Spreadsheet, Version 1.3

Total Residual Chlorine (TRC): At the downstream point of perennial flow, the TRC spreadsheet calculates that the technology limitation of 0.5 mg/L is protective of the receiving stream. Considering the actual discharge point is at least 2 to 3-miles from the compliance monitoring sampling point, no residual chlorine is expected in the discharge plume at the point of perennial conditions if the technology-based limitation of 0.5 mg/l is imposed.

WQM 7.0 modelling resulted in the following limitations (Attachment A):

CBOD5: 100 mg/l calculated by the ELG spreadsheet is protective. However, no concentration limitation is established. Only loading limitations are established.
Ammonia-Nitrogen: 25 mg/l (No NH3-N effluent limitation is necessary.)
Dissolved Oxygen (D.O.): 4.0 mg/l (No D.O. effluent limitation is necessary.)

Best Professional Judgment (BPJ) Limitations

N/A

Anti-Backsliding

Anti-backsliding does not apply to the proposed effluent limitations.

Development of Effluent Limitations

Outfall No.	002	**Design Flow (MGD)**	0
Latitude	41º 7' 3.24"	**Longitude**	-80º 22' 31.90"

Wastewater Description: Spills, Overflows, and Stormwater

Technology-Based Limitations

N/A

Water Quality-Based Limitations

N/A

Best Professional Judgment (BPJ) Limitations

The current permit has monitoring requirements for Flow, pH, TRC, BOD5, COD, TSS, Oil and Grease, Fecal Coliform, Total Kjeldahl Nitrogen (TKN), Total Phosphorus, and Total Iron.

Since this is an emergency outfall, flow monitoring will remain. Otherwise, the monitoring requirements in the proposed permit have been amended to align with the PAG-03 Appendix I requirements. TRC, Fecal Coliform, TKN, Total Phosphorus, and Total Iron monitoring requirements will be removed. See the following page for further discussion on Appendix I monitoring requirements.

Anti-Backsliding

Anti-backsliding does not apply since the proposed changes are for monitoring requirements only. This outfall does not have effluent limitations subject to anti-backsliding.

Outfall No.	003	**Design Flow (MGD)**	0
Latitude	41º 7' 14.00"	**Longitude**	-80º 21' 38.00"
Wastewater Description:	Stormwater		

Outfall No.	004	**Design Flow (MGD)**	0
Latitude	41º 7' 14.00"	**Longitude**	-80º 21' 40.00"
Wastewater Description:	Stormwater		

Outfall No.	005	**Design Flow (MGD)**	0
Latitude	41º 7' 8.00"	**Longitude**	-80º 21' 37.00"
Wastewater Description:	Stormwater		

This facility falls under Appendix I (Food and Kindred Products) of the PAG-03 General Permit (SIC Codes 2022 and 2023).

The monitoring requires associated with appendix I are as follows:

Parameter	Monitoring Requirements		Benchmark Values
	Minimum Measurement Frequency	Sample Type	
pH (S.U.)	1 / 6 months	Grab	XXX
5-Day Biochemical Oxygen Demand (BOD5) (mg/L)	1 / 6 months	Grab	XXX
Total Suspended Solids (TSS) (mg/L)	1 / 6 months	Grab	100
Chemical Oxygen Demand (COD) (mg/L)	1 / 6 months	Grab	120
Nitrate + Nitrite-Nitrogen (mg/L)	1 / 6 months	Grab	XXX
Oil and Grease (mg/L)	1 / 6 months	Grab	30

The current permit has monitoring requirements for Flow, pH, TRC, BOD5, COD, TSS, Oil and Grease, Fecal Coliform, Total Kjeldahl Nitrogen (TKN), Total Phosphorus, and Total Iron.

The monitoring requirements in the proposed permit have been amended to align with the PAG-03 Appendix I requirements. Flow, TRC, Fecal Coliform, TKN, Total Phosphorus, and Total Iron monitoring requirements will be removed.

Anti-Backsliding

Anti-backsliding does not apply since the proposed changes are for monitoring requirements only. The stormwater outfalls do not have effluent limitations subject to anti-backsliding.

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	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
BOD5	420	1050	XXX	Report	Report	150	1/week	24-Hr Composite
TSS	630	1575	XXX	Report	Report	225	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Total Copper (ug/L)	XXX	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 001 sampling point located after disinfection and prior to mixing with any other waters (See Figure 4 for the location of the sampling point).

Other Comments: The sampling location was previously referred to as IMP 101 but the results were reported under Outfall 001. The location of monitoring for Outfall 001 should not matter since it is being monitored after disinfection and no other waters mix with the waste stream prior to it reaching outfall 001 at the Shenango River.

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	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/discharge	Estimate
pH (S.U.)	XXX	XXX	XXX	XXX	Report	XXX	1/discharge	Grab
BOD5	XXX	XXX	XXX	XXX	Report	XXX	1/discharge	Grab
COD	XXX	XXX	XXX	XXX	Report	XXX	1/discharge	Grab
TSS	XXX	XXX	XXX	XXX	Report	XXX	1/discharge	Grab
Oil and Grease	XXX	XXX	XXX	XXX	Report	XXX	1/discharge	Grab
Nitrate-Nitrite	XXX	XXX	XXX	XXX	Report	XXX	1/discharge	Grab

Compliance Sampling Location: Outfall 002 prior to mixing with other waste streams

Other Comments: N/A

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 003, 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		
pH (S.U.)	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
BOD5	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
COD	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
TSS	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Oil and Grease	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Nitrate-Nitrite	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab

Compliance Sampling Location: Outfall 003 prior to mixing with other waste streams

Other Comments: N/A

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 004, 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		
pH (S.U.)	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
BOD5	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
COD	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
TSS	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Oil and Grease	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Nitrate-Nitrite	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab

Compliance Sampling Location: Outfall 003 prior to mixing with other waste streams

Other Comments: N/A

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 005, 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		
pH (S.U.)	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
BOD5	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
COD	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
TSS	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Oil and Grease	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Nitrate-Nitrite	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab

Compliance Sampling Location: Outfall 003 prior to mixing with other waste streams

