pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0044059**
Facility Type	**Industrial**	APS ID	**342128**
Major / Minor	**Minor**	Authorization ID	**1014823**

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

Applicant and Facility Information

Applicant Name	**PA Fish & Boat Commission**	Facility Name	**Reynoldsdale Fish Culture Station**
Applicant Address	Benner Spring Fish Research Station 1735 Shiloh Road State College, PA 16801	Facility Address	162 Fish Hatchery Road New Paris, PA 15554-8213
Applicant Contact	Mindy McClenahan	Facility Contact	Harry Wade
Applicant Phone	(814) 353-2229	Facility Phone	(814) 839-2211
Client ID	135455	Site ID	451848
SIC Code	0921	Municipality	East Saint Clair Township
SIC Description	Agriculture - Fish Hatcheries and Preserves	County	Bedford
Date Application Received	February 18, 2014	EPA Waived?	Yes
Date Application Accepted	February 26, 2014	If No, Reason	

Purpose of Application: This is an application for NPDES renewal.

Approve	Deny	Signatures	Date
X		Nicholas Hong, P.E. / Environmental Engineer Nick Hong (via electronic signature)	December 21, 2022
x		Daniel W. Martin, P.E. / Environmental Engineer Manager Maria D. Bebenek for	January 25, 2023
x		Maria D. Bebenek, P.E. / Environmental Program Manager Maria D. Bebenek	January 25, 2023

Summary of Review

IMPORTANT NOTE:

THIS FACT SHEET HAS BEEN REVISED BASED UPON COMMENTS FROM FISH AND BOAT.

Water quality modeling was also re-done to determine impacts to downstream dischargers.

The application submitted by the applicant requests a NPDES renewal permit for the PA Fish and Boat Commission-Reynoldsdale State Fish Hatchery located at 162 Fish Hatchery Road, New Paris, PA 15554 in Bedford County, municipality of East St. Clair Township. The existing permit became effective on February 1, 2009 and expired on August 31, 2014. The application for renewal was received by DEP Southcentral Regional Office (SCRO) on February 18, 2014. An updated application form was submitted October 19, 2017. Significant delays in processing the renewal could be attributed to efforts to maintain consistency with other fish hatchery facilities due to appeals to the Environmental Hearing Board (EHB) for a facility separate from Reynoldsdale Fish Hatchery.

The purpose of this Fact Sheet is to present the basis of information used for establishing the proposed NPDES permit effluent limitations. The Fact Sheet includes a description of the facility, a description of the facility's receiving waters, a description of the facility's receiving waters attainment/non-attainment assessment status, and a description of any changes to the proposed monitoring/sampling frequency. Section 6 provides the justification for the proposed NPDES effluent limits derived from technology based effluent limits (TBEL), water quality based effluent limits (WQBEL), total maximum daily loading (TMDL), antidegradation, anti-backsliding, and/or whole effluent toxicity (WET). A brief summary of the outlined descriptions has been included in the Summary of Review section.

The subject facility is a 1.6 MGD hydraulic design flow treatment facility. The applicant does not anticipate any proposed upgrades to the treatment facility in the next five years. The NPDES application has been processed as an Industrial Wastewater Facility due to the type of wastewater and the design flow rate for the facility. The applicant disclosed the Act 14 requirement to Bedford County Commissioners and East St. Clair Township Supervisors and the notice was received by the parties on January 28, 2014.

Utilizing the DEP's web-based Emap-PA information system, the receiving waters has been determined to be Dunning Creek. The sequence of receiving streams that Dunning Creek discharges into are the Raystown Branch Juniata River, the Juniata River, and the Susquehanna River which eventually drains into the Chesapeake Bay. The subject site is subject to the Chesapeake Bay implementation requirements. The receiving water has protected water usage for warm water fishes (WWF) and migratory fishes (MF). No Class A Wild Trout fisheries are impacted by this discharge. The absence of high quality and/or exceptional value surface waters removes the need for an additional evaluation of anti-degradation requirements.

The Dunning Creek is a Category 2 stream listed in the 2022 Integrated List of All Waters (formerly 303d Listed Streams). This stream is an attaining stream that supports aquatic life. The receiving waters is not subject to a total maximum daily load (TMDL) plan to improve water quality in the subject facility's watershed.

The existing permit and proposed permit differ as follows:

- **Monitoring for BOD is being made in lieu of CBOD.**
- **Mass loadings have been adjusted for a flow rate of 1.6 MGD.**
- **Monitoring frequency for BOD, TSS, and ammonia nitrogen has been reduced to 2x/month.**
- **Due to the Chesapeake Bay WIP, monitoring on a 1x/quarter shall be necessary for nitrogen species and phosphorus.**
- **Maximum daily usage limits for drugs/chemicals have been included in the permit.**

Sludge use and disposal description and location(s): Fish waste is held in the 250,000-gallon storage tank and is removed by a commercial vendor. The solids are then applied as fertilizer on local agricultural field at least once per year.

The proposed permit will expire five (5) years from the effective date.

Based on the review in this report, it is recommended that the permit be drafted. 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

Summary of Review

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.

Any additional information or public review of documents associated with the discharge or facility may be available at PA DEP Southcentral Regional Office (SCRO), 909 Elmerton Avenue, Harrisburg, PA 17110. To make an appointment for file review, contact the SCRO File Review Coordinator at 717.705.4700.

1.0 Applicant

1.1 General Information

This fact sheet summarizes PA Department of Environmental Protection's review for the NPDES renewal for the following subject facility.

Facility Name:	PA Fish and Boat Commission Reynoldsdale State Fish Hatchery
NPDES Permit #	PA0044059
Physical Address:	162 Fish Hatchery Road New Paris, PA 15554
Mailing Address:	1735 Shiloh Road State College, PA 16801
Contact:	Mindy McClenahan Chemist 3 814-353-2229 mmcclenaha@pa.gov
Site Contact:	Harry Wade Fish Hatchery Manager 814-839-2211 hwade@pa.gov
Consultant:	The NPDES renewal application was submitted without a consultant.

1.2 Permit History

Description of Facility

The Reynoldsdale Fish Hatchery is owned and operated by the PA Fish and Boat Commission (PFBC). The facility is located on a 130 acre parcel. The hatchery was originally constructed in 1928 and consists of earthen ponds, concrete and earthen raceways, and a hatchery building that contains concrete and fiberglass tanks and vertical flow incubator trays. Water is supplied to the hatchery by a spring that is located at the west end of the facility.

The hatchery raises brook, brown, rainbow, and golden trout. Eggs are collected and fertilized on site from August to November. The eggs are maintained in the hatch house with egg hatch occurring about 30-45 days after fertilization.

The existing permit was effective beginning on September 1, 2009 and expired on August 31, 2014. On January 1, 2014, the facility was issued a WQM Part amendment which included treatment for their wastewater using Actiflo. The NPDES was not amended due to the Actiflo plant upgrade.

The facility does not qualify for coverage under PAG-11 since it discharges into the Chesapeake Bay watershed.

Permit submittal included the following information.

- NPDES Application
- Flow Diagrams
- Effluent Sample Data (abbreviated Pollutant Group 1 parameters)
- Preparedness, Prevention, and Contingency (PPC) Plan

2.0 Treatment Facility Summary

2.1.1 Site location

The physical address for the facility is 162 Fish Hatchery Road, New Paris, PA 15554. A topographical and an aerial photograph of the facility are depicted as Figure 1 and Figure 2.

