pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0266345**
Facility Type	**Industrial**	APS ID	**891784**
Major / Minor	**Major**	Authorization ID	**1394688**

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

Applicant and Facility Information

Applicant Name	**Keystone Protein Co.**	Facility Name	**Keystone Protein Fredericksburg**
Applicant Address	154 W Main Street Fredericksburg, PA 17026-9510	Facility Address	568 Chestnut Hill Road Fredericksburg, PA 17026-9337
Applicant Contact	Mike Bracrella	Facility Contact	Mike Bracrella
Applicant Phone	(717) 865-1104	Facility Phone	(717) 865-1104
Client ID	326322	Site ID	814165
SIC Code	2015	Municipality	Bethel Township
SIC Description	Manufacturing - Poultry Slaughtering And Processing	County	Lebanon
Date Application Received	May 2, 2022	EPA Waived?	No
Date Application Accepted	May 19, 2022	If No, Reason	Major Facility, Significant CB Discharge
Purpose of Application	NPDES permit renewal for discharge of treated industrial wastewater		

Summary of Review

1.0 General Discussion

This fact sheet supports the renewal of an existing NPDES permit for a discharge of treated industrial waste from Keystone Protein's poultry processing and rendering plants and hatchery operations located in Bethel Township, Lebanon County. Process wastewater sources to the wastewater treatment plant are from raw product (live chicken) killing, scalding, feather removal, offal recovery, evisceration(final bird wash), ammonia compressor cooling water, air chillers, bulk ice packaging of chicken, boiler blowdown, plant sanitation clean-up and final screening. Other sources of wastewater to the plant include recovered feather, blood and offal processing wastewater from the rendering facility and wastewater from the hatchery. The facility replaced the former rendering facility with permit number PA0080829. The final build-out hydraulic design capacity of the treatment facility is 3 mgd, but the design and construction is expected to occur in 3 phases. The 1st phase of the project with a design capacity of 1.05MGD has been completed and online in December 2021. The 2nd phase will increase capacity to 2 MGD and the 3rd phase will increase the capacity to 3 MGD. The NPDES permit will include a condition that requires permittee to start phase 2 of the project when average flow reaches 1.05MGD two times in a quarter and to start phase 3 of the project when average flow reaches 2.0MGD two times in a quarter. The facility falls under SIC 2015, 2077 and 0254 and is covered under ELG. Wastewater from the various are screened and pretreated with a dissolved air flotation (DAF) treatment cell with chemical coagulation and flocculation prior to a 4-stage activated sludge nutrient removal treatment system with final clarification and filtration and UV disinfection. Some of the existing tanks at the former rendering plant were retrofitted for use with the new treatment facility. Treated effluent is pumped to Little Swatara Creek which is classified as WWF and MF. The permitted Annual Average Design Flow is 1.05 MGD. The existing permit was issued on October 26, 2017 with effective date of November 1, 2017 and expiration date of October 31, 2022. The permit was amended on September 27, 2018 to address third party challenge of the permit. The applicant submitted a timely NPDES renewal application to the Department and is

Approve	Deny	Signatures	Date
X		*J. Pascal Kwedza* J. Pascal Kwedza, P.E. / Environmental Engineer	November 3, 2023
X		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	November 15, 2023
X		*Maria D. Bebenek* Maria D. Bebenek, P.E. / Program Manager	November 15, 2023

Summary of Review

currently operating under the terms and conditions in the existing permit under administrative extension provisions pending Department action on the renewal application. A topographical map showing discharge location is presented in attachment A. Schematic water flow diagram showing the various sources and amounts of process wastewater produced is presented in attachment B and diagram showing treatment units are presented in attachment C.

1.1 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.

1.2 Existing Permit Limitations and Monitoring Requirements

	DISCHARGE LIMITATIONS						MONITORING REQUIREMENTS	
	Mass Units (lbs/day)		Concentrations (mg/l)					
Discharge Parameter	Avg Monthly	Max Daily	Minimum	Average Monthly	Maximum Daily	Inst. Maximum	Minimum Measurement Frequency	Required Sample Type
Flow (mgd)	Monitor & Report	Monitor & Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	From 6.0 to 9.0 inclusive				1/day	Grab
D.O.	XXX	XXX	Minimum of 5.0 mg/l at all times				1/day	Grab
CBOD5	Report	Report	XXX	10	20	25	2/week	24-Hr Composite
TSS	Report	Report	XXX	20	40	50	2/week	24-Hr Composite
Total Dissolved Solids	Report	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite
Oil and Grease	Report	Report	XXX	8	14	16	2/week	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	400 Geo Mean	400	XXX	2/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	400	XXX	2/week	Grab
Total Nitrogen	XXX	XXX	XXX	103.0	147.0	XXX	2/week	Calculation
Ammonia Nov 1 - Apr 30	Report	Report	XXX	4	8	10	2/week	24-Hr Composite
Ammonia May 1 - Oct 31	26	53.0	XXX	3	6	7.5	2/week	24-Hr Composite
Total Phosphorus	18	35	XXX	2	4	5	2/week	24-Hr Composite
Sulfate	Report	XXX	XXX	Report	Report	XXX	2/week	24-Hr Composite

Summary of Review

Ultraviolet light transmittance(%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
Chloride	Report	XXX	XXX	Report	Report	XXX	2/week	24-Hr Composite

1.2.1 Chesapeake Bay Limits and Monitoring Requirements

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Ammonia--N	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Net Total Nitrogen	Report	19,786	XXX	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	Report	380.5	XXX	XXX	XXX	XXX	1/month	Calculation

1.2.2 Storm water Outfalls 002 & 003

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

1.3 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	3
Latitude	40º 25' 0.01"	Longitude	-76º 23' 47.99"
Quad Name	Fredericksburg	Quad Code	4007604
Wastewater Description:	IW Process Effluent with ELG		

Receiving Waters	Little Swatara Creek (WWF, MF)	Stream Code	09888
NHD Com ID	56396243	RMI	6.97
Drainage Area	69.7	Yield (cfs/mi^2)	0.066
Q_{7-10} Flow (cfs)	4.57	Q_{7-10} Basis	USGS Gage Station
Elevation (ft)	435	Slope (ft/ft)	
Watershed No.	7-D	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
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		
PWS Waters	Swatara Creek	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	

Changes Since Last Permit Issuance: N/A

1.3.1 Water Supply Intake:

The closest water supply intake located downstream from the discharge is Pennsylvania American Water Company in South Hanover Twp., Dauphin County. The distance downstream from the discharge to the intake is approximately 28 miles. No impact is expected on the intake as a result of this discharge

2.0 Treatment Facility Summary				

Treatment Facility Name: Keystone Protein STP

WQM Permit No.	Issuance Date
3817202	10/26/2017

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial	Tertiary	Activated Sludge	Ultraviolet	

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
1.05	25,270		Aerobic Digestion	