Other Comments: N/A

Figure 1 - eMAP with Aerial Imagery and Stream Designation

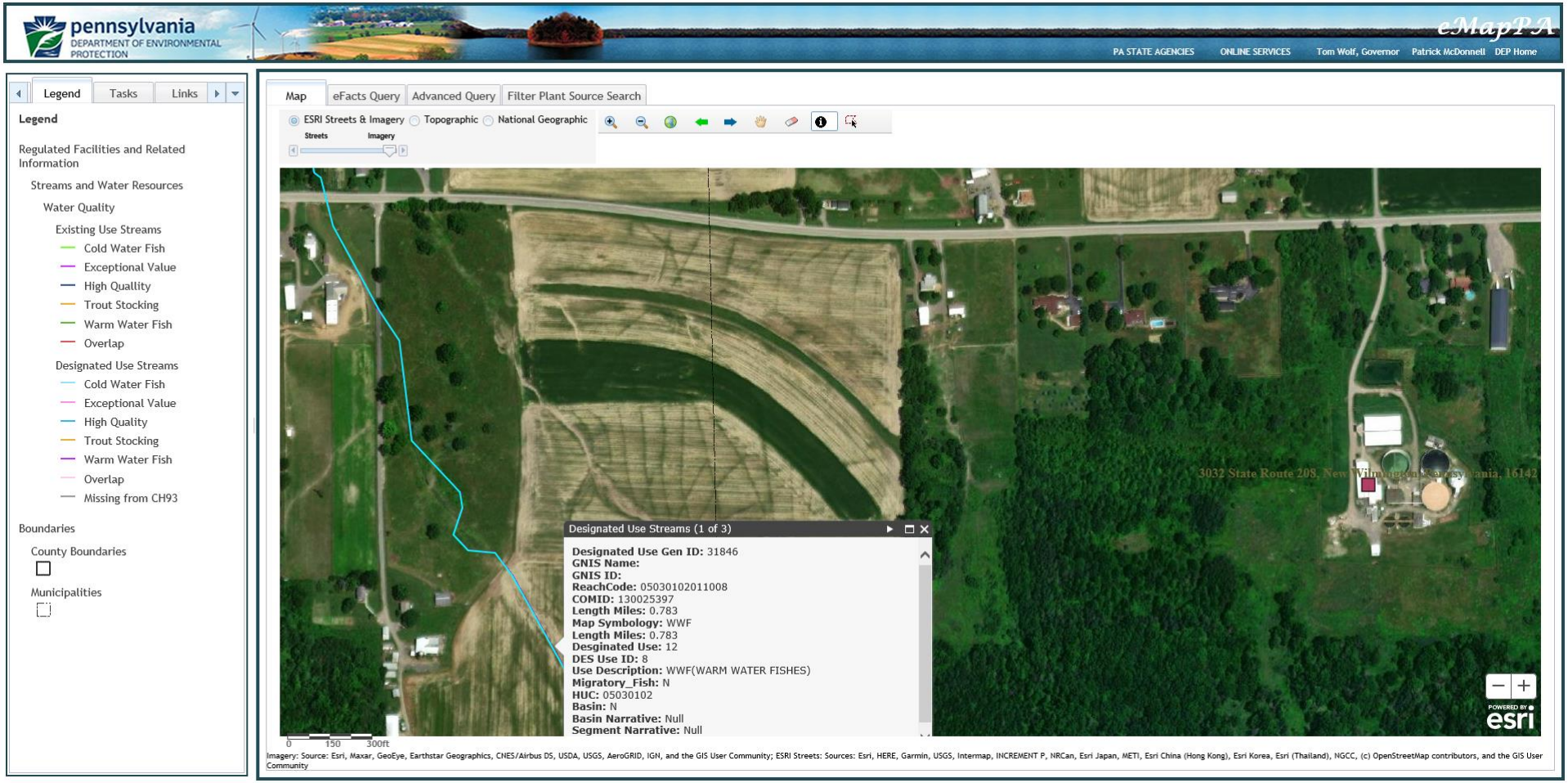


Figure 2 - Google Earth – Outfall Locations (overall)