Figure 1: Topographical map of the subject facility

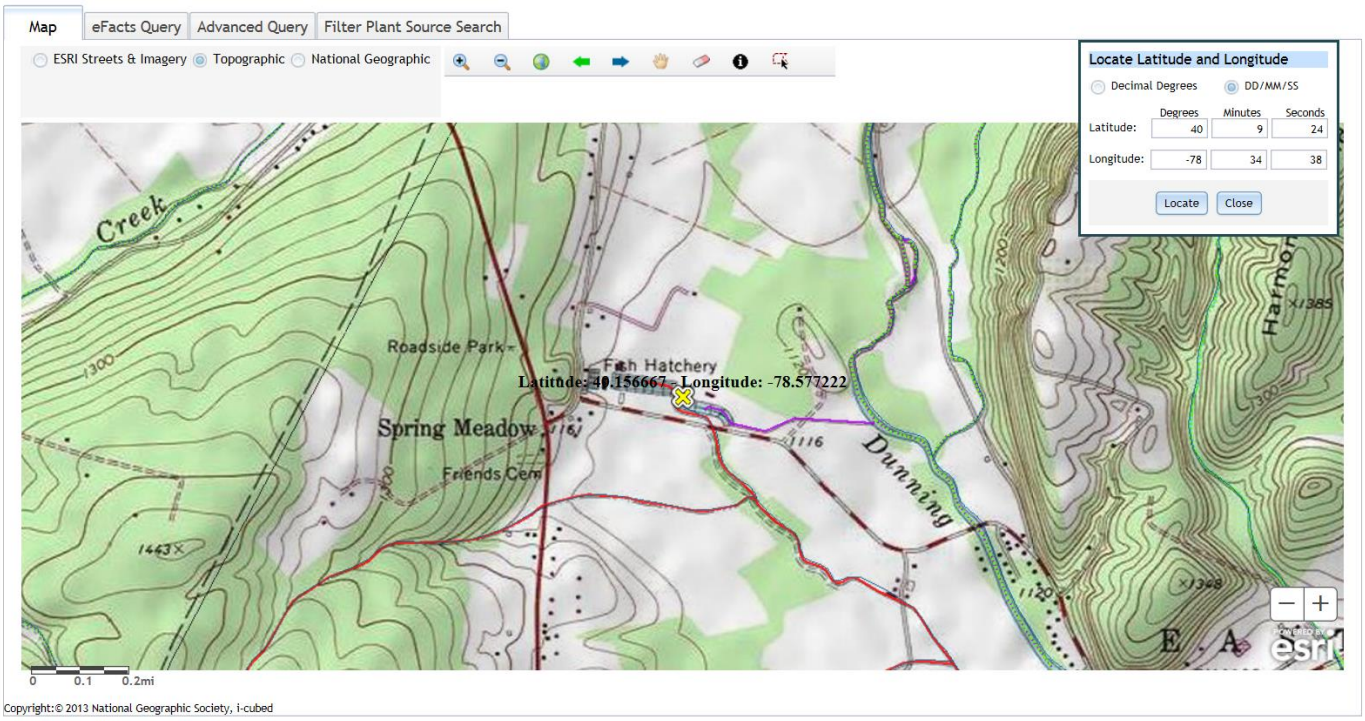
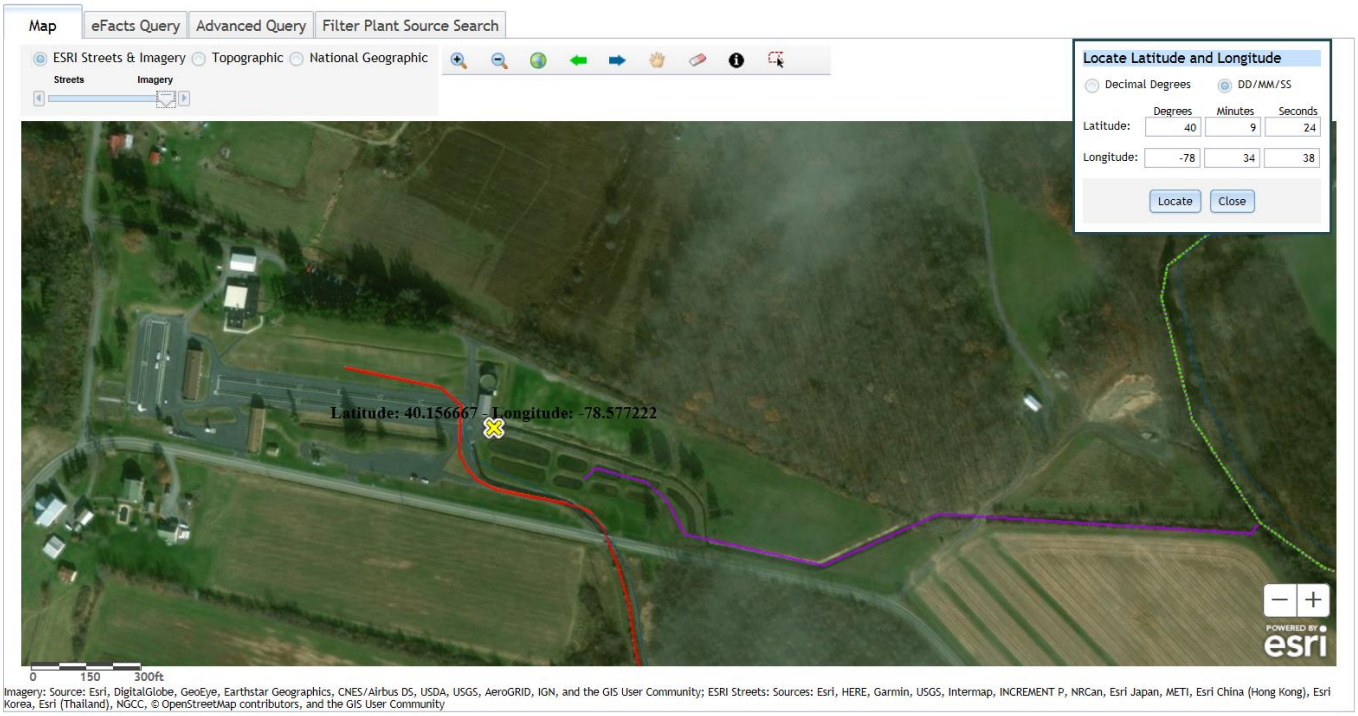


Figure 2: Aerial Photograph of the subject facility



2.2 Description of Wastewater Treatment Process

The subject facility is a 1.4012 MGD average annual design flow facility. The hydraulic design flow is 1.6 MGD. The subject facility treats wastewater using the Actiflo treatment system.

According to the attached flow diagram, the source of water originates from both a spring and a sump. The spring pumps 1400 gpm with twenty percent (20%) of the flow being fed directly to Spring Meadow Run and the remaining eighty percent (80%) of the flow being fed to the treatment process. The spring water flows via gravity into the upper most raceways sections and flows down through the various production area.

Up to an additional 200 gpm (0.288 MGD) of additional flow from a low lying sump area is pumped into the bottom of the first two raceways where it combines with the main spring flow.

Each 100-foot raceway section has a quiescent zone (QZ) at the lower end which is void of fish. Settletable solids descend to the bottom of the QZ. Each QZ contains a plug that when pulled leads to an underground piping system that carries the settled waste to a ballasted flocculation treatment system (Actiflo) at the lower end of the hatchery. The QZ are routinely cleaned at least 2x/week. Accumulated fish waste from the treatment system is held in a 250,000-gal storage tank.

The treatment building houses the Actiflo treatment process where the wastewater is treated.