Changes Since Last Permit Issuance: None

2.1 Wastewater Treatment Units and Process

Wastewater from the Chicken processing and the rendering plants are separately screened using two sets of rotary screens in series and collected in two Flow Equalization Basins (FEBs) joined with a pipe. These two FEBs were part of the old plant and has been retrofitted for use with the new treatment system. The first FEB is mixed, and the second one has aerobic capabilities. Blended screened wastewater is pumped from the FEBs into a Dissolved Air Flotation (DAF) Cells for pretreatment by chemical coagulation, flocculation, and flotation. Polymer and Ferrous Sulfate are added to the DAF cells. Pretreated wastewater from DAF flows into another FEB (7-Day) where pretreated wastewater is blended, aerated, and pumped at a relatively constant rate 24 hours per day, 7 days per week, into a downstream 4-stage activated sludge Biological Nutrient Removal (BNR) treatment system. Tank #1 is anoxic with a jet mixer to keep tank mixed. Tank #2 is aerated and is the Complete Mixed Activated Sludge (CMAS) tank with a nitrate recycle back to tank #1. Tank#3 and #4 is one tank partitioned to an anoxic zone (Tank #3) and reaeration zone (Tank#4). Coagulant 3070 and polymer are added to the discharge from tank #4 for phosphorous removal and settling. Effluent from the BNR system go through a final clarifier for clarification. Clarified effluent flow to a travelling bridge sand filter for filtration and the filtered effluent is disinfected using a UV and flows to final effluent pump station. Effluent from the pump station is either pumped back to the processing plant for re-use or to outfall 001 on Little Swatara Creek. Cascade is provided at the discharge point for post aeration. Sludge from the DAF cell is stored in a tank inside the DAF building prior to an aerated sludge processing tank before being hauled out for land application. Sludge from the activated sludge process is stored in aerated sludge processing tank and gravity thickened prior to hauling out for land application

3.0 Compliance History

3.1 DMR Data for Outfall 001 (from September 1, 2022 to August 31, 2023)

Parameter	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22
Flow (MGD) Average Monthly	0.8626	0.7941	0.8321	0.8257	0.7961	0.8313	0.8855	0.8693	0.9194	0.8295	0.7644	0.7387
Flow (MGD) Daily Maximum	1.254	1.2589	1.1834	1.1306	1.2125	1.226	0.5413	1.2382	1.836	1.4384	1.0799	1.396
pH (S.U.) Daily Minimum	7.5	7.6	7.5	7.5	7.1	7.4	7.1	6.9	7.0	7.1	7.2	6.9
pH (S.U.) Daily Maximum	8.0	8.1	8.1	8.1	8.1	8.1	8.1	8.0	7.6	7.7	7.9	7.9
DO (mg/L) Daily Minimum	7.2	6.9	7.2	6.6	7.6	6.9	7.8	8.1	8.5	7.5	7.6	7.4
CBOD5 (lbs/day) Average Monthly	< 15.0	< 12.0	< 13.0	< 12.0	< 12.0	< 12.0	< 13.0	< 14.0	< 13.0	< 15	< 11	< 11
CBOD5 (lbs/day) Daily Maximum	< 21.0	< 17.0	< 16.0	< 2.0	< 15.0	17.0	< 2.0	< 18.0	< 17.0	< 24	< 16	< 23
CBOD5 (mg/L) Average Monthly	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.1	< 2.0	< 2.0
CBOD5 (mg/L) Daily Maximum	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	2.3	< 2.0	< 2.0	< 2.0	2.6	< 2.0	< 2.0
TSS (lbs/day) Average Monthly	< 14.0	< 16.0	< 13.0	< 15.0	< 11.0	< 13.0	< 10	< 7.0	14.0	< 11	< 8	< 12
TSS (lbs/day) Daily Maximum	25.0	58.0	40.0	38.0	29.0	26.0	19.0	< 9.0	34.0	24	21	35
TSS (mg/L) Average Monthly	< 1.9	< 2.4	< 2.0	< 2.22	< 2.0	< 3.0	< 2.0	< 1.0	2.0	< 2.0	< 1.0	< 2.0
TSS (mg/L) Daily Maximum	4.0	8.0	5.0	5.0	7.0	6.0	3.0	1.0	4.0	6.0	3.0	7.0
Total Dissolved Solids (lbs/day) Ave. Monthly	8170.0	5411.0	5267.0	5712.0	5712.0	5286.0	7201	8206.0	7505.0	8350	6651	6528
Total Dissolved Solids (mg/L) Ave. Monthly	1128.0	1070.0	1175.0	1234.0	1263.0	1253.0	1250	1280.0	1238.0	1188	1252	1258
Total Dissolved Solids (mg/L) Daily Maximum	1160.0	1130.0	1200.0	1380.0	1330.0	1310.0	1320	1360.0	1400.0	1230	1340	1400
Oil and Grease (lbs/day) Ave. Monthly	< 37.0	< 30.0	< 31.0	< 30.0	< 29.0	< 30.0	< 33.0	< 34.0	< 34.0	< 36	< 28	< 27
Oil and Grease (lbs/day) Daily Max.	< 52.0	< 41.0	< 41.0	< 42.0	< 37.0	< 38.0	< 39.0	< 46.0	< 42.0	< 60	< 40	< 58
Oil and Grease (mg/L) Average Monthly	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Oil and Grease (mg/L) Daily Maximum	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Fecal Coliform (No./100 ml) Geometric Mean	< 4.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 3.0	< 6.0	< 7.0	< 12	< 2	< 8
Fecal Coliform (No./100 ml) Daily Max.	40	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	10.0	15.0	18.0	94	< 2	410
UV Transmittance (%) Daily Minimum	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	33.33	60	65
Nitrate-Nitrite (mg/L) Average Monthly	< 7.34	< 4.97	< 4.34	< 292.2	< 1.18	< 3.87	< 2.17	< 2.09	< 2.16	< 1.55	< 1.13	< 2.38
Total Nitrogen (lbs/day) Ave. Monthly	< 62.0	< 39.0	< 1083.8	< 9.0	< 7.0	< 23.0	< 30.25	< 23.7	< 22.10	23.93	< 14.6	< 24.6
Total Nitrogen (lbs/day) Daily Max.	< 103.0	< 73.0	81.3	< 17.0	< 13.0	60.0	< 42.1	49.3	72.4	< 49.9	< 21.5	< 101.8
Total Nitrogen (mg/L) Average Monthly	< 8.1	< 5.9	< 5.3	< 1.36	< 1.18	< 3.7	< 3.45	< 3.28	< 3.23	< 3.27	< 2.61	3.64
Total Nitrogen (mg/L) Daily Maximum	< 12.24	< 10.17	10.67	2.44	< 1.69	8.18	< 5.36	5.38	10.36	< 4.16	< 3.20	< 8.74
Total Nitrogen (lbs) Average Monthly	< 1916.2	< 1201.7	< 36.0	< 436.6	< 443.3	< 5.16	< 651.7	< 734.1	< 685.2	< 718.3	< 453.6	< 737.6
Total Nitrogen (lbs) Effluent Net Total Monthly	< 1916.2	< 1202.0	< 1084.0	< 463.6	< 443.3	< 988.7	< 651.7	< 734.1	< 685.2	< 718.3	< 453.6	< 737.6
Total Nitrogen (lbs) Effluent Net Total Annual												< 19784
Total Nitrogen (lbs) Total Annual												33912
Ammonia (lbs/day) Average Monthly	< 0.02	< 4.4	< 0.2	< 0.1	< 0.2	< 0.1	< 0.2	< 55.7	< 0.4	< 0.2	< 0.2	< 0.1
Ammonia (lbs/day) Daily Maximum	0.03	0.03	0.3	< 0.2	0.4	0.2	< 0.1	14.1	2.0	0.4	< 0.1	< 0.2
Ammonia (mg/L) Average Monthly	< 0.02	< 0.02	< 0.02	< 0.02	< 0.03	< 0.02	< 0.03	< 0.25	< 0.05	< 0.03	< 0.03	< 0.02
Ammonia (mg/L) Daily Maximum	0.03	0.03	0.04	< 0.02	0.06	0.05	< 0.04	1.85	0.24	0.05	0.04	0.02
Ammonia (lbs) Total Monthly	< 4.9	< 4.4	4.6	3.7	< 4.5	< 4.2	< 4.7	< 55.7	< 11.4	< 7	< 4.4	< 3.2
Ammonia (lbs) Total Annual												< 282
Nitrate (lbs) Total Monthly	1715.0	1007.0	878.0	< 274.0	< 210.2	< 718.0	< 400.0	< 434.0	< 387.0	2.04	< 197.8	< 537.3
TKN (mg/L) Average Monthly	0.76	< 0.97	< 0.93	< 0.92	1.32	1.29	1.28	< 1.2	< 1.07	1.72	< 1.48	1.26
TKN (lbs) Total Monthly	178.0	< 175.6	< 175.9	< 171.4	233.2	236.8	233.3	< 262.9	< 224.6	370.5	< 255.8	200.2