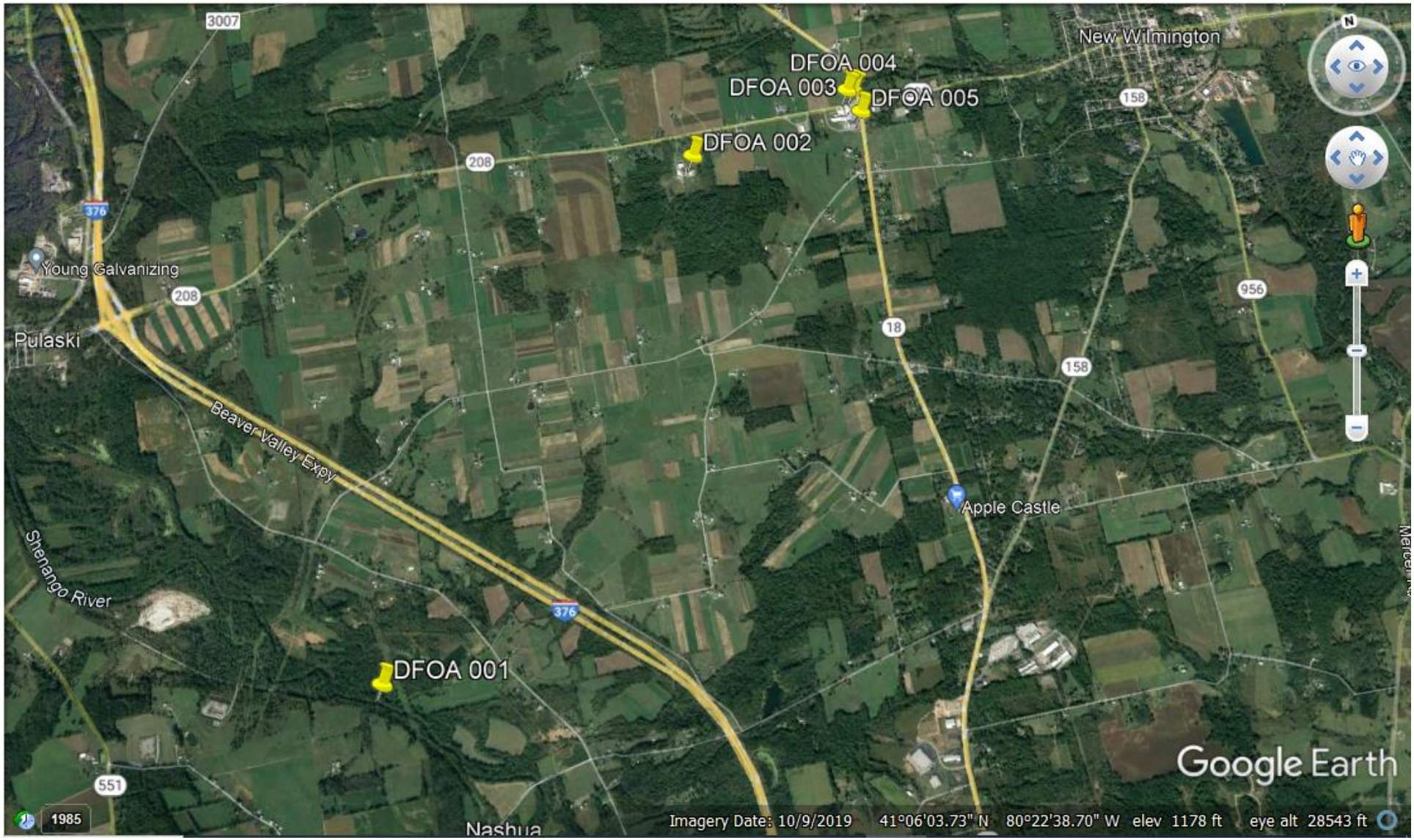


Figure 2 - Google Earth – Outfall Locations (facility)

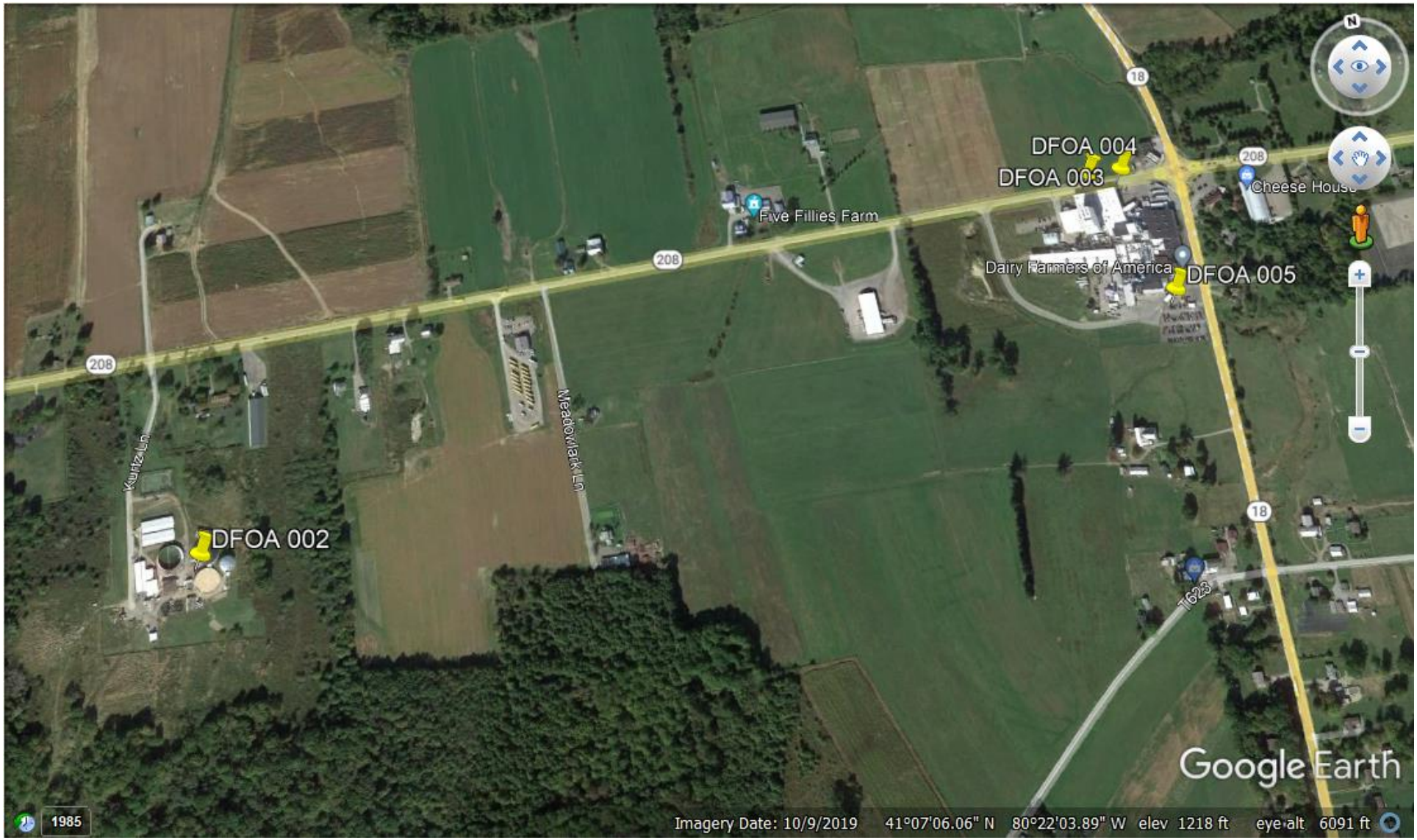


Figure 4 - Outfall 001 Sampling Point Location (diagram from application)