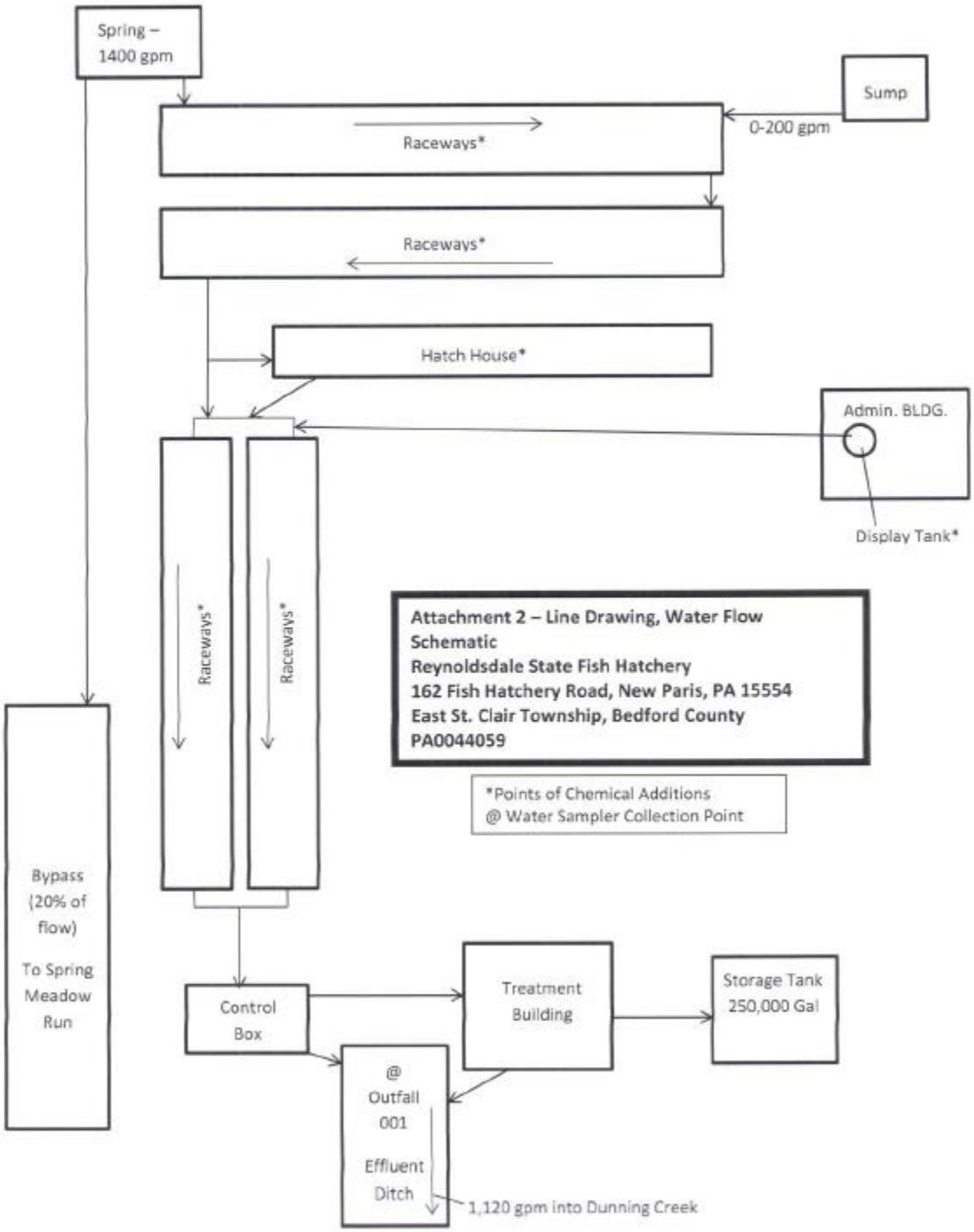
Fish waste is held in the 250,000-gallon storage tank and is removed by a commercial vendor and applied as fertilizer on local agricultural field at least once/yr.

According to the facility personnel, the control box splits approximately 50% of the total flow to the outfall and the remaining 50% of the total flow gets treated by the Actiflo treatment system prior to joining the outfall (See flow diagram).

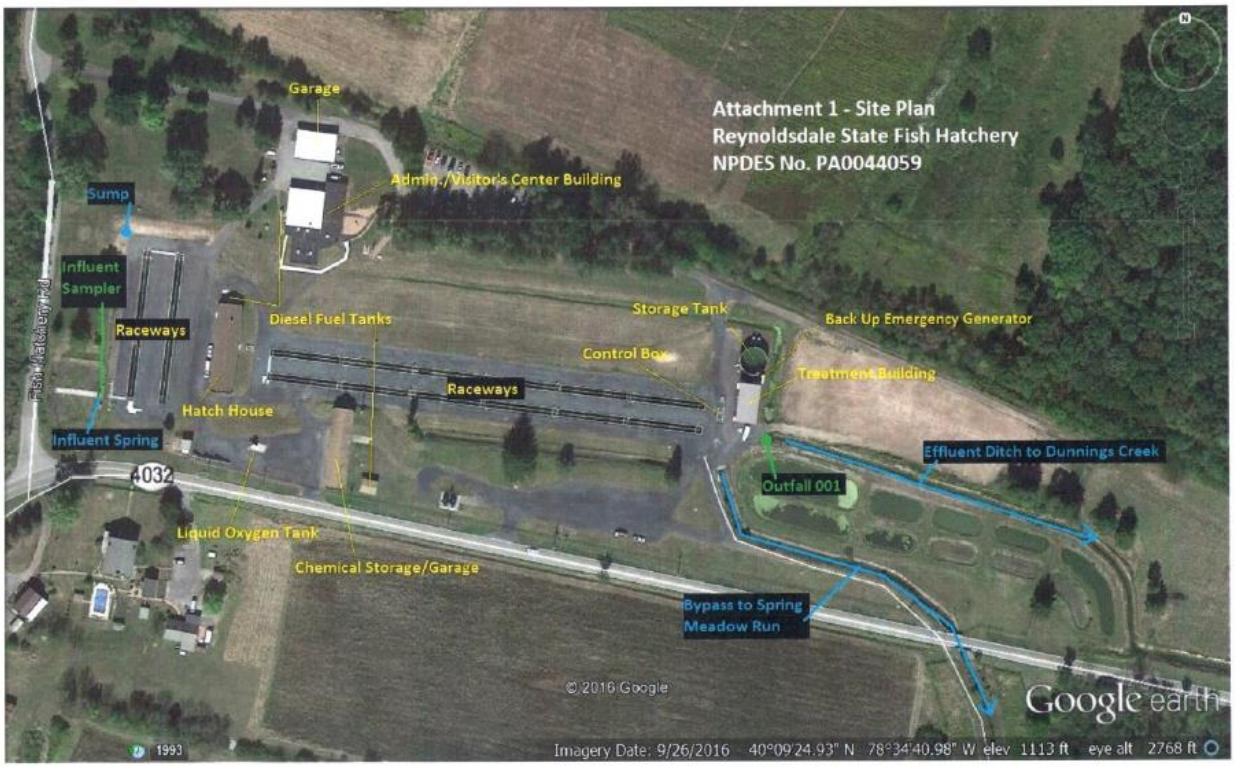
The flow direction from Outfall 001 is through an effluent ditch which flows east before discharge into Dunnings Creek.

The facility is being evaluated for flow, pH, dissolved oxygen, CBOD5, TSS, ammonia-nitrogen, and formaldehyde. The existing permits limits for the facility is summarized in Section 2.4.

A schematic of the treatment process is depicted in the figure.



An aerial photograph with site features is shown.



The treatment process is summarized in the table.

Treatment Facility Summary				
Treatment Facility Name: PA Fish and Boat- Reynoldsdale				
WQM Permit No.	**Issuance Date**			
503202	01/22/2014			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Industrial	Tertiary	Chemical With Solids Removal	Bromine	1.4012*
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
1.6*				Land Application

***** A control box splits approximately 50% of the total flow to the outfall and the remaining 50% of the total flow gets treated by the Actiflo treatment system prior to joining the outfall. The total flow discharging the outfall is approximately 1,120 gpm (1.61 MGD).

Operating Days

The number of operating days for the facility is 365 days per year.

Species and Weights

The table summarizes the projected yearly (gross) maximum harvestable fish over the next five years.

Projected Yearly (Gross) Harvested Fish		
Species	**Warm/Cold Water**	**Total lbs**
Brook Trout	Cold	28,800
Brown Trout	Cold	40,000
Rainbow Trout	Cold	93,000
Golden Rainbow Trout	Cold	3,200
Total		165,000

The application erroneously reported 170,000 total lbs. The total lbs calculated from the table is 165,000 lbs.

Feed

The table summarizes the feed usage in the next five years.