Total Phosphorus (lbs/day) Ave. Monthly	0.2	< 3.2	0.1	< 0.09	0.1	0.1	0.2	< 0.1	< 0.1	0.2	0.15	< 0.1
Total Phosphorus (lbs/day) Daily Max.	0.3	0.2	0.2	0.2	0.3	0.2	0.4	0.3	0.1	0.5	0.4	0.3
Total Phosphorus (mg/L) Ave. Monthly	0.02	< 0.02	0.02	< 0.01	0.02	0.02	0.03	< 0.02	< 0.02	0.04	< 0.02	< 0.03
Total Phosphorus (mg/L) Daily Max.	0.04	0.03	0.03	0.02	0.04	0.04	0.05	0.04	0.03	0.05	0.04	0.06
Total Phosphorus (lbs) Effluent Net Total Monthly	5.3	< 3.2	3.9	2.7	3.3	< 4.1	6.3	< 4.5	< 3.1	< 7.5	< 4.6	< 3.7
Total Phosphorus (lbs) Total Monthly	5.3	< 3.2	3.9	2.73	3.3	4.1	6.3	< 5.0	< 3.1	7	< 4.6	< 3.7
Total Phosphorus (lbs) Effluent Net Total Annual												< 238.0
Total Phosphorus (lbs) Total Annual												< 238
Sulfate (lbs/day) Average Monthly	1531.0	963.0	889.0	960.0	1050	804.0	1344.0	1637.0	1514.0	1880	2605	1220
Sulfate (mg/L) Average Monthly	208.0	191.0	199.0	208.0	233.0	186.2	233.0	254	249.0	266	429	228
Chloride (lbs/day) Average Monthly	2093.0	1554.0	< 1142.0	1723.0	1616.0	1230.0	2253.0	2331.0	2078.0	2470	1627	1784
Chloride (mg/L) Average Monthly	289.0	307.0	< 267.0	368.0	359.0	285.0	389.0	366.0	342.0	357	305	322

3.2 DMR Data for Outfall 002 (from September 1, 2022 to August 31, 2023)

Parameter	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22
pH (S.U.) Daily Maximum			E						7.0			
BOD5 (mg/L) Daily Maximum			FF						< 2.0			
COD (mg/L) Daily Maximum			FF						< 2.0			
TSS (mg/L) Daily Maximum			FF						13.0			
Oil and Grease (mg/L) Daily Maximum			FF						< 5.0			
Nitrate-Nitrite (mg/L) Daily Maximum			< 3.14						< 5.10			
TKN (mg/L) Daily Maximum			0.85						< 0.50			
Total Phosphorus (mg/L) Daily Maximum			0.16						0.11			

3.3 DMR Data for Outfall 003 (from September 1, 2022 to August 31, 2023)

Parameter	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22
pH (S.U.) Daily Maximum			E						7.0			
BOD5 (mg/L) Daily Maximum			E						< 2.0			
COD (mg/L) Daily Maximum			E						< 25.0			
TSS (mg/L) Daily Maximum			E						11.0			
Oil and Grease (mg/L) Daily Maximum			E						< 5.0			
Nitrate-Nitrite (mg/L) Daily Maximum			E						< 5.07			
TKN (mg/L) Daily Maximum			E						< 0.50			
Total Phosphorus (mg/L) Daily Maximum			E						0.11			

3.4 Effluent Violations for Outfall 001, from: March 1, 2022 To: August 31, 2023

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	09/30/22	Daily Max	410	No./100 ml	400	No./100 ml

3.5 DMR Summary

Discharge Monitoring Reports (DMRs) review for the facility for the last 12 months of operation presented on the table above indicate permit limits have been met consistently and monitoring results are within acceptable range. One effluent violation for Fecal Coliform was noted during the period reviewed. The violation appear to be one-time occurrence.

3.6 Summary of Inspections:

The facility was inspected a couple of times during since it went online. Inspection reports review for the facility during the period indicate permit limits have been met consistently. No effluent violations were found during plant inspections. Two incidents of partially treated effluent discharges were reported by permittee and has been addressed.

4.0 Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	3
Latitude	40º 25' 0.01"	**Longitude**	-76º 23' 47.99"

Wastewater Description: IW Process Effluent with ELG

4.1 Basis for Effluent Limitations

In general, the Clean Water Act (CWA) requires that effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits.

4.2 Technology Based Limits

Discharges from poultry processors are regulated under 40 CFR 432 that presents production-based effluent limits in mg/l for existing and new sources. Subpart K (Poultry First Processing) applies since the process wastewater resulted from slaughtering of poultry, further processing of poultry and rendering of material derived from a facility that slaughters more than 100 million pounds per year (in units of live weight killed (LWK)). Keystone Protein provided production data available since the facility went online on 12/6/2021. Full year production data reported for 2022 is 444,675,350 pounds per year of LWK. And 2023 production data from January to March is 112,169,568 pounds of LWK. Section 432.115(b) of New source performance standards (NSPS) presented on the table below are applicable. The limits from 40 CFR 432.115(b) must be included in the permit unless water quality based effluent limits (WQBELs) are more stringent.

SUMMARY OF BAT LIMITS		
Pollutant	**Effluent Concentrations (mg/l)**	
	Average Monthly	**Maximum Daily**
BOD_5	16	26
TSS	20	30
Oil & Grease (as HEM)	8	14
NH_3-N	4	8
Total N	103	147
Fecal Coliform	Maximum of 400/100ml	

4.3 Water Quality-Based Limitations

4.3.1 Receiving Stream

The receiving stream is the Little Swatara Creek. According to 25 PA § 93.9o, this stream is protected for Warm Water Fishes (WWF) and Migratory Fishes (MF). It is located in Drainage List o and State Watershed 7-D. It has been assigned stream code 09888. The discharge goes to the segment of Little Swatara Creek is impaired for recreational use.

4.3.2 WQM 7.0 Stream Model

WQM 7.0 is a water quality model DEP utilizes to establish appropriate effluent limits for $CBOD_5$, NH_3-N and DO in permits. The model simulates mixing and degradation of NH_3-N in the stream and compares calculated instream NH_3-N concentrations to NH_3-N water quality criteria and also simulates mixing and consumption of D.O. in the stream due to the degradation of $CBOD_5$ and NH_3N and compares calculated instream D.O. concentrations to D.O. water quality criteria and recommends effluent limits.

4.3.3 Streamflow:

Streamflows for the water quality analysis were determined by correlating with the yield of USGS gauging station No 01573000 on Swatara Creek at Harper Tavern. The Q_{7-10} and drainage area at the gage is 22.1ft3/s and 337 mi^2 respectively. The resulting yields are as follows:

- Q_{7-10} = (22.1ft^3/s)/337 mi^2 = 0.0656ft^3/s/ mi^2
- Q_{30-10} / Q_{7-10} = 1.40
- Q_{1-10} / Q_{7-10} = 0.80

The drainage area at discharge is calculated by USGS StreamStats = 69.7mi^2

The Q_{7-10} at discharge = 69.7 mi^2 x 0.0.0656ft^3/s/mi^2 = 4.57 ft^3/s.