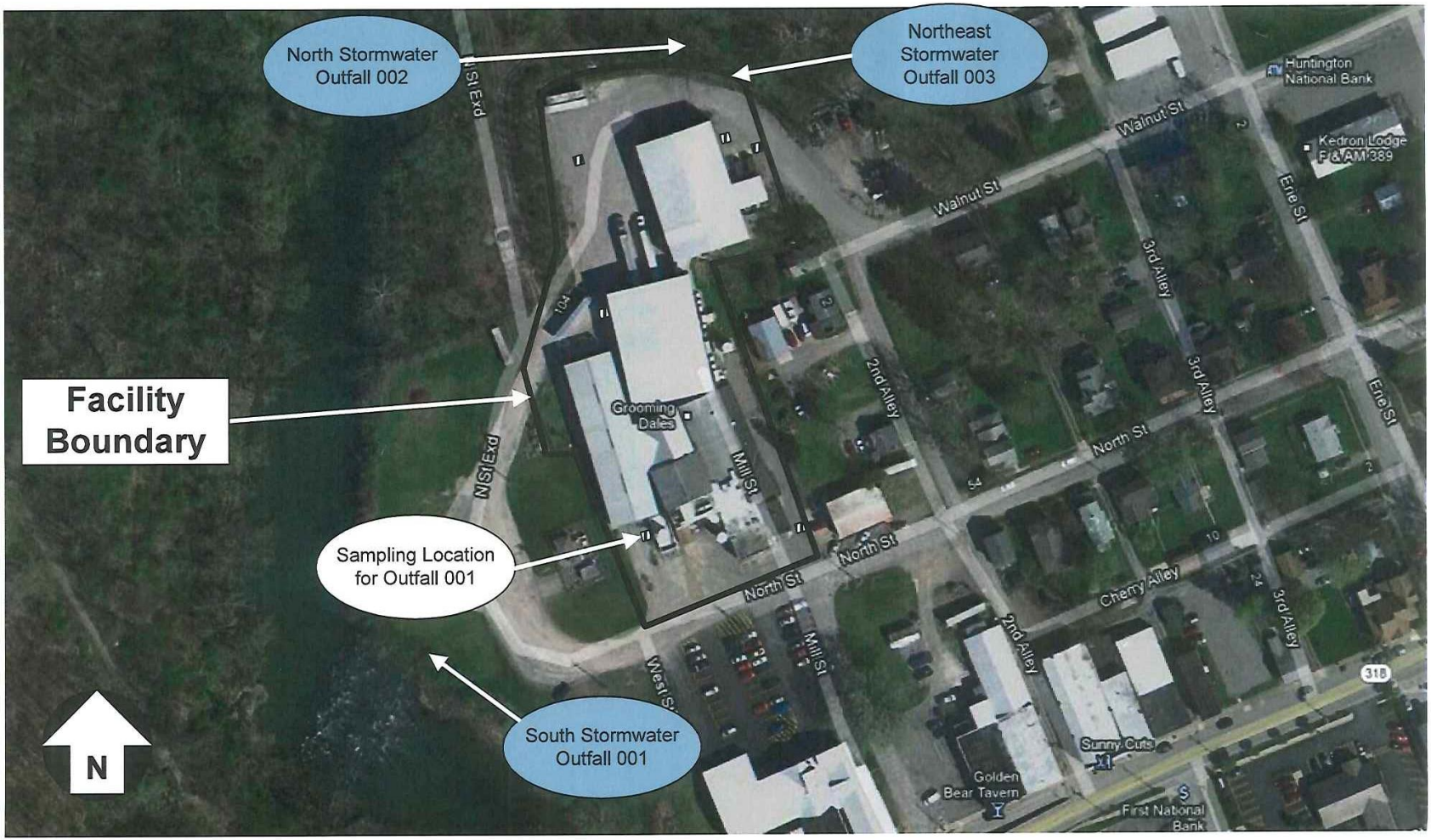


Figure 5 – Process Diagram (from application)

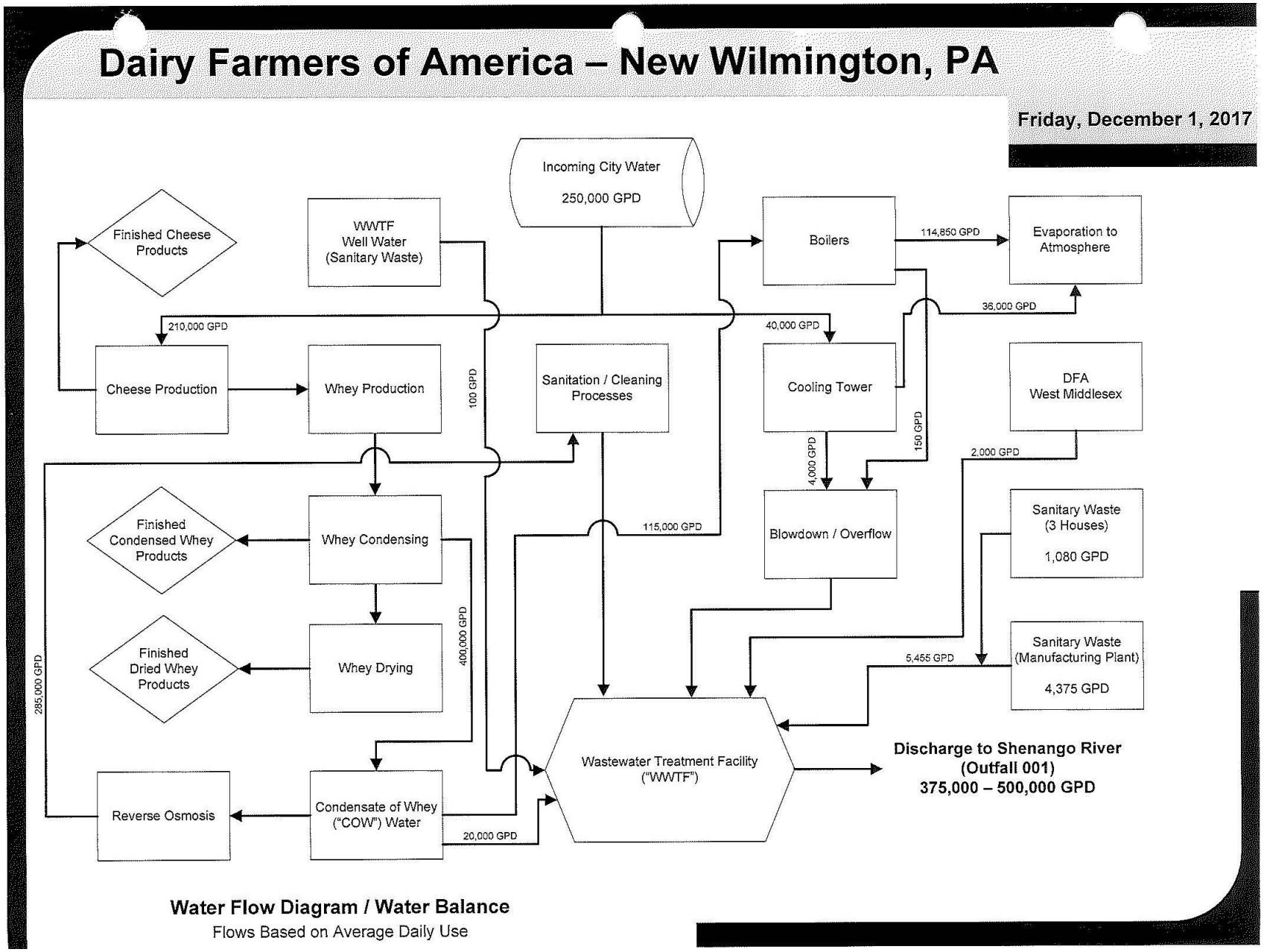


Figure 6 – WWTP Diagram (from application)