Projected Feed Usage		
	Lbs/month	**Lbs/Year**
Average	17,300	208,000
Maximum	36,000	234,000

February is the month of maximum feeding. The total mass of food fed during the month of February is 36,000 pounds.

Solids Management

Fish waste is held in the 250,000-gallon storage tank and is removed by a commercial vendor. The solids are then applied as fertilizer on local agricultural field at least once per year.

2.3 Facility Outfall Information

The facility has the following outfall information for wastewater.

Outfall No. 001 **Design Flow (MGD)** 1.6
Latitude 40º 9' 20.00" **Longitude** -78º 34' 29.00"
Wastewater Description: Aquaculture Discharge

2.3.1 Operational Considerations- Chemical Additives

Chemical additives are chemical products introduced into a waste stream that is used for cleaning, disinfecting, or maintenance and which may be detected in effluent discharged to waters of the Commonwealth. Chemicals excluded are those used for neutralization of waste streams, the production of goods, and treatment of wastewater.

Drugs and Chemicals

The table summarizes drugs and the purpose of the drugs used at the facility to treat fish.

Purpose of Chemical Substance Used	
Chemical Substance	**Purpose of Use**
Chloramine-T	Used to treat fish infected with gill disease, columnaris, and other external bacterial diseases on fish.
Diquat Dibromide	Used to control gill disease, columnaris disease, and other external bacteria on fish.
Florfenicol (AQUAFLOR)	Used to treat fish that are infected with coldwater disease and furunculosis
Hydrogen Peroxide (35%)	Used to control fungus on eggs and fish. Also used to control gill disease, columnaris, and other external bacterial diseases on fish.
Professional Lysol Brand	Used to treat fish with environmental gill disease and bacterial gill diseases on fish.
Parasite-S; Formalin (Formaldehyde 37%)	Used to control fungus on eggs and fish. Used to control Ich, Costic, Chilodonella, Syphidia, Epistylis, Trichondina, Cleidodiscus, Gyrodactylus, and Dactylogyrus on fish.
Romet TC	Used to treat fish that are infected with systemic bacteria.
Sodium Chloride	Used to treat fish infected with external parasites and as an osmoregulator to reduce stress.
Terramycin for Fish, TM 200	Used to treat fish that are infected with systemic bacteria and furunculosis.

A review of the requested drug usage amount in the NPDES renewal application and actual 2021 maximum daily usage was completed. The table summarizes the requested maximum daily usage amount in the NPDES renewal application and the actual 2021 maximum daily usage amounts. The requested amount in the NPDES was generally much larger than actual usage except for florfenicol and hydrogen peroxide.

Hydrogen peroxide should dissipate after 30 minutes of detention time. The facility confirmed that this detention time is met with a dye test.

Drug Usage from 2021		
Drug	**Requested Maximum Daily Usage (lbs/day)**	**2021 Maximum Daily Usage (lbs/day)[1]**
Chloramine-T	11	8.38
Diquat Dibromide	12.5	0.00
Florfenicol	1.1	68.66
Hydrogen Peroxide[2]	62	285.23
Parasite-S	4.5	0.00
Lysol	75	3.34
Romet TC	1.8	0.00
Sodium Chloride	3750	0.00
Terramycin 200	37	0.07

Notes:

- [1] Data abstracted from DMR data for January 2021 to November 2021. The January 2021 DMR appeared to reflect data from November 2020
- [2]Facility confirmed that hydrogen peroxide will dissipate after 30 minutes

2.4 Existing NPDES Permits Limits

The existing NPDES permit limits are summarized in the table.

Permit No. PA 0044059

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS

I. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. For Outfall 001, Latitude 40°09'20", Longitude 78°34'29", River Mile Index 14.12, Stream Code 14586, Discharging to Dunning Creek

which receives wastewater from the fish hatchery.

1. The permittee is authorized to discharge during the period from September 1, 2009 through August 31, 2014.

2. Based on the production data and anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements, Footnotes, and Supplemental Information).

Discharge Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) [1]		Concentrations (mg/L)				Minimum [2] Measurement Frequency	Required Sample Type
	Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Instantaneous Maximum		
Flow (MGD) [4]	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/Week	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/Week	Grab
$CBOD_5$ (5/1 to 10/31)	111	222	XXX	8.0	16	20	1/Week	24-hr Comp
$CBOD_5$ (11/1 to 4/30)	222	444	XXX	16	32	40	1/Week	24-hr Comp
Total Suspended Solids	139	278	XXX	10	20	25	1/Week	24-hr Comp
NH_3-N (5/1 to 10/31)	34	69	XXX	2.5	5.0	6.5	1/Week	24-hr Comp
NH_3-N (11/1 to 4/30)	104	208	XXX	7.5	15	19	1/Week	24-hr Comp
Formaldehyde [3]	13.5	27	XXX	0.97	1.94	2.42	2/Month	3 Grab/Event

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

° at discharge from facility.

3.0 Facility NPDES Compliance History

3.1 Summary of Inspections

A summary of the most recent inspections during the existing permit review cycle is as follows.

The DEP inspector noted the following during the inspection.

10/16/2014:

- The facility was noted as undergoing the initial stage of the Actiflo construction upgrade. The hatchery raceways will be redesigned and the facility will be utilizing a wastewater treatment system.
- The facility was advised that the composite sampler should have a thermometer.

12/03/2015:

- The facility was noted a having completed the construction of the Actiflo wastewater treatment system. The plant had not been placed in service but the major units of the treatment system were installed.
- The hatchery reportedly was in the process of constructing new concrete fish rearing raceways. Only one section of the raceways was being used (2-3 year olds). The original hatch house was planned on being retained for use.
- The facility was advised to keep an operations log book to record process adjustments, problems, and maintenance, and repair information on the new treatment system.

11/01/2016:

- The facility was noted a having completed the construction of the Actiflo wastewater treatment system and the treatment units were placed in service las winter.

- The wastewater treatment plant consist of two Actiflo treatment trains- only one train is active. Each Actiflo treatment train includes a pre-coagulation tank, a coagulation tank, a maturation tank, a clarifier, a sand recirculation, and a hydracyclone. The Actiflo is controlled by a SCADA system that has in-line pH and turbidity meters.
- The facility reportedly was utilizing an additional fresh water spring on the property for additional flow to the fish rearing tanks.

11/14/2017:

- The facility utilizes an Actiflo wastewater treatment system that was placed in service in the winter of 2015.
- Approximately 70% of the hatchery racewater is sent to the treatment plant while the remaining 30% is discharged from the raceways to the receiving stream. When the hatchery staff are cleaning the concrete raceways all the effluent is sent to the Actiflo system.
- The effluent sampled is a combination of direct raceway discharge and fully treated effluent. The effluent discharges to a constructed water course and flows about 300 feet before discharging to Dunning Creek.
- Algae was observed downstream of the outfall. The water course also contained an abundance of fluffy, tan colored solids starting near the outfall and extending approximately 100 feet downstream. The plant operator thinks that this could be fish food or fish emulsion that escaped with the untreated overflow water. The facility had planned on pumping the solids and sending the sewage directly to the treatment plant.
- The facility was reportedly having issues with the straining device at the plant headworks of the Actiflo treatment system. The strainer had been clogging. The facility plans to have a dual strainer to remedy the clogging issue.

11/28/2018:

- A new dual strainer was installed ahead of the Actiflo unit to help reduce clogging, allow for easier access, and prevent the need for shut down during routine maintenance.
- Approximately 50% of the hatchery raceway water is sent to the treatment plant and the remaining 50% is discharged from the raceways directly to the receiving stream.
- There was an abundance of algae and fluffy, tan colored solids starting near the outfall and extending approximately 100 feet downstream. The deposits are usually pumped out by the facility a few times each year and sent to the treatment plant. The solids in the stream remain confined behind a raised weir in the stream and will be pumped out when the vacuum truck is repaired.

12/18/2019:

- There was nothing significant to report

2020 and 2021: The facility was not inspected.