4.3.4 NH_3N Calculations

NH_3N calculations were based on the Department's Implementation Guidance of Section 93.7 Ammonia Criteria, dated 11/4/97 (ID No. 391-2000-013). The following data were used as input in the WQM water quality model:

STP pH	=6.60 (DMR Median July - Sept)
STP Temp	=20^{0}C (Default)
Stream pH	=7.0 (Default)
Stream Temp	=20^0 C (Default)
Background NH_3N	=0.00 (Default)

4.3.5 $CBOD_5$

Due to the proximity of Fredericksburg STP discharge (PA0261670) to Keystone Protein's discharge, they were modeled together. The WQM 7.0 stream modeling was done using the proposed built-out design flow of 3MGD for Keystone Protein. The attached results of the WQM 7.0 stream model presented in attachment D indicates a water quality limit of 10 mg/l as monthly average is adequate to protect water quality of the stream. This is approximately equal to the Technology limit 16 mg/l BOD_5 (10mg/l $CBOD_5$). Therefore, a monthly average limit of 10mg/l $CBOD_5$ will be written in the permit. Permit Writers Manual specifies that mass loadings should be reported for industrial discharges with technology based limits (Document No. 362-0400-001, Table 5-2, 10/1/97).

4.3.6 NH_3-N

The attached results of the WQM 7.0 stream model presented in attachment D indicates also that a summer limit of 3 mg/l NH_3-N as a monthly average is necessary to protect the aquatic life from toxicity effects. This limit is more stringent than the technology limit of 4mg/l and will be written in the permit. The technology limit of 4mg/l will be written in the permit for the winter months. Mass limits will be written for the summer water quality-based limit and reported for the winter technology-based limit following recommendations in permit writer's manual Document No. 362-0400-001, Table 5-2, 10/1/97.

The mass based limits are expressed in pounds per day and are calculated as follows:

Mass based limit (lb/day) = concentration limit (mg/L) × phase 1 design flow (mgd) × 8.34

Mass based average monthly (lb/day) for the summer months for NH_3-N = 3 (mg/L) × 1.05 (mgd) × 8.34 = 26.27

Mass based daily maximum (lb/day) for the summer months for NH_3-N = 6 (mg/L) × 1.05 (mgd) × 8.34 = 52.5

4.3.7 Dissolved Oxygen

The existing permit has a limit of 5 mg/l for Dissolved Oxygen (DO) following DEP's Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001, 10/97) which suggests that, either the adopted minimum stream D.O. criteria for the receiving stream or the effluent level determined through water quality modeling be used as the limit. Since the WQM 7.0 model was run using a minimum D.O. of 5.0 mg/l, a minimum D.O of 5.0mg/l will remain in the permit with a daily monitoring requirement.

4.3.8 Total Suspended Solids:

There is no water quality standard for TSS. The ELG provides an average monthly concentration limit of 20 mg/l, and a daily maximum of 30mg/l which will be written in the permit. Mass limits will be reported following permit writer's Manual (Document No. 362-0400-001 Table 5-2, 10/1/97).

4.3.9 Fecal Coliform:

25 PA code § 92a.47(a)(4) requires a summer technology limit of 200/100 ml as a geometric mean and § 92a.47(a)(5) requires a winter limit of 2,000/100ml as a geometric mean for Fecal Coliform. However, 40 CFR 432 requires a maximum daily limit of 400/100 ml, which will be required in the permit as a winter geometric mean since it's more stringent than 2,000/100ml. Therefore, a summer limit of 200/100 ml and a winter limit of 400/100 ml as a geometric mean, and a maximum daily limit of 400/100 ml for both seasons will be required in the permit.

4.3.10 Chesapeake Bay Strategy:

In 2003, EPA established state-wide cap loads for Total Nitrogen and Total Phosphorus for Pennsylvania that are needed to ensure compliance with new water quality standards enacted to restore the water quality of the Chesapeake Bay. DEP released Pennsylvania's Chesapeake Bay Tributary Strategy (CBTS) in January of 2005 to guide Pennsylvania's efforts to meet those cap loads, and made revisions to the Strategy in 2006-2007 following a stakeholder process. Industrial discharges have been prioritized by Central Office based on their delivered TN loadings to the Bay. Significant industrial wastewater dischargers are facilities that discharge more than 75 lbs/day of TN or 25 lbs/day of TP on an average annual basis and the rest are classified as non-significant dischargers. The determination of cap loads for significant industrial dischargers were divided into five categories. First category were those facilities that had reductions before the 2002 loads were calculated; second category were those facilities that submitted a Nutrient Reduction Evaluation (NRE) and reduced their nutrient loads between 2002 and 2009; third category were those facilities that submitted an NRE and are planned to reduce nutrient loads through upgrades to operation or construction of their treatment plants; fourth category were those facilities that are already at low levels of nutrient discharge loads; and the fifth category were those facilities that did not submit an NRE or submitted an NRE but did not plan to reduce nutrient loads. New and expanding industrial dischargers are required to submit report on how they plan to address any associated nutrient loadings. Non-significant IW dischargers will be required to monitor and report the nitrogen series (TKN, NH_3-N and NO_2+NO_3-N) and total phosphorus using a monitoring frequency that is dependent on quantity and type of discharge. The existing rendering facility (PA0080829) is classified as significant discharger, submitted NRE and proposed upgrade to the treatment plant to meet cap load. Based on their NRE, the facility's cap loads are 19,786lbs/yr TN and 380.5lb/yr TP respectively. The existing cap loads has been transferred to the new facility with permit number PA0266345. The treatment plant was designed to produce effluent quality of 6 mg/l TN and 0.8 mg/l TP and is authorized to receive offsets from one of their other facility with NPDES Permit No. PA0035157 to comply with the Chesapeake Bay cap load requirement or purchase credits if needed to comply with the Chesapeake Bay cap load requirement. The facility is in compliance with the cap load requirements.

4.3.11 Total Nitrogen

There is no water quality standard for Total Nitrogen. The ELG required average monthly concentration limit of 103 mg/l, and a daily maximum of 147mg/l which is consistent with the existing permit and will remain in the permit. Consistent with the existing permit, mass limits reporting will continue in the permit following permit writer's Manual (Document No. 362-0400-001 Table 5-2, 10/1/97).

4.3.12 Phosphorus:

Phosphorus limitations are based on the Department's Implementation Guidance for Section 96.5 Phosphorus Discharges to Free Flowing Streams, dated 10/27/97 (ID No. 391-2000-018). The discharge from this facility has the potential to increase the stream's nutrient enrichment risks. Phosphorus limitation of 2mg/l average monthly and 4mg/l maximum daily established in the existing permit will remain to ensure phosphorus treatment efficiency. Mass limits written in the permit existing permit following permit writer's Manual (Document No. 362-0400-001 Table 5-2, 10/1/97) as follows will be carried forward in the current permit.

Mass based average monthly (lb/day) for Phosphorus = 2 (mg/L) × 1.05 (mgd) × 8.34 = 17.5

Mass based daily maximum (lb/day) for Phosphorus = 4 (mg/L) × 1.05 (mgd) × 8.34 = 35

4.3.13 Total Residual Chlorine:

The discharge does not have any reasonable potential to cause or contribute to a water quality standards violation for total residual chlorine since the permittee utilizes UV instead of chlorine for wastewater disinfection. Therefore, the proposed permit does not contain effluent limits for total residual chlorine. The permittee may use chlorine based

chemicals for cleaning and is required to optimize chlorine usage to prevent negative impacts on receiving stream. Daily UV transmittance(%) monitoring required in the permit to ensure efficiency of the UV unit will remain.