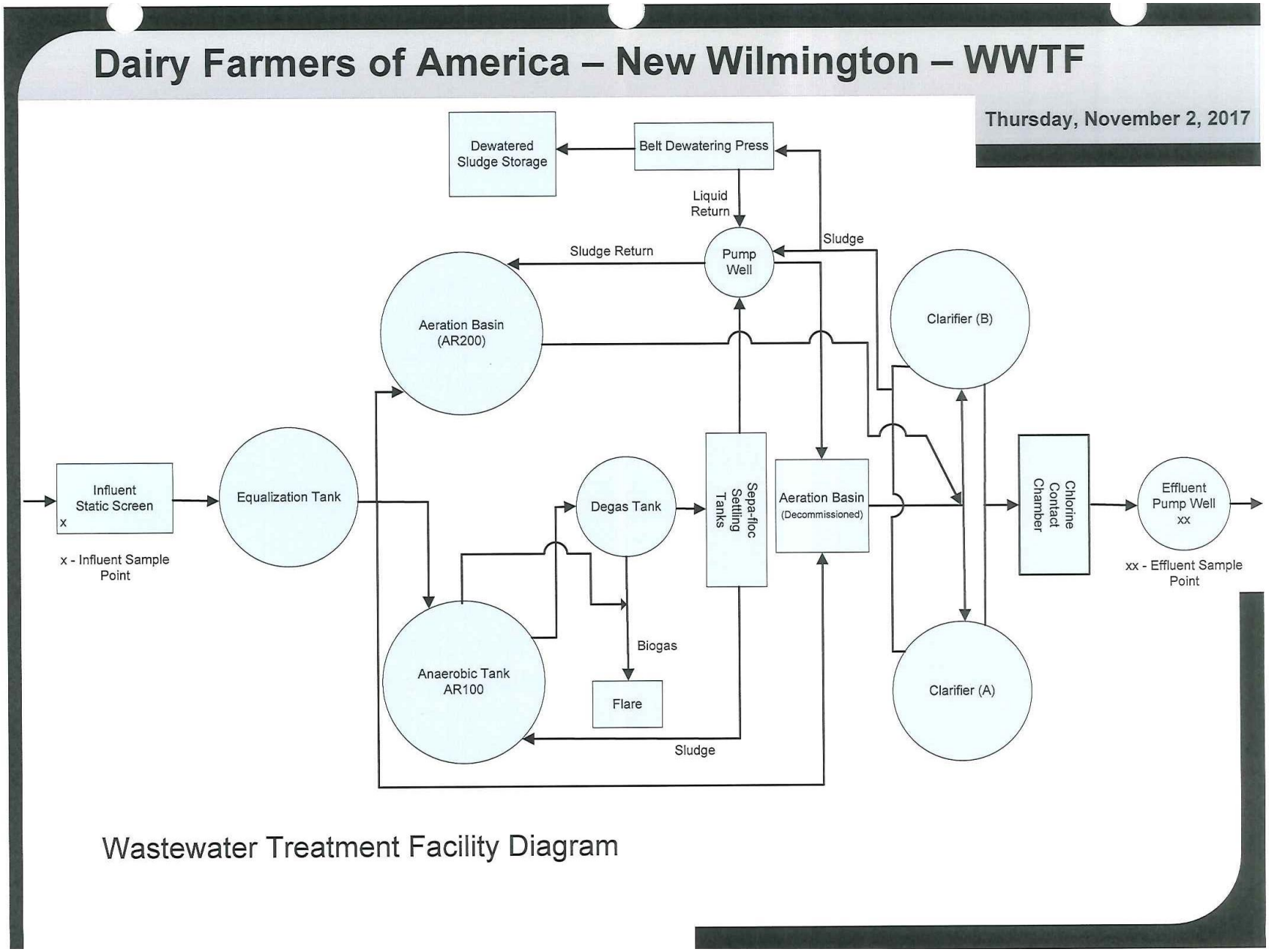
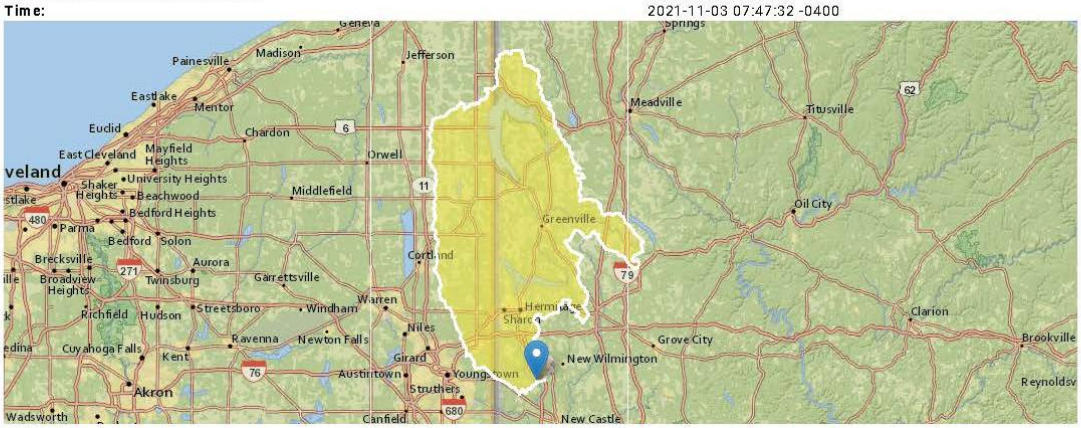


Figure 7 – USGS StreamStats – Watershed Area at Outfall 001 (RMI 12.75)

StreamStats Report - DFA - Drainage Area at Outfall 001

Region ID:	PA
Workspace ID:	PA20211103114710677000
Clicked Point (Latitude, Longitude):	41.08683, -80.40648
Time:	2021-11-03 07:47:32 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	766	square miles