3.2 Summary of DMR Data

A review of approximately 1-year of DMR data (October 2021 to September 2022) shows that the max monthly average flow data for the facility at 1.6389 MGD in May 2022. A more extended flow rate study was done for the time beginning January 1, 2020 to August 1, 2022. The average flow rate was 1.67 MGD. The summary table appears in the attachment. The design capacity of the treatment system is 1.6 MGD. Modeling was based upon 1.67 MGD.

A control box splits approximately 50% of the total flow to the outfall and the remaining 50% of the total flow gets treated by the Actiflo treatment system prior to joining the outfall. In February 2022, the facility confirmed via email correspondence that the facility is not hydraulically overloaded.

The off-site laboratory used for the analysis of the parameters were Benner Spring Water Quality Lab (PA Fish and Boat Commission) located at 1735 Shiloh Road, State College, PA 16801 and Fairway Laboratories located at 2019 Ninth Avenue, PO BOX 1925, Altoona, PA 16603.

DMR Data for Outfall 001 (from October 1, 2021 to September 30, 2022)

Parameter	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21	OCT-21
Flow (MGD) Average Monthly	1.4749	1.465	1.5038	1.5138	1.6389	1.5681	1.5504	1.6336	1.5431	1.5919	1.4784	1.5112
Flow (MGD) Daily Maximum	1.5307	1.5927	1.6445	1.62	2.232	1.7122	1.7626	2.137	1.7251	1.7007	1.584	1.6013
pH (S.U.) Minimum	6.8	6.8	7.1	6.6	6.7	7.0	7.0	6.6	6.7	6.7	6.6	6.7
pH (S.U.) Maximum	6.9	7.2	7.5	7.2	7.1	7.5	7.2	7.1	7.3	7.1	7.0	6.9
DO (mg/L) Minimum	11.3	11.3	12.7	11.1	12.0	14.4	14.9	13.6	12.7	11.8	10.6	12.2
CBOD5 (lbs/day) Average Monthly	61	64	< 42	< 41	< 44	< 42	48	59	83	85	82	72
CBOD5 (lbs/day) Daily Maximum	75	8	48	46	49	46	51	68	101	112	97	82
CBOD5 (mg/L) Average Monthly	5.0	5.2	< 3.3	< 3.3	< 3.3	< 3	3.8	5	7	7	7	5.8
CBOD5 (mg/L) Daily Maximum	6	7.2	3.7	3.6	3.8	4	4.2	5	8	8	8	6.6
TSS (lbs/day) Average Monthly	41	41	25	26	31	29	38	56	67	54	67	97
TSS (lbs/day) Daily Maximum	60	54	31	34	58	36	64	79	78	65	102	173
TSS (mg/L) Average Monthly	3.3	3	2.0	2.0	2.3	2	3	4	5	4	5	8
TSS (mg/L) Daily Maximum	5	4	2.4	2.7	4.4	3	5	6	6	5	8	14
Ammonia (lbs/day) Average Monthly	13	13	11	10	< 9	11	14	18	17	20	15	14
Ammonia (lbs/day) Daily Maximum	15	17	12	11	12	13	15	22	21	25	18	18
Ammonia (mg/L) Average Monthly	1.1	1.1	0.9	0.8	< 0.7	0.9	1.1	1.4	1.4	1.5	1.2	1.1
Ammonia (mg/L) Daily Maximum	1.2	1.4	0.9	0.9	0.9	1.1	1.2	1.6	1.7	1.7	1.5	1.4
Formaldehyde (lbs/day) Average Monthly	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
Formaldehyde (lbs/day) Daily Maximum	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG

Formaldehyde (mg/L) Average Monthly	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
Formaldehyde (mg/L) Daily Maximum	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG

3.3 Non-Compliance

3.3.1 Non-Compliance- NPDES Effluent

A summary of the non-compliance to the permit limits for the existing permit cycle is as follows.

From the DMR data beginning in September 1, 2009 to August 31, 2022, the following were observed effluent non-compliances.

Summary of Non-Compliance with NPDES Permit Limits
Beginning 2/1/2009 and Ending 8/31/2022

NON_COMPLIANCE_DATE	NON_COMPL_TYPE_DESC	NON_COMPL_CATEGORY_DESC	PARAMETER	SAMPLE_VALUE	VIOLATION_CONDITION	PERMIT_VALUE	UNIT_OF_MEASURE	STAT_BASE_CODE	FACILITY_COMMENTS
12/12/2015	Violation of permit condition	Effluent	Total Suspended Solids	17.6	>	10	mg/L	Average Monthly	
12/12/2015	Violation of permit condition	Effluent	Total Suspended Solids	230	>	139	lbs/day	Average Monthly	
12/12/2015	Violation of permit condition	Effluent	Total Suspended Solids	45	>	20	mg/L	Daily Maximum	
12/12/2015	Violation of permit condition	Effluent	Total Suspended Solids	589	>	278	lbs/day	Daily Maximum	
12/12/2015	Violation of permit condition	Effluent	Total Suspended Solids	12.6	>	10	mg/L	Average Monthly	
12/12/2015	Violation of permit condition	Effluent	Total Suspended Solids	154	>	139	lbs/day	Average Monthly	
12/12/2015	Violation of permit condition	Effluent	Total Suspended Solids	21.5	>	20	mg/L	Daily Maximum	
12/12/2015	Violation of permit condition	Effluent	Total Suspended Solids	13	>	10	mg/L	Average Monthly	
12/12/2015	Violation of permit condition	Effluent	Total Suspended Solids	178	>	139	lbs/day	Average Monthly	
12/12/2015	Violation of permit condition	Effluent	Total Suspended Solids	40	>	20	mg/L	Daily Maximum	
12/12/2015	Violation of permit condition	Effluent	Total Suspended Solids	554	>	278	lbs/day	Daily Maximum	
12/12/2015	Violation of permit condition	Effluent	Formaldehyde	1.93	>	.97	mg/L	Average Monthly	
12/12/2015	Violation of permit condition	Effluent	Formaldehyde	15.9	>	13.5	lbs/day	Average Monthly	
12/12/2015	Violation of permit condition	Effluent	Formaldehyde	3.27	>	1.94	mg/L	Daily Maximum	
12/12/2015	Violation of permit condition	Effluent	Formaldehyde	17.3	>	13.5	lbs/day	Average Monthly	
12/12/2015	Violation of permit condition	Effluent	Formaldehyde	2.1	>	.97	mg/L	Average Monthly	
12/12/2015	Violation of permit condition	Effluent	Formaldehyde	2.35	>	1.94	mg/L	Daily Maximum	
6/26/2017	Violation of permit condition	Effluent	Total Suspended Solids	24	>	20	mg/L	Daily Maximum	The violation was due to maintenance issues with the effluent treatment building.
6/26/2017	Violation of permit condition	Effluent	Total Suspended Solids	357	>	278	lbs/day	Daily Maximum	The violation was due to maintenance issues with the effluent treatment building.
7/23/2018	Other	Other Violations							
7/24/2019	Violation of permit condition	Effluent	pH	5.9	<	6.0	S.U.	Minimum	We believe the value could have been instrument failure or operator error.

3.3.2 Non-Compliance- Enforcement Actions

A summary of the non-compliance enforcement actions for the current permit cycle is as follows:

Beginning in September 1, 2009 to October 25, 2022, there were no observed enforcement actions.

3.4 Summary of Biosolids Disposal

A summary of the biosolids disposed of from the facility is as follows.

2021	
Sewage Sludge / Biosolids Production	
Hauled Off-Site	
2021	Gallons
January	4,300
February	4,750
March	5,700
April	11,350
May	15,400
June	10,650
July	9,950
August	19,850
September	11,600
October	15,200
November	15,350
December	10,000
Notes:	
Undisclosed location	

3.5 Open Violations

No open violations existed as of December 2022.