4.3.14 Oil and Grease

25 PA code § 95.2(3) (ii) requires 15 mg/l and 30 mg/l for average monthly and maximum daily limits respectively for O&G. However, ELG limit of 8 mg/L monthly average and 16 mg/L daily maximum for O&G are more stringent and will be written in the permit with monitoring requirement for mass limits. In addition to the technology-based numerical effluent limits, narrative water quality-based limits for oil and grease, such as prohibiting visible sheening, are included in the permit

4.3.15 pH

Following PA code 25 § 95.2, a pH of not less than 6 and not greater than 9, will be required in the permit for this industrial waste discharge with daily monitoring requirement.

4.3.16 Toxics Limits

Toxics are not expected to be present at levels of concern in the discharge from poultry processing facilities and data presented in the application shows effluent levels that are below screening detection levels for all parameters. No limits or monitoring is needed for any toxics at this time.

4.3.17 Chemical Additives

The following Chemical additives are approved for use at the processing plant, hatchery, and the rendering plant with their proposed daily/stated maximum usage rates:

Chemical additives used in the Processing Plant are Oxonia Active, Sanitation Chemical (Proposed Max usage rate 30 gal/day), Questar CAF, Sanitation Chemical (Proposed Max usage rate 70 gal/day), Questar GPC, Sanitation Chemical (Proposed Max usage rate 130 gal/day),Conquest, Sanitation Chemical (Proposed Max usage rate 135 gal/day), Liquid K 001 Sanitation Chemical (Proposed Max usage rate 0.1 gal/day), CD 470, Sanitation Chemical (Proposed Max usage rate 2 gal/day),Quorum Orange, Sanitation Chemical (Proposed Max usage rate 2 gal/day), Questar SHC, Sanitation Chemical (Proposed Max usage rate 4.5 gal/day), Quorum Green, Sanitation Chemical Occasionally (Proposed Max usage rate 10 gal/day), Microtox Ultra, Processing Aid (Proposed Max usage rate 350 gal/day), Neutrachill, Processing Aid (Proposed Max usage rate 80 gal/day)

Chemical additives used in the Hatchery are AFCO 5279, Sanitation Chemical (Proposed Max usage rate 10.35 gal/day), AFCO 5342, Sanitation Chemical (Proposed Max usage rate 0.68 gal/day), AFCO 5362, Sanitation Chemical (Proposed Max usage rate 2 gal/day), AFCO 5380, Sanitation Chemical Monthly (Proposed Max usage rate 5 gal/month), AFCO 4325, Sanitation Chemical (Proposed Max usage rate 0.52 gal/day)

Chemical additives used in the Rendering Plant are Acrylic Polymer – B130, Boiler Water Treatment (Proposed Max usage rate 1.0 gal/day), EDTA – B150, Boiler Water Treatment (Proposed Max usage rate 1.0 gal/day), Sodium Sulfite, Boiler Water Treatment (Proposed Max usage rate 0.3 gal/day)

The permit is written with chemical additive usage and notification requirement located in Part C.II of the permit.

4.3.18 TDS, Chloride and Sulfate

The existing monitoring requirement for TDS, Chloride, and Sulfate, has been discontinued in the permit. Adequate data has been collected for this facility and does not appear they are pollutants of concern that needed further analysis. The rational for monitoring TDS, Chloride and Sulfate presented below has been discontinued.

Total Dissolved Solids (TDS) and its major constituents including sulfate, chloride, and bromide have emerged as pollutants of concern in several major watersheds in the Commonwealth. The conservative nature of these solids allows them to accumulate in surface waters and they may remain a concern even if the immediate downstream public water supply is not directly impacted. Bromide has been linked to formation of disinfection byproducts at increased levels in public water systems. In addition, as a consequence of actions associated with Triennial Review 13, the Environmental Quality Board has directed DEP to collect additional data related to sulfate, chloride, and 1,4-dioxane. Furthermore, in an August 2013

letter from Jon Capacasa of the Region III Water Protection Program to DEP, EPA has expressed concern related to bromide and the importance of monitoring all point sources for bromide when it may be present.

Based on these concerns and under the authority of §92a.61, DEP has determined it should implement increased monitoring in NPDES permits for these parameters: TDS, sulfate, chloride, bromide, and 1,4-dioxane.

This monitoring initiative applies to all programs within DEP that have been delegated the responsibilities of implementing the NPDES program. The increased monitoring applies to all point source discharges, except that DEP may determine that certain sources are too small to warrant routine monitoring. All other permit actions related to these pollutants, including any water quality-based effluent limits (WQBELs) or treatment requirements, are unaffected by this initiative.

Analytical costs for TDS, sulfate, chloride, and bromide are nominal. Higher analytical costs may apply for 1,4-dioxane, but relatively few point source discharges will be affected. NPDES permit application forms have been or will be revised to ensure that TDS, sulfate, chloride, bromide, and 1,4-dioxane are sampled and reported to DEP as part of the permit application process where appropriate.

For point source discharges and upon issuance or reissuance of an individual NPDES permit:

- Where the concentration of TDS in the discharge exceeds 1,000 mg/L, or the net TDS load from a discharge exceeds 20,000 lbs/day, and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for TDS, sulfate, chloride, and bromide. Discharges of 0.1 MGD or less should monitor and report for TDS, sulfate, chloride, and bromide if the concentration of TDS in the discharge exceeds 5,000 mg/L.

- Where the concentration of bromide in a discharge exceeds 1 mg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for bromide. Discharges of 0.1 MGD or less should monitor and report for bromide if the concentration of bromide in the discharge exceeds 10 mg/L.

- Where the concentration of 1,4-dioxane (CAS 123-91-1) in a discharge exceeds 10 µg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for 1,4-dioxane. Discharges of 0.1 MGD or less should monitor and report for 1,4-dioxane if the concentration of 1,4-dioxane in the discharge exceeds 100 µg/L.

4.3.19 Stormwater:

The existing permit had two outfalls 002 (40º 26' 26"/76º 25' 01") and 003 (40º 26' 29"/76º 25' 17") which were the two outfalls in the rendering plant's previous permit. The two outfalls have been eliminated when the new site development was completed, and 10 new storm water outfalls have been added. The storm water outfalls and the coordinates with description of activities conducted within the drainage areas are presented on the table below. 4 outfalls were listed as no exposure areas. The new storm water outfalls were numbered starting from 002 to 011. Outfalls 002, 003, 007 and 008 were determined to be representative sampling points for the various industrial activities conducted at the site

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Outfall	Drainage Area Sq. ft	% Impervious	Description of Materials/Activities in Drainage Area Exposed to Precipitation	Lat/Long
002		58	Vehicle traffic; Site washdown & clean-up activities drains to outfall 002 via hatchery stormwater management basin 1	40º 26' 39.57"/76º 24' 55.17" (Elizabeth Run)
003		65	Receiving and transfer of live chickens in cage trucks into processing plant. Loading of processed chicken into trucks and site washdown & clean-up activities drains to outfall 003 via processing plant storm water basin 1	40º 26' 36.13"/76º 24' 55.49" (Elizabeth Run)
004		52	Vehicle traffic towards hatchery and green drains to outfall 004 through hatchery stormwater management basin 2	40º 26' 35.53"/76º 24' 55.35" (Elizabeth Run)
005			Green area (Uncontaminated by site activities in the hatchery area).	40º 26' 33"/76º 24' 57" (Elizabeth Run)
006			Green area (Uncontaminated by site activities in the hatchery area).	40º 26' 33"/76º 24' 58" (Elizabeth Run)
007		66	Receiving of Raw Material (RM) at the rendering in open top truck dumpsters; Storage of RM on site; Site washdown & cleanup activities drains to outfall 007 via Rendering Plant Storm water basin	40º 26' 26.44"/76º 24' 58.37" (UNT Elizabeth Run)