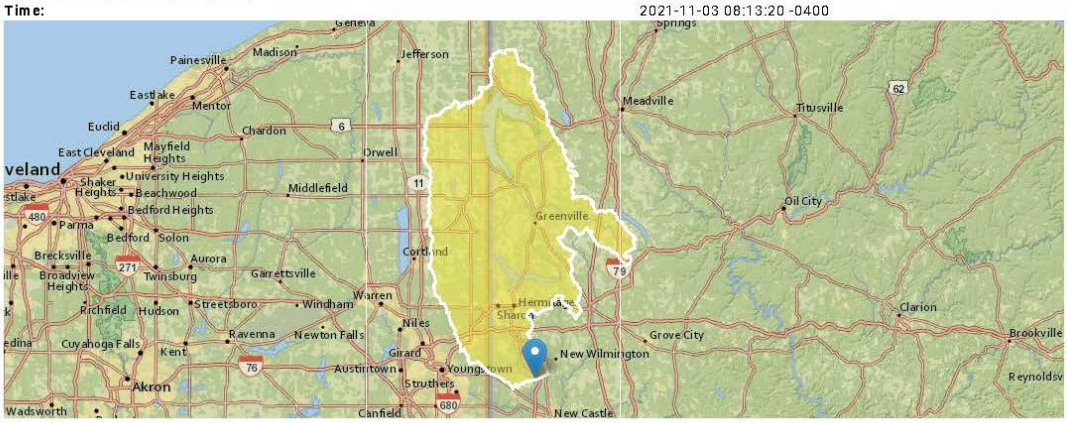
Application Version: 4.6.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

https://streamstats.usgs.gov/ss/ 11/3/2021

Figure 8 – USGS StreamStats – Watershed Area at UNT 35870 to Shenango River (RMI 11.78)

StreamStats Report - DFA - Drainage Area at Shenango confluence with UNT 35870

Region ID:	PA
Workspace ID:	PA20211103121258646000
Clicked Point (Latitude, Longitude):	41.08134, -80.39577
Time:	2021-11-03 08:13:20 -0400



Basin Characteristics

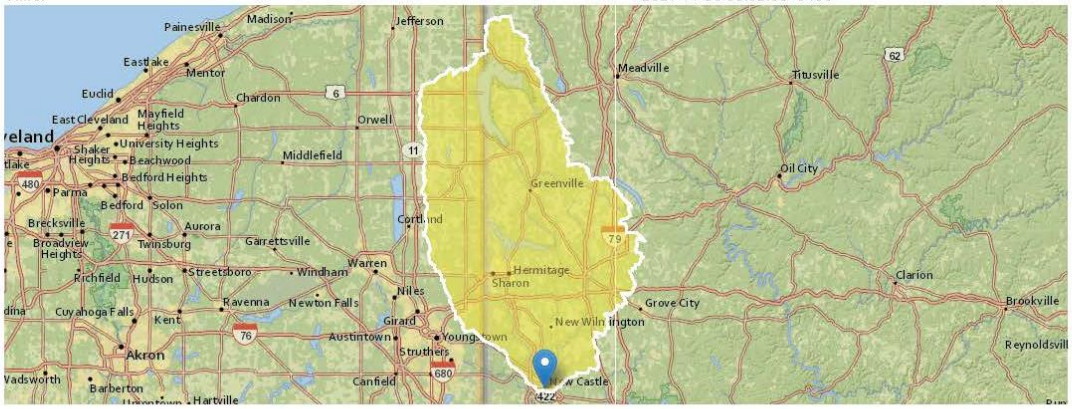
Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	768	square miles

Application Version: 4.6.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

Figure 8 – USGS StreamStats – Watershed Area at Neshannock Creek confluence with Shenango River (RMI 2.97

StreamStats Report - DFA - Drainage Area at Shenango confluence with Neshannock Creek

Region ID:	PA
Workspace ID:	PA20211103120141561000
Clicked Point (Latitude, Longitude):	40.99185, -80.35418
Time:	2021-11-03 08:02:03 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1040	square miles

Application Version: 4.6.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

Attachment A – WQM 7.0 Model Output

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
	20A	35482	SHENANGO RIVER	**12.750**	799.00	766.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.162	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	8.00	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
DFOA	PA0005860	0.5000	0.5000	0.5000	0.000	25.00	8.10

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	110.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	8.24	0.00	0.00
NH3-N	25.00	0.10	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
20A	35482	SHENANGO RIVER	**11.780**	798.00	768.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.162	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

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
20A	35482	SHENANGO RIVER	**2.970**	782.00	1040.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.162	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
20A	35482	SHENANGO RIVER

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												
12.750	124.09	0.00	124.09	.7735	0.00020	1.151	196.01	170.29	0.55	0.107	25.00	8.00
11.780	124.42	0.00	124.42	.7735	0.00034	1.136	192.81	169.73	0.57	0.942	24.99	7.99
Q1-10 Flow												
12.750	79.42	0.00	79.42	.7735	0.00020	NA	NA	NA	0.43	0.137	25.00	8.00
11.780	79.63	0.00	79.63	.7735	0.00034	NA	NA	NA	0.45	1.207	24.99	7.99
Q30-10 Flow												
12.750	168.77	0.00	168.77	.7735	0.00020	NA	NA	NA	0.66	0.090	25.00	8.00
11.780	169.21	0.00	169.21	.7735	0.00034	NA	NA	NA	0.68	0.794	24.99	7.99

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20A	35482	SHENANGO RIVER

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
12.750	DFOA	2.58	50	2.58	50	0	0
11.780		NA	NA	2.63	NA	NA	NA

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
12.750	DFOA	.56	25	.56	25	0	0
11.780		NA	NA	.57	NA	NA	NA

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)		
12.75	DFOA	110	110	25	25	4	4	0	0
11.78		NA	NA	NA	NA	NA	NA	NA	NA

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20A	35482	SHENANGO RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
12.750	0.500	25.000	8.001
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
196.015	1.151	170.295	0.553
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.67	0.355	0.25	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.217	0.568	Tsivoglou	6
Reach Travel Time (days)			
0.107			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.011	2.66	0.25	7.54
0.021	2.64	0.25	7.54
0.032	2.63	0.25	7.54
0.043	2.62	0.24	7.54
0.054	2.61	0.24	7.54
0.064	2.59	0.24	7.54
0.075	2.58	0.24	7.54
0.086	2.57	0.23	7.54
0.096	2.56	0.23	7.54
0.107	2.54	0.23	7.54

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
11.780	0.500	24.987	7.991
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
192.815	1.136	169.733	0.572
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.54	0.169	0.13	1.028
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.540	1.032	Tsivoglou	6
Reach Travel Time (days)			
0.942			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.094	2.49	0.12	7.49
0.188	2.44	0.11	7.46
0.283	2.39	0.10	7.43
0.377	2.35	0.09	7.41
0.471	2.30	0.08	7.40
0.565	2.26	0.07	7.40
0.659	2.21	0.07	7.39
0.754	2.17	0.06	7.40
0.848	2.12	0.05	7.40
0.942	2.08	0.05	7.41

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20A	35482	SHENANGO RIVER

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)
12.750	DFOA	PA0005860	0.500	CBOD5	110		
				NH3-N	25	50	
				Dissolved Oxygen			4