4.0 Receiving Waters and Water Supply Information Detail Summary

4.1 Receiving Waters

The receiving waters has been determined to be Dunning Creek. The sequence of receiving streams that Dunning Creek discharges into are the Raystown Branch Juniata River, the Juniata River, and the Susquehanna River which eventually drains into the Chesapeake Bay.

4.2 Public Water Supply (PWS) Intake

The closest PWS to the subject facility is Saxton Municipal Water Authority (PWS ID #4050021) located approximately 65 miles downstream of the subject facility on the Juniata River. Based upon the distance and the flow rate of the facility, the PWS should not be impacted.

4.3 Class A Wild Trout Streams

Class A Wild Trout Streams are waters that support a population of naturally produced trout of sufficient size and abundance to support long-term and rewarding sport fishery. DEP classifies these waters as high-quality coldwater fisheries.

The information obtained from EMAP suggests that no Class A Wild Trout Fishery will be impacted by this discharge.

4.4 2022 Integrated List of All Waters (303d Listed Streams)

Section 303(d) of the Clean Water Act requires States to list all impaired surface waters not supporting uses even after appropriate and required water pollution control technologies have been applied. The 303(d) list includes the reason for impairment which may be one or more point sources (i.e. industrial or sewage discharges) or non-point sources (i.e. abandoned mine lands or agricultural runoff and the pollutant causing the impairment such as metals, pH, mercury or siltation).

States or the U.S. Environmental Protection Agency (EPA) must determine the conditions that would return the water to a condition that meets water quality standards. As a follow-up to listing, the state or EPA must develop a Total Maximum Daily Load (TMDL) for each waterbody on the list. A TMDL identifies allowable pollutant loads to a waterbody from both point and non-point sources that will prevent a violation of water quality standards. A TMDL also includes a margin of safety to ensure protection of the water.

The water quality status of Pennsylvania's waters uses a five-part categorization (lists) of waters per their attainment use status. The categories represent varying levels of attainment, ranging from Category 1, where all designated water uses are met to Category 5 where impairment by pollutants requires a TMDL for water quality protection.

The receiving waters is listed in the 2022 Pennsylvania Integrated Water Quality Monitoring and Assessment Report as a Category 2 waterbody. The surface waters is an attaining stream that supports aquatic life. The designated use has been classified as protected waters for warm water fishes (WWF) and migratory fishes (MF).

4.5 Low Flow Stream Conditions

Water quality modeling estimates are based upon conservative data inputs. The data are typically estimated using either a stream gauge or through USGS web based StreamStats program. The NPDES effluent limits are based upon the combined flows from both the stream and the facility discharge.

A conservative approach to estimate the impact of the facility discharge using values which minimize the total combined volume of the stream and the facility discharge. The volumetric flow rate for the stream is based upon the seven-day, 10-year low flow (Q710) which is the lowest estimated flow rate of the stream during a 7 consecutive day period that occurs once in 10 -year time period. The facility discharge is based upon a known design capacity of the subject facility.

The closest WQN station to the subject facility is the Raystown Branch Juniata station (WQN223). This WQN station is located approximately 65 miles downstream of the subject facility.

The closest gauge station to the subject facility is the Dunning Creek station at Belden, PA (USGS station number 1560000). This gauge station is located approximately 10 miles downstream of the subject facility.

For WQM modeling, pH and stream water temperature data from the water quality network station was used. pH was estimated to be 8.00 and the stream water temperature was estimated to be 23.3 C.

The hardness of the stream was estimated from the water quality network to be 96 mg/l $CaCO_3$.

The low flow yield and the Q710 for the subject facility was estimated as shown below.

Gauge Station Data			
USGS Station Number	1560000		
Station Name	Dunning Creek at Belden, PA		
Q710	9.4	ft^3/sec	
Drainage Area (DA)	172	mi^2	
Calculations			
The low flow yield of the gauge station is:			
Low Flow Yield (LFY) = Q710 / DA			
LFY =	(9.4 ft^3/sec / 172 mi^2)		
LFY =	0.0547	$ft^3/sec/mi^2$	
The low flow at the subject site is based upon the DA of		57.5	mi^2
Q710 = (LFY@gauge station)(DA@Subject Site)			
Q710 = (0.0547 $ft^3/sec/mi^2$)(57.5 mi^2)			
Q710 =	3.142	ft^3/sec	

4.6 Summary of Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	1.6
Latitude	40º 9' 20.81"	Longitude	-78º 34' 29.70"
Quad Name		Quad Code	
Wastewater Description:	Aquaculture Discharge		

Receiving Waters	Unnamed Tributary to Dunning Creek (WWF, MF)	Stream Code	14586
NHD Com ID	65844605	RMI	14.8
Drainage Area	57.5	Yield (cfs/mi^2)	0.0547
Q_{7-10} Flow (cfs)	3.142	Q_{7-10} Basis	StreamStats/Steamgauge
Elevation (ft)	1112	Slope (ft/ft)	
Watershed No.	11-C	Chapter 93 Class.	WWF, MF
Existing Use	Same as Chapter 93 class	Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Not Assessed		
Cause(s) of Impairment	Not appl.		
Source(s) of Impairment	Not appl.		
TMDL Status	Not appl.	Name	

Background/Ambient Data		Data Source
pH (SU)	8.00	WQN223; median July to Sept
Temperature (°C)	23.3	WQN223; median July to Sept
Hardness (mg/L)	96	WQN223; median historical
Other:		

Nearest Downstream Public Water Supply Intake		Saxton Municipal Authority	
PWS Waters	Juniata River	Flow at Intake (cfs)	
PWS RMI	41	Distance from Outfall (mi)	64

5.0: Overview of Presiding Water Quality Standards

5.1 General

There are at least six (6) different policies which determines the effluent performance limits for the NPDES permit. The policies are technology based effluent limits (TBEL), water quality based effluent limits (WQBEL), antidegradation, total maximum daily loading (TMDL), anti-backsliding, and whole effluent toxicity (WET) The effluent performance limitations enforced are the selected permit limits that is most protective to the designated use of the receiving waters. An overview of each of the policies that are applicable to the subject facility has been presented in Section 6.

5.2.1 Technology-Based Limitations

TBEL treatment requirements under section 301(b) of the Act represent the minimum level of control that must be imposed in a permit issued under section 402 of the Act (40 CFR 125.3). Available TBEL requirements for the state of Pennsylvania are itemized in PA Code 25, Chapter 92a.47.

The presiding sources for the basis for the effluent limitations are governed by either federal or state regulation. The reference sources for each of the parameters is itemized in the tables. The following technology-based limitations apply, subject to water quality analysis and best professional judgement (BPJ) where applicable:

Parameter	Limit (mg/l)	SBC	Federal Regulation	State Regulation
BOD_5	30	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	45	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)

5.3 Water Quality-Based Limitations

WQBEL are based on the need to attain or maintain the water quality criteria and to assure protection of designated and existing uses (PA Code 25, Chapter 92a.2). The subject facility that is typically enforced is the more stringent limit of either the TBEL or the WQBEL.

Determination of WQBEL is calculated by spreadsheet analysis or by a computer modeling program developed by DEP. DEP permit engineers utilize the following computing programs for WQBEL permit limitations: (1) MS Excel worksheet for Total Residual Chorine (TRC); (2) WQM 7.0 for Windows Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen Version 1.1 (WQM Model) and (3) Toxics using DEP Toxics Management Spreadsheet for Toxics pollutants.

5.3.1 Water Quality Modeling 7.0

The WQM Model is a computer model that is used to determine NPDES discharge effluent limitations for Carbonaceous BOD (CBOD5), Ammonia Nitrogen (NH3-N), and Dissolved Oxygen (DO) for single and multiple point source discharges scenarios. WQM Model is a complete-mix model which means that the discharge flow and the stream flow are assumed to instantly and completely mixed at the discharge node.

WQM recommends effluent limits for DO, CBOD5, and NH_3-N in mg/l for the discharge(s) in the simulation.