008			Vehicle traffic; Wastewater treatment facility activities, Site washdown & cleanup activities	40º 26' 25.48"/76º 24' 57.96" (UNT Elizabeth Run)
009			Vehicle traffic; Wastewater treatment facility activities, Site washdown & cleanup activities	40º 26' 25.06"/76º 24' 59.09" (UNT Elizabeth Run)
010			Green area (Uncontaminated by Wastewater treatment facility activities	40º 26' 25"/76º 24' 59" (UNT Elizabeth Run)
011			Green area (Uncontaminated by Wastewater treatment facility activities	40º 26' 23"/76º 24' 58" (UNT Elizabeth Run)

Rendering, hatchery and poultry processing facilities fall under SIC codes 2077, 0254 and 2015. The requirements in Appendix I of the current PAG 03 presented on the table below applies. The permittee shall monitor and report analytical results for the parameters listed on the table below on Discharge Monitoring Reports (DMRs) for outfalls 002, 003, 007 and 008. The benchmark values listed on the table are not effluent limitations, and exceedances do not constitute permit violations. However, if the permittee's sampling demonstrates exceedances of benchmark values for two consecutive monitoring periods, the permittee shall submit a corrective action plan within 90 days of the end of the monitoring period triggering the plan.

Parameter	Minimum Measuring Frequency	Sample Type (mg/l)	Benchmark Values
pH (S.U.)	1 / 6months	Grab	XXX
BOD_5	1 / 6months	Grab	XXX
TSS	1 / 6months	Grab	100
COD	1 / 6months	Grab	120
NO_3+NO_2-N	1 / 6months	Grab	XXX
Oil & Grease	1 / 6months	Grab	30
TKN*	1 / 6months	Grab	XXX
Total Phosphorus*	1 / 6months	Grab	XXX

*In addition, the Chesapeake Bay Strategy requires storm water to be monitored for the nitrogen series and TP. Semi-annual monitoring of TKN and Total Phosphorus have been added to Appendix I parameters.

4.3.20 Best Management Practices (BMPs)

In addition to general BMPs, the permittee shall implement the following BMPs that may be applicable to SIC codes 2077 and 2015.

- Store all dry raw materials, additives and products in enclosed/covered areas; install dust collection and control system for silos, holding bins, etc.
- Store liquids in tanks with secondary containment and lead detection, where appropriate.
- Minimize raw water usage for washing products and raw materials; recycle wash water to the maximum extent practicable.
- Practice good housekeeping to limit spillage/leakage of residue and provide for prompt clean-up; dispose of rotting products promptly.
- Manage inventories to ensure only short-term supplies of raw materials and products are stored on-site.
- Limit use of pesticides, insecticides and rodenticides to the maximum extent possible; apply during dry conditions; investigate non (or least) hazardous alternatives.
- Wherever possible, enclose/cover animal holding areas; install run-on controls and collect and treat run-off, as appropriate.
- Practice good housekeeping by containing and promptly removing and managing animal manure

4.3.21 Biosolids Management

Sludge generated from the biological process and DAF sludge will be stored in holding tanks and thickened prior to hauling off-site for final disposal by land application

5.0 Other Requirements

5.1 Antidegradation Requirements (25 PA Code § 93.4):

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High-Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

5.2 Anti-backsliding

The existing monitoring requirement for TDS, Chloride, and Sulfate, has been discontinued in the permit. This is consistent with provisions for permit relaxation under CWA section 303(d)(4)(B). The discharge is in a stream segment of Little Swatara Creek which is designated as impaired for recreational use due to pathogens. Eliminating the monitoring requirement for TDS, Chlorite and Sulfate is not expected to degrade receiving waters and is consistent with PA's antidegradation policy.

5.3 Class A Wild Trout Streams:

No Class A Wild Trout Fisheries are impacted by this discharge

5.4 Endangered Species

There is no confirmed existence of endangered species in the area close to the discharge. Therefore, the discharge authorized by this permit is not likely to impact any endangered or threatened species or adversely affect its critical habitat.

5.5 303d Listed Streams:

The discharge is located in a stream segment of Little Swatara Creek which is designated as impaired for recreational use due to pathogens. Cause of impairment is unknown. No further action is warranted at this time.

5.6 Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs).

5.7 Effluent Monitoring Frequency

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits are less than the effluent limits. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR

6.0 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	Daily Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0	XXX	1/day	Grab
DO	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
CBOD5	Report	Report	XXX	10.0	20.0	25	2/week	24-Hr Composite
TSS	Report	Report	XXX	20.0	40.0	50	2/week	24-Hr Composite
Oil and Grease	Report	Report	XXX	8.0	14.0	16	2/week	24-Hr Composite
Fecal Coliform (No./100 ml) Nov 1 - Apr 30	XXX	XXX	XXX	400 Geo Mean	400	XXX	2/week	Grab
Fecal Coliform (No./100 ml) May 1 - Oct 31	XXX	XXX	XXX	200 Geo Mean	400	XXX	2/week	Grab
UV Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Recorded
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	103.0	147.0	XXX	2/week	Calculation
Total Nitrogen (lbs)	Report	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Ammonia Nov 1 - Apr 30	Report	Report	XXX	4.0	8.0	10	2/week	24-Hr Composite
Ammonia May 1 - Oct 31	26	53	XXX	3.0	6.0	7.5	2/week	24-Hr Composite

Outfall 001, Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Daily Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Ammonia (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Nitrate (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
TKN	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TKN (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus	18	35	XXX	2.0	4.0	5	2/week	24-Hr Composite
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation

Compliance Sampling Location: Outfall 001

6.1 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.

Storm water Outfalls 002, 003, 007 and 008 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
TKN	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Phosphorus	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab

Compliance Sampling Location: Storm water Outfalls 002, 003, 007 and 008

6.2 Proposed Effluent Limitations and Monitoring Requirements

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

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

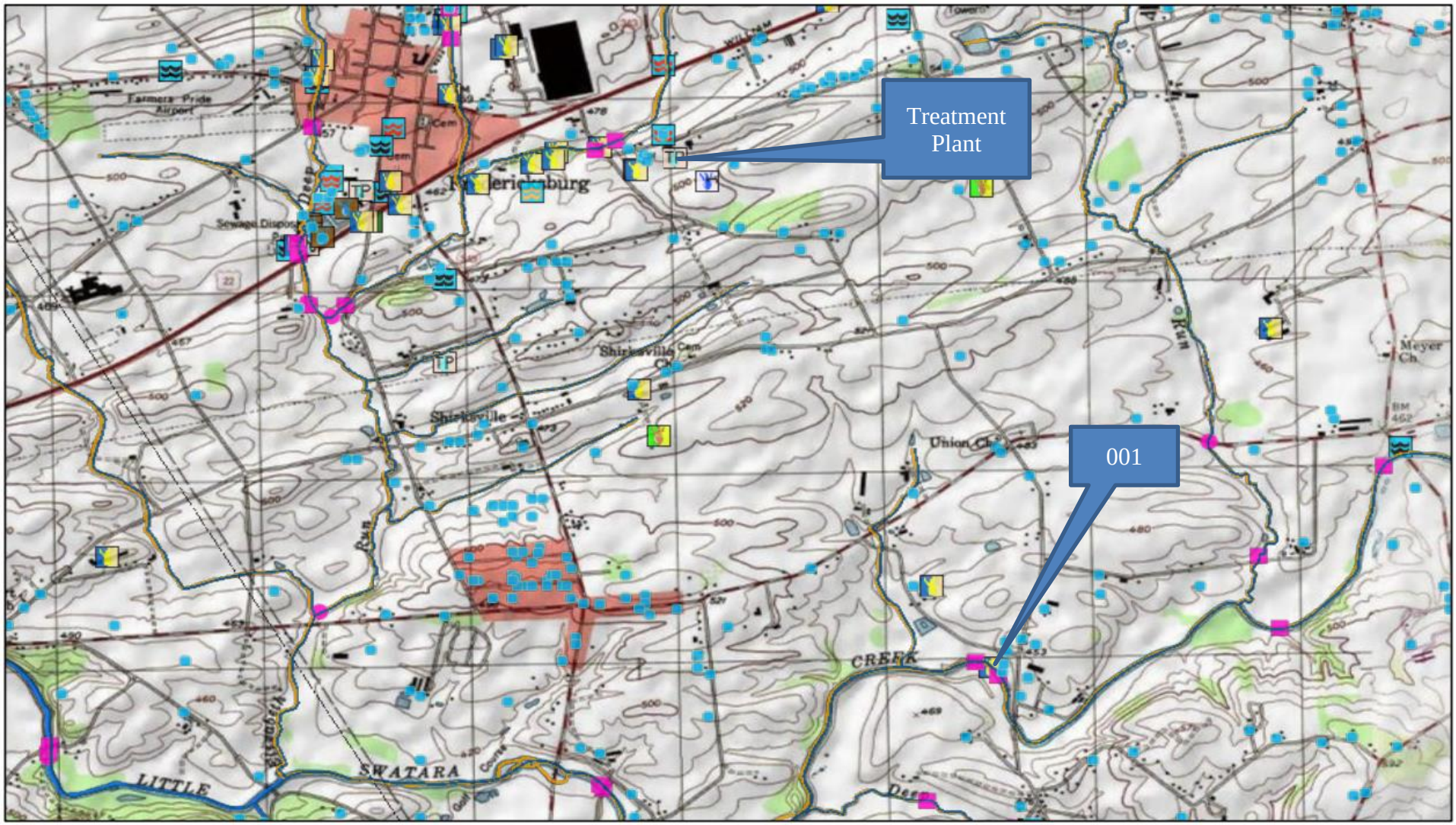
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Total Nitrogen (lbs) Effluent Net	XXX	19,786 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Nitrogen (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Ammonia (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs) Effluent Net	XXX	380.5 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Phosphorus (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation

Compliance Sampling Location: Outfall 001

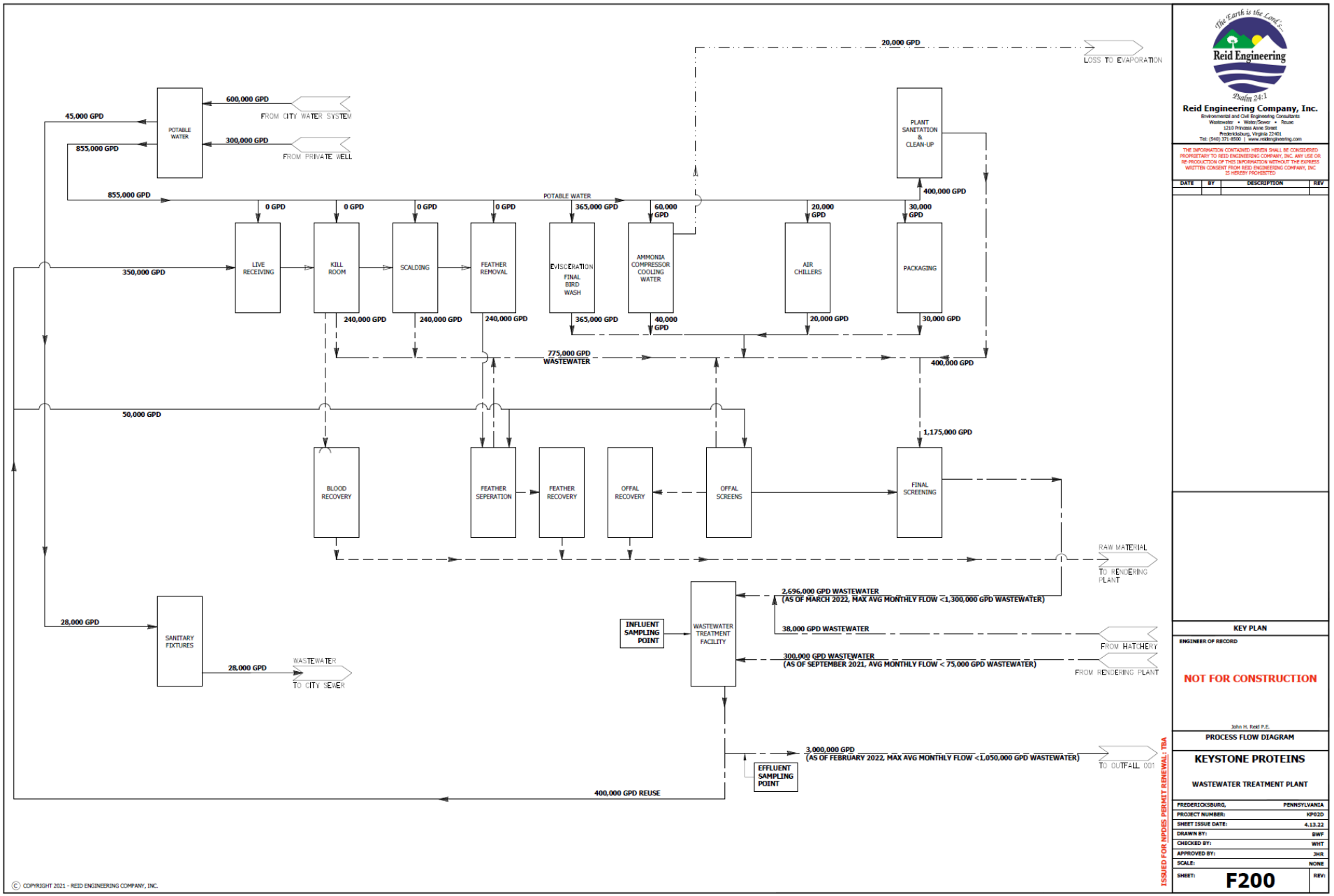
	7.0 Tools and References Used to Develop Permit
☒	WQM for Windows Model (see Attachment **D**)
☐	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☒	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☒	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☒	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 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, 391-2000-022, 3/1999.
☒	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: Establishing effluent limitation for individual industrial permit
☐	Other:

8. Attachments

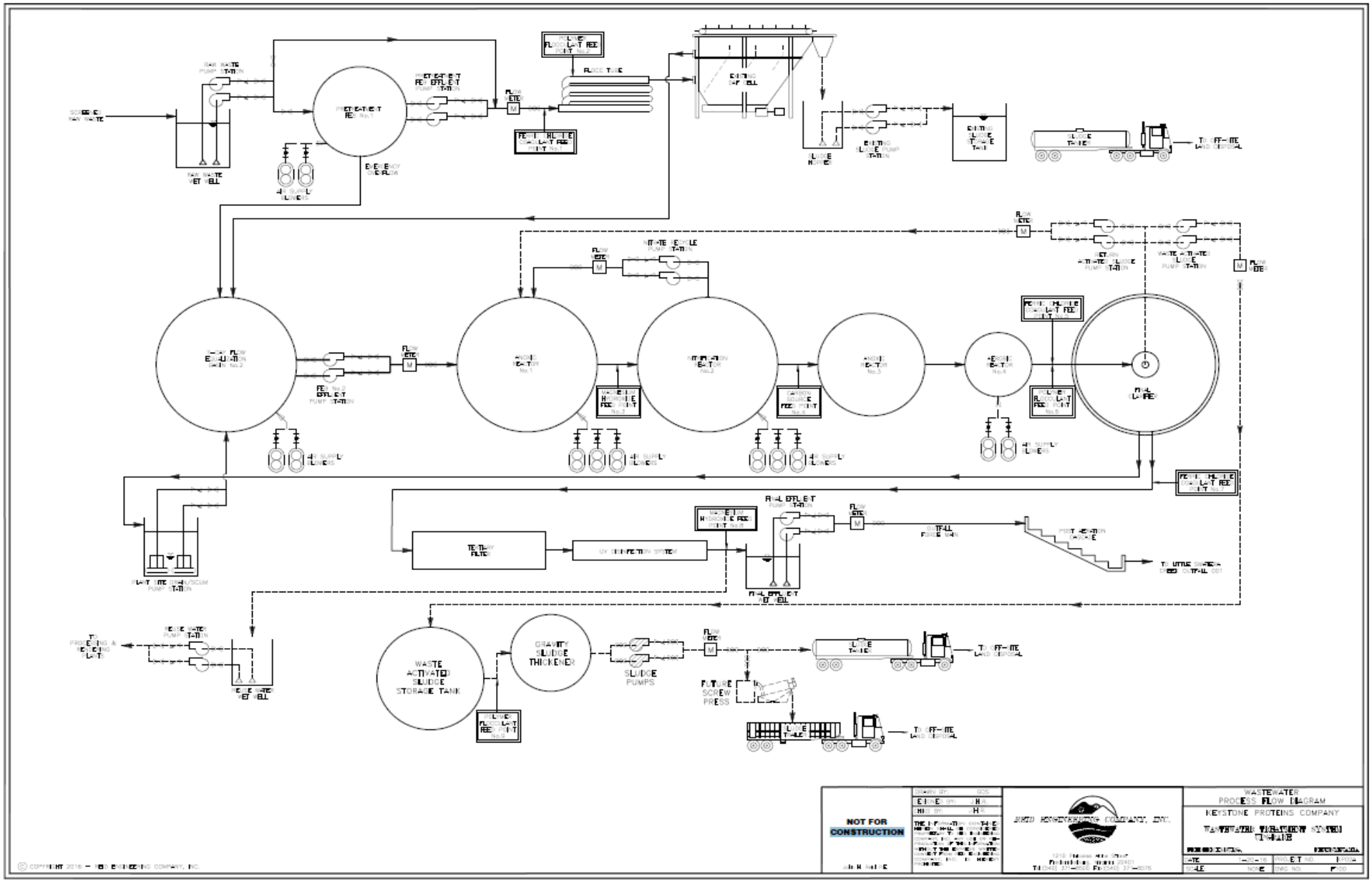
A. Topographical Map



B. Process Flow Diagram



C. Treatment System



D. WQM Model Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07D	9888	LITTLE SWATARA 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)
6.970	Keystone Prot	PA0266345	3.000	CBOD5	10.25		
				NH3-N	3.07	6.14	
				Dissolved Oxygen			5

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
3.520	Fredericksburg	PA026160	0.650	CBOD5	25		
				NH3-N	15.14	30.28	
				Dissolved Oxygen			5

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
07D	9888	LITTLE SWATARA CREEK	6.970	435.00	69.70	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	0.066	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
Keystone Prot	PA0266345	3.0000	3.0000	3.0000	0.000	20.00	6.60

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	5.00	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
07D	9888	LITTLE SWATARA CREEK	**3.520**	423.00	86.15	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	0.066	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
Fredericksburg	PA026160	0.6500	0.6500	0.6500	0.000	25.00	6.45

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	5.00	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
07D	9888	LITTLE SWATARA CREEK	**3.100**	414.00	94.20	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	0.066	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
07D	9888	LITTLE SWATARA CREEK	**2.950**	410.00	97.10	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	0.066	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	5.00	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
07D	9888	LITTLE SWATARA CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
6.970	4.57	0.00	4.57	4.641	0.00066	.78	48.82	62.61	0.24	0.871	20.00	6.75
3.520	5.65	0.00	5.65	5.6465	0.00406	.77	48.69	63.19	0.30	0.085	20.45	6.73
3.100	6.18	0.00	6.18	5.6465	0.00505	.779	49.23	63.22	0.31	0.030	20.43	6.74
Q1-10 Flow												
6.970	3.66	0.00	3.66	4.641	0.00066	NA	NA	NA	0.23	0.924	20.00	6.73
3.520	4.52	0.00	4.52	5.6465	0.00406	NA	NA	NA	0.28	0.090	20.49	6.71
3.100	4.94	0.00	4.94	5.6465	0.00505	NA	NA	NA	0.29	0.032	20.47	6.72
Q30-10 Flow												
6.970	6.40	0.00	6.40	4.641	0.00066	NA	NA	NA	0.27	0.787	20.00	6.79
3.520	7.91	0.00	7.91	5.6465	0.00406	NA	NA	NA	0.33	0.077	20.37	6.77
3.100	8.65	0.00	8.65	5.6465	0.00505	NA	NA	NA	0.34	0.027	20.35	6.78

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	0.8	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.4	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07D	9888	LITTLE SWATARA 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
6.970	Keystone Prot	20.31	36.31	20.31	36.31	0	0
3.520	Fredericksburg	17.67	50	19.74	50	0	0
3.100		NA	NA	19.67	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
6.970	Keystone Prot	2.02	4.8	2.02	4.34	2	10
3.520	Fredericksburg	1.89	16.76	1.98	15.14	2	10
3.100		NA	NA	1.98	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)		
6.97	Keystone Prot	10.25	10.25	3.07	3.07	5	5	0	0
3.52	Fredericksburg	25	25	15.14	15.14	5	5	0	0
3.10		NA	NA	NA	NA	NA	NA	NA	NA

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07D	9888	LITTLE SWATARA CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
6.970	3.000	20.000	6.754
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
48.819	0.780	62.615	0.242
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
6.15	0.491	1.55	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.609	1.515	Tsivoglou	5
Reach Travel Time (days)			
0.871			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.087	5.90	1.46	6.17
0.174	5.65	1.37	5.83
0.261	5.41	1.29	5.56
0.348	5.19	1.21	5.36
0.436	4.97	1.14	5.22
0.523	4.76	1.07	5.12
0.610	4.56	1.01	5.07
0.697	4.37	0.95	5.05
0.784	4.19	0.89	5.06
0.871	4.01	0.84	5.10

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
3.520	3.650	20.445	6.733
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
48.688	0.770	63.192	0.301
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
5.69	0.839	2.03	0.724
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.388	8.430	Tsivoglou	5
Reach Travel Time (days)			
0.085			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.009	5.65	2.02	5.53
0.017	5.61	2.01	5.66
0.026	5.57	2.00	5.78
0.034	5.53	1.98	5.90
0.043	5.49	1.97	6.01
0.051	5.45	1.96	6.11
0.060	5.41	1.95	6.21
0.068	5.37	1.94	6.30
0.077	5.33	1.92	6.38
0.085	5.29	1.91	6.46

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07D	9888	LITTLE SWATARA CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
3.100	3.650	20.425	6.742
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
49.228	0.779	63.221	0.309
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
5.14	0.806	1.83	0.723
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.539	10.741	Tsivoglou	5
Reach Travel Time (days)			
0.030			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.003	5.13	1.82	6.58
0.006	5.12	1.82	6.63
0.009	5.10	1.81	6.67
0.012	5.09	1.81	6.71
0.015	5.08	1.81	6.75
0.018	5.07	1.80	6.78
0.021	5.06	1.80	6.82
0.024	5.04	1.80	6.86
0.027	5.03	1.79	6.89
0.030	5.02	1.79	6.92