Attachment B – Toxics Management Spreadsheet

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Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: Dairy Farmers of America NPDES Permit No.: PA0005860 Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Industrial Waste and Sewage

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
0.5	148	8.21						

					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		3554									
	Chloride (PWS)	mg/L		715									
	Bromide	mg/L		0.6									
	Sulfate (PWS)	mg/L		43.6									
	Fluoride (PWS)	mg/L	<	0.4									
Group 2	Total Aluminum	µg/L		11.2									
	Total Antimony	µg/L		1.4									
	Total Arsenic	µg/L	<	1									
	Total Barium	µg/L		2.5									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L		77									
	Total Cadmium	µg/L	<	0.5									
	Total Chromium (III)	µg/L		1.7									
	Hexavalent Chromium	µg/L	<	10									
	Total Cobalt	µg/L	<	1									
	Total Copper	µg/L		37.8									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L		20									
	Dissolved Iron	µg/L	<	50									
	Total Iron	µg/L	<	50									
	Total Lead	µg/L		4.2									
	Total Manganese	µg/L	<	0.04									
	Total Mercury	µg/L		0.04									
	Total Nickel	µg/L		3.1									
	Total Phenols (Phenolics) (PWS)	µg/L	<	10									
	Total Selenium	µg/L	<	1									
	Total Silver	µg/L	<	0.2									
	Total Thallium	µg/L	<	1									
	Total Zinc	µg/L		16.1									
	Total Molybdenum	µg/L		2.6									
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

Group 3	Carbon Tetrachloride	µg/L	<										
	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											

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Dairy Farmers of America, NPDES Permit No. PA0005860, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Shenango River**

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	035482	12.75	799	766			Yes
End of Reach 1	035482	2.97	782	1040			Yes

$Q_{7\text{-}10}$

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	12.75	0.162										100	7		
End of Reach 1	2.97	0.162													

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	12.75														
End of Reach 1	2.97														

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Dairy Farmers of America, NPDES Permit No. PA0005860, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ ***Hydrodynamics***

$Q_{7\text{-}10}$

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)
12.75	124.09		124.09	0.774	0.00033	1.137	192.828	169.607	0.57	1.049	2288.456
2.97	168.48		168.48								

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)
12.75	502.25		502.25	0.774	0.00033	2.099	192.828	91.871	1.243	0.481	920.887
2.97	656.133		656.13								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.081 Analysis Hardness (mg/l): 103.43 Analysis pH: 7.03

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	10,491	
Total Antimony	0	0		0	1,100	1,100	15,387	
Total Arsenic	0	0		0	340	340	4,756	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	293,758	
Total Boron	0	0		0	8,100	8,100	113,307	
Total Cadmium	0	0		0	2.081	2.21	30.9	Chem Translator of 0.943 applied
Total Chromium (III)	0	0		0	585.727	1,854	25,929	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	228	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	1,329	
Total Copper	0	0		0	13.873	14.5	202	Chem Translator of 0.96 applied

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	66.997	85.2	1,192	Chem Translator of 0.786 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	23.0	Chem Translator of 0.85 applied
Total Nickel	0	0		0	481.793	483	6,753	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	3.409	4.01	56.1	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	909	
Total Zinc	0	0		0	120.579	123	1,725	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 720 PMF: 0.561 Analysis Hardness (mg/l): 100.53 Analysis pH: 7.00

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	20,017	
Total Arsenic	0	0		0	150	150	13,648	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	373,046	
Total Boron	0	0		0	1,600	1,600	145,579	
Total Cadmium	0	0		0	0.247	0.27	24.7	Chem Translator of 0.909 applied
Total Chromium (III)	0	0		0	74.435	86.6	7,875	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	946	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	1,729	
Total Copper	0	0		0	8.996	9.37	853	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	242,144	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.531	3.2	291	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	82.4	Chem Translator of 0.85 applied
Total Nickel	0	0		0	52.239	52.4	4,767	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	454	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	1,183	
Total Zinc	0	0		0	118.667	120	10,950	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 720 PMF: 0.561 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	510	
Total Arsenic	0	0		0	10	10.0	910	
Total Barium	0	0		0	2,400	2,400	218,368	
Total Boron	0	0		0	3,100	3,100	282,059	
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	
Dissolved Iron	0	0		0	300	300	27,296	
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	90,987	
Total Mercury	0	0		0	0.050	0.05	4.55	
Total Nickel	0	0		0	610	610	55,502	
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	21.8	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 720 PMF: 0.884 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	
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	130	AFC	Discharge Conc > 10% WQBEL (no RP)

☑ ***Other Pollutants without Limits or Monitoring***

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	6,725	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	510	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	188,287	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	72,625	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	19.8	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	7,875	µg/L	Discharge Conc ≤ 10% WQBEL

Hexavalent Chromium	146	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	852	µg/L	Discharge Conc < TQL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	27,296	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	242,144	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	291	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	90,987	µg/L	Discharge Conc < TQL
Total Mercury	4.55	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	4,328	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	454	µg/L	Discharge Conc < TQL
Total Silver	36.0	µg/L	Discharge Conc < TQL
Total Thallium	21.8	µg/L	Discharge Conc < TQL
Total Zinc	1,105	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

Attachment C – TRC Spreadsheet

1A	B	C	D	E	F	G
2	**TRC EVALUATION**					
3	Input appropriate values in B4:B8 and E4:E7					
4	124.09	= Q stream (cfs)		0.5	= CV Daily	
5	0.5	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
	0	= % Factor of Safety (FOS)		0	=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA afc = 51.195		1.3.2.iii	WLA cfc = 49.904
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= 19.077		5.1d	LTA_cfc = 29.012
14						
15	Source		Effluent Limit Calculations			
16	PENTOXSD TRG	5.1f	AML MULT = 1.231			
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500		BAT/BPJ	
18			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)**

Attachment D – ELG Calculations

Calculation of Technology Based Effluent Limitations

Case **Dairy Farmers of America** NPDES # **PA0005860**
Outfall **001** Wasteflow **0.5** mgd
Industry Category and Subcategory: **Dairy** **Subpart F - Natural and Processed Cheese**
Applicable ELG: 40 CFR **405.62(a)**
Production Rate Used and Basis for Selection: **Application**
Production based on a projected average annual production of 440,798 lbs/day BOD5 input equivalent
lbs/year of BOD5 input: **160,891,270** (Approximate - Based on 440,798 lbs/day)
Average Production Days per Month: **30.4 to 30.5**
Average Annual Production 5-years application data: **376,143** **lbs/day BOD5 input** (From application - Calculations verified below)
lbs/day of BOD5 input: **440,798** **lbs/day BOD5 input** (Projected annual production in application)

Parameter	ELG Information			Limitations				
				Allowable Mass Loadings (lbs/day)		Allowable Concentrations (mg/l)		
	Max 1-day	Avg 30-day	Units	Max Daily	Avg Monthly	Avg Monthly	Max Daily	Inst Max
NATURAL AND PROCESS CHEESE MAKING								
BOD_5	0.073	0.029	#/100 lbs BOD5 input	321.7825	127.83142	30.65502	77.16608	
TSS	0.109	0.044	#/100 lbs BOD5 input	480.4698	193.95112	46.51106	115.2206	
pH	6 to 9 S.U.					6 to 9 S.U.		