Four types of limits may be recommended. The limits are

(a) a *minimum concentration for DO in the discharge as 30-day average;*
(b) a 30-day average concentration for CBOD5 in the discharge;
(c) a 30-day average concentration for the NH_3-N in the discharge;
(d) *24-hour average concentration for NH_3-N in the discharge*.

The WQM Model requires several input values for calculating output values. The source of data originates from either EMAP, the National Map, or Stream Stats. Data for stream gauge information, if any, was abstracted from USGS Low-Flow, Base-Flow, and Mean-Flow Regression Equations for Pennsylvania Streams authored by Marla H. Stuckey (Scientific Investigations Report 2006-5130).

The input values utilized for the modeling are summarized in the table which can be found in Attachment B.

The applicable WQM Effluent Limit Type are discussed in Section 6 under the corresponding parameter which is either DO, CBOD, or ammonia-nitrogen.

5.3.2 Toxics Modeling

The Toxics Management Spreadsheet model is a computer model that is used to determine effluent limitations for toxics (and other substances) for single discharge wasteload allocations. This computer model uses a mass-balance water quality analysis that includes consideration for mixing, first-order decay, and other factors used to determine recommended water quality-based effluent limits. Toxics Management Spreadsheet does not assume that all discharges completely mix with the stream. The point of compliance with water quality criteria are established using criteria compliance times (CCTs). The available CCTs are either acute fish criterion (AFC), chronic fish criterion (CFC), or human health criteria (THH & CRL).

Acute Fish Criterion (AFC) measures the criteria compliance time as either the maximum criteria compliance time (i.e.15 minutes travel time downstream of the current discharge) or the complete mix time whichever comes first. AFC is evaluated at Q710 conditions.

Chronic Fish Criterion (CFC) measures the criteria compliance time as either the maximum criteria compliance time (i.e. 12 hours travel time downstream of the current discharge) or the complete mix time whichever comes first. CFC is evaluated at Q710 conditions.

Threshold Human Health (THH) measures the criteria compliance time as either the maximum criteria compliance time (i.e. 12 hours travel time downstream of the current discharge) or the estimated travel time downstream to the nearest potable water supply intake whichever comes first. THH is evaluated at Q710 conditions.

Cancer Risk Level (CRL) measures the criteria compliance time as either the maximum criteria compliance time (i.e. 12 hours travel time downstream of the current discharge) or the complete mix time whichever comes first. CRL is evaluated at Qh (harmonic mean or normal flow) conditions.

The Toxics Model requires several input values for calculating output values. The source of data originates from either EMAP, the National Map, or Stream Stats. Data for stream gauge information, if any, was abstracted from USGS Low-Flow, Base-Flow, and Mean-Flow Regression Equations for Pennsylvania Streams authored by Marla H. Stuckey (Scientific Investigations Report 2006-5130).

5.3.2.1 Determining if NPDES Permit Will Require Monitoring/Limits in the Proposed Permit for Toxic Pollutants

To determine if Toxics modeling is necessary, DEP has developed a Toxics Management Spreadsheet to identify toxics of concern. Toxic pollutants whose maximum concentrations as reported in the permit application or on DMRs are greater than the most stringent applicable water quality criterion are pollutants of concern. A Reasonable Potential Analysis was utilized to determine (a) if the toxic parameters modeled would require monitoring or (b) if permit limitations would be required for the parameters. The toxics reviewed for reasonable potential were the chemical additives/drugs used at the facility to treat the fish.

The toxic pollutants in Pollutant Group 2 was not evaluated since (a) the PAG 11 does not require sampling for Pollutant Group 2 (b) the permit renewal application submittal did not include sampling results for Pollutant Group 2 and (c) the instructions in the Application for Individual Permit to Discharge Industrial Wastewater did not specify requirements for toxics other than Pollutant Group 1.

Toxics Management Spreadsheet recommended maximum usages for the drugs.

Applicable monitoring or permit limits for toxics are summarized in Section 6.

The Toxics Management Spreadsheet output has been included in Attachment B.

5.3.3 Whole Effluent Toxicity (WET)

The facility is not subject to WET.

5.4 Total Maximum Daily Loading (TMDL)

5.4.1 TMDL

The goal of the Clean Water Act (CWA), which governs water pollution, is to ensure that all of the Nation's waters are clean and healthy enough to support aquatic life and recreation. To achieve this goal, the CWA created programs designed to regulate and reduce the amount of pollution entering United States waters. Section 303(d) of the CWA requires states to assess their waterbodies to identify those not meeting water quality standards. If a waterbody is not meeting standards, it is listed as impaired and reported to the U.S. Environmental Protection Agency. The state then develops a plan to clean up the impaired waterbody. This plan includes the development of a Total Maximum Daily Load (TMDL) for the pollutant(s) that were found to be the cause of the water quality violations. A Total Maximum Daily Load (TMDL) calculates the maximum amount of a specific pollutant that a waterbody can receive and still meet water quality standards.

Pennsylvania has committed to restoring all impaired waters by developing TMDLs and TMDL alternatives for all impaired waterbodies. The TMDL serves as the starting point or planning tool for restoring water quality.

5.4.1.1 Local TMDL

The subject facility does not discharge into a local TMDL.

5.4.1.2 Chesapeake Bay TMDL Requirement

The Chesapeake Bay Watershed is a large ecosystem that encompasses approximately 64,000 square miles in Maryland, Delaware, Virginia, West Virginia, Pennsylvania, New York and the District of Columbia. An ecosystem is composed of interrelated parts that interact with each other to form a whole. All of the plants and animals in an ecosystem depend on each other in some way. Every living thing needs a healthy ecosystem to survive. Human activities affect the Chesapeake Bay ecosystem by adding pollution, using resources and changing the character of the land.

Most of the Chesapeake Bay and many of its tidal tributaries have been listed as impaired under Section 303(d) of the federal Water Pollution Control Act ("Clean Water Act"), 33 U.S.C. § 1313(d). While the Chesapeake Bay is outside the boundaries of Pennsylvania, more than half of the State lies within the watershed. Two major rivers in Pennsylvania are part of the Chesapeake Bay Watershed. They are (a) the Susquehanna River and (b) the Potomac River. These two rivers total 40 percent of the entire Chesapeake Bay watershed.

The overall management approach needed for reducing nitrogen, phosphorus and sediment are provided in the Bay TMDL document and the Phase I, II, and III WIPs which is described in the Bay TMDL document and Executive Order 13508.

The Bay TMDL is a comprehensive pollution reduction effort in the Chesapeake Bay watershed identifying the necessary pollution reductions of nitrogen, phosphorus and sediment across the seven Bay watershed jurisdictions of Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia and the District of Columbia to meet applicable water quality standards in the Bay and its tidal waters.

The Watershed Implementation Plans (WIPs) provides objectives for how the jurisdictions in partnership with federal and local governments will achieve the Bay TMDL's nutrient and sediment allocations.

Phase 3 WIP provides an update on Chesapeake Bay TMDL implementation activities for point sources and DEP's current implementation strategy for wastewater. The latest revision of the supplement was December 17, 2019.

The Chesapeake Bay TMDL (Appendix Q) categorizes point sources into four sectors:

- Sector A- significant sewage dischargers;
- Sector B- significant industrial waste (IW) dischargers;
- Sector C- non-significant dischargers (both sewage and IW facilities); and
- Sector D- combined sewer overflows (CSOs).

All sectors contain a listing of individual facilities with NPDES permits that were believed to be discharging at the time the TMDL was published (2010). All sectors with the exception of the non-significant dischargers have individual wasteload allocations (WLAs) for TN and TP assigned to specific facilities. Non-significant dischargers have a bulk or aggregate allocation for TN and TP based on the facilities in that sector that were believed to be discharging at that time and their estimated nutrient loads.

Based upon the supplement the subject facility has been categorized as a Sector C discharger. The supplement defines Sector C as a non-significant discharger that includes sewage facilities (Phase 4 facilities: ≥ 0.2 MGD and < 0.4 MGD and Phase 5 facilities: > 0.002 MGD and < 0.2 MGD), small flow/single residence sewage treatment facilities (≤ 0.002 MGD), and non-significant IW facilities, all of which may be covered by statewide General Permits or may have individual NPDES permits.