YEAR	TOTAL ANNUAL PRODUCTION (lbs BOD5 Input)	AVG. PROD DAYS PER MONTH	AVG. ANNUAL PRODUCTION PER DAY (lbs BOD5 Input)
2012	120,491,364	30.5	329,211
2013	126,759,296	30.4	347,286
2014	133,079,240	30.4	364,601
2015	156,086,947	30.4	427,635
2016	150,785,123	30.5	411,981
AVG.	137,440,394	30.44	

AVG PER DAY	376,143 lbs BOD 5 Input average for the years 2012-2016

Calculation of Technology Based Effluent Limitations

Case **Dairy Farmers of America** NPDES # **PA0005860**
Outfall **001** Wasteflow **0.5** mgd
Industry Category and Subcategory: **Dairy** **Subpart L - Dry Whey**
Applicable ELG: 40 CFR **405.122(a)**
Production Rate Used and Basis for Selection: **Application**
Production based on a projected average annual production of 352,500 lbs/day BOD5 input equivalent
lbs/year of BOD5 input: **128,662,500** (Approximate - Based on 352,500 lbs/day)
Average Production Days per Month: **30.4 to 30.5**
Average Annual Production 5-years application data: **299,333** **lbs/day BOD5 input** (From application - Calculations verified below)
lbs/day of BOD5 input: **352,500** **lbs/day BOD5 input** (Projected annual production in application)

Parameter	ELG Information			Limitations				
				Allowable Mass Loadings (lbs/day)		Allowable Concentrations (mg/l)		
	Max 1-day	Avg 30-day	Units	Max Daily	Avg Monthly	Avg Monthly	Max Daily	Inst Max
DRY WHEY								
BOD_5	0.1	0.04	#/100 lbs BOD5 input	352.5	141	33.81295	84.53237	
TSS	0.15	0.06	#/100 lbs BOD5 input	528.75	211.5	50.71942	126.7986	
pH	6 to 9 S.U.					6 to 9 S.U.		

YEAR	TOTAL ANNUAL PRODUCTION (lbs BOD5 Input)	AVG. PROD DAYS PER MONTH	AVG. ANNUAL PRODUCTION PER DAY (lbs BOD5 Input)
2012	95,008,414	30.5	259,586
2013	100,755,425	30.4	276,042
2014	105,707,600	30.4	289,610
2015	125,487,626	30.4	343,802
2016	119,911,312	30.5	327,627
AVG.	109,374,075	30.44	

AVG PER DAY	299,333 lbs BOD 5 Input average for the years 2012-2016

Calculation of Technology Based Effluent Limitations

Case **Dairy Farmers of America** NPDES # **PA0005860**
Outfall **001** Wasteflow **0.5** mgd
Industry Category and Subcategory: **Dairy** **Subpart K - Condensed Whey**
Applicable ELG: 40 CFR **405.112(a)**
Production Rate Used and Basis for Selection: **Application**
Production based on a projected average annual production of 377,692 lbs/day BOD5 input equivalent
lbs/year of BOD5 input: **137,857,580** (Approximate - Based on 377,692 lbs/day)
Average Production Days per Month: **30.4 to 30.5**
Average Annual Production 5-years application data: **320,726** **lbs/day BOD5 input** (From application - Calculations verified below)
lbs/day of BOD5 input: **377,692** **lbs/day BOD5 input** (Projected annual production in application)

Parameter	ELG Information			Limitations				
				Allowable Mass Loadings (lbs/day)		Allowable Concentrations (mg/l)		
	Max 1-day	Avg 30-day	Units	Max Daily	Avg Monthly	Avg Monthly	Max Daily	Inst Max
CONDENSED WHEY								
BOD_5	0.1	0.04	#/100 lbs BOD5 input	377.692	151.0768	36.22945	90.57362	
TSS	0.15	0.06	#/100 lbs BOD5 input	566.538	226.6152	54.34417	135.8604	
pH	6 to 9 S.U.					6 to 9 S.U.		

YEAR	TOTAL ANNUAL PRODUCTION (lbs BOD5 Input)	AVG. PROD DAYS PER MONTH	AVG. ANNUAL PRODUCTION PER DAY (lbs BOD5 Input)
2012	101,798,365	30.5	278,138
2013	107,956,097	30.4	295,770
2014	113,262,187	30.4	310,307
2015	134,455,830	30.4	368,372
2016	128,480,994	30.5	351,041
AVG.	117,190,695	30.44	

AVG PER DAY	320,726 lbs BOD5 Input average for the years 2012-2016

Calculation of Technology Based Effluent Limitations

Case	**Dairy Farmers of America**			NPDES #	**PA0005860**
Outfall	**001**	Wasteflow		**0.5**	mgd
Industry Category and Subcategory:		**Dairy**		**F, L, and K**	
Applicable ELG:		40 CFR	**405.15**		
Production Rate Used and Basis for Selection:					**Application**

Production based on a projected average annual production of BOD5 input equivalent for each category

lbs/year of raw milk:	**N/A**	
Average Production Days per Month:	**30.4 to 30.5**	
Average Annual Production 5-years application data:	**N/A**	
lbs/day of BOD5 input:	**N/A**	**lbs/day BOD5 input**

Parameter	ELG Information			Limitations				
				Allowable Mass Loadings (lbs/day)		Allowable Concentrations (mg/l)		
	Max 1-day	Avg 30-day	Units	Max Daily	Avg Monthly	Avg Monthly	Max Daily	Inst Max
TOTAL (Natural and Processed Cheese + Dry Whey + Condensed Whey)								
BOD_5				1051.975	419.90822	100.6974	252.2721	
TSS				1575.758	632.06632	151.5747	377.8796	
pH							6 to 9 S.U.	
This is the total technology based limitations for 001.								