At this time, there are approximately 850 Phase 4 and 5 sewage facilities, approximately 715 small flow sewage treatment facilities covered by a statewide General Permit, and approximately 300 non-significant IW facilities.

For non-significant IW facilities, monitoring and reporting of TN and TP will be required throughout the permit term in renewed or amended permits anytime the facility has the potential to introduce a net TN or TP increase to the load contained within the intake water used in processing.

Non-significant IW facilities that propose expansion or production increases and as a result will discharge at least 75 lbs/day TN or 25 lbs/day TP (on an annual average basis), will be classified as Significant IW dischargers and receive Cap Loads in their permits based on existing performance (existing TN/TP concentrations at current average annual flow).

In general, for new non-significant IW discharges (including existing facilities discharging without a permit), DEP will issue permits containing Cap Loads of "0" and these facilities will be expected to purchase credits and/or apply offsets to achieve compliance.

This facility is subject to Sector C monitoring requirements. Monitoring shall be required 1x/quarter for nitrogen species and phosphorus.

5.5 Anti-Degradation Requirement

Chapter 93.4a of the PA regulations requires that surface water of the Commonwealth of Pennsylvania may not be degraded below levels that protect the existing uses. The regulations specifically state that *Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected*. Antidegradation requirements are implemented through DEP's guidance manual entitled Water Quality Antidegradation Implementation Guidance (Document #391-0300-02).

The policy requires DEP to protect the existing uses of all surface waters and the existing quality of High Quality (HQ) and Exceptional Value (EV) Waters. Existing uses are protected when DEP makes a final decision on any permit or approval for an activity that may affect a protected use. Existing uses are protected based upon DEP's evaluation of the best available information (which satisfies DEP protocols and Quality Assurance/Quality Control (QA/QC) procedures) that indicates the protected use of the waterbody.

For a new, additional, or increased point source discharge to an HQ or EV water, the person proposing the discharge is required to utilize a nondischarge alternative that is cost-effective and environmentally sound when compared with the cost of the proposed discharge. If a nondischarge alternative is not cost-effective and environmentally sound, the person must use the best available combination of treatment, pollution prevention, and wastewater reuse technologies and assure that any discharge is nondegrading. In the case of HQ waters, DEP may find that after satisfaction of intergovernmental coordination and public participation requirements lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In addition, DEP will assure that cost-effective and reasonable best management practices for nonpoint source control in HQ and EV waters are achieved.

The subject facility's discharge will be to a non-special protection waters and the permit conditions are imposed to protect existing instream water quality and uses. Neither HQ waters or EV waters is impacted by this discharge.

5.6 Anti-Backsliding

Anti-backsliding is a federal regulation which prohibits a permit from being renewed, reissued, or modified containing effluent limitations which are less stringent than the comparable effluent limitations in the previous permit (40 CFR 122.l.1 and 40 CFR 122.l.2). A review of the existing permit limitations with the proposed permit limitations confirm that the facility is consistent with anti-backsliding requirements. The facility has proposed effluent limitations that are as stringent as the existing permit.

6.0 NPDES Parameter Details

The basis for the proposed sampling and their monitoring frequency that will appear in the permit for each individual parameter are itemized in this Section. The final limits are the more stringent of technology based effluent treatment (TBEL) requirements, water quality based (WQBEL) limits, TMDL, antidegradation, anti-degradation, or WET.

The reader will find in this section:

a) a justification of recommended permit monitoring requirements and limitations for each parameter in the proposed NPDES permit;
b) a summary of changes from the existing NPDES permit to the proposed permit; and
c) a summary of the proposed NPDES effluent limits.

6.1 Recommended Monitoring Requirements and Effluent Limitations

A 6-mile segment of Dunning Creek includes a total of four dischargers (one industrial waste facility and three minor sewage discharge facilities). Hillside Terrace MHB which was modelled in previous renewals has been abandoned. The four dischargers were modeled to determine the impacts of each of the dischargers on the next downstream discharger. The previous draft modeled the discharge individually and did not review impacts to the downstream dischargers.

Tabulated below are assumptions used for the model

- Drainage area Q710, and low flow yield were abstracted from the web-based Stream Stats program. The annual average flow rate utilized was the highest flow rate among the years 2019, 2020, or 2021. The flow rate was collected either from DMR data download data or the flow rate reported on the NPDES application.
- Consistent with DEP guidance documents, a default discharge temperature of 20 C was used.
- The discharge pH input into the model was the average of the most recent 12 months of DMR data (i.e. June/July 2021 to May/June 2022).

The table summarizes data inputs into the water quality modeling program.

Node Point	Facility	Latitude	Longitude	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (mi^2)	Q710 (ft^3/s)	Low Flow Yield	Annual Average Flow Rate (MGD)	Discharge Temp (C)	Discharge pH
1	Reynoldsdale FH	40.15602	-78.56965	14586	Dunning Creek	14.8	1112	57.5	1.5	0.0261	1.850	20	6.93
2	East St. Clair Stone Creek	40.14599	-78.5622	14586	Dunning Creek	13.9	1097	59.4	1.57	0.0264	0.042	20	7.59
3	East St. Clair Fishertown	40.11285	-78.55725	14586	Dunning Creek	10.4	1085	146	4.85	0.0332	0.057	20	7.70
4	Chestnut Ridge	40.10476	-78.53375	14586	Dunning Creek	8.9	1071	150	4.98	0.0332	0.546	20	6.92
5	-----	40.0923	-78.51096	14586	Dunning Creek	7.26	1063	164	5.52	0.0337	-----	-----	-----
6	-----	40.0717	-78.49519	14586	Dunning Creek	4.9	1055	172	5.91	0.0344	-----	-----	-----

Modeling with the highest annual average flow rate would represent a worst-case scenario using reasonable flow rates. The values in the table were used for modeling the following facilities East St Clair Stone Creek, East St. Clair Fishertown, and Chestnut Ridge.

For Reynoldsdale Fish Hatchery, the WQM Part 2 permit limits average annual flow to 1.44 MGD and the design hydraulic capacity at 1.6 MGD.

Reynoldsdale appears in the table with the highest annual average flow rate of 1.85 MGD (from DMR data from 8/1/18 to 12/1/21). However, the highest annual flow rate of 1.85 MGD was substituted with 1.67 MGD. This was the average flow rate from 1/1/2020 to 8/1/2022 (See attachment for calculation). DEP rationalizes that an average flow rate over 32 months is a reasonable time frame to use for modeling purposes.

Water quality modeling for BOD and ammonia nitrogen was reviewed over two separate runs.

- Run #1 utilized Reynoldsdale Fish Hatchery and East St. Clair Stone Creek as discharge points. Modeling Run #1 recommended effluent limits less stringent than current permit limits. The modeling recommended effluent limits of 18.7 mg/l for CBOD and 2.81 mg/l for ammonia nitrogen. Anti-backsliding regulations would prevent less stringent effluent limits.

- Run #2 utilized a total of four discharge points on the Dunning Creek stream segment to determine impacts on downstream dischargers. The discharge points were Reynoldsdale Fish Hatchery, East St. Clair Fishertown, East St. Clair Stone Creek, and Chestnut Ridge. Recommended effluent limits were CBOD of 6.62 mg/l and an ammonia nitrogen of 1.99 mg/l. The water quality model calculates effluent limits as CBOD. The facility has requested that effluent be monitored as BOD. Incorporating a 1.2 (i.e. 30 mg/l / 25 mg/l = 1.2) factor converting CBOD to BOD gives an effluent limit of approximately 7.9 mg/l.

  Mathematically rounded summer limits for BOD effluent limits would be 8 mg/l while ammonia nitrogen would be 2 mg/l. Winter limits are 2x summer limits.

DMR data from July 2021 to June 2022 show the maximum monthly average CBOD and ammonia nitrogen were 7 mg/l and 1.5 mg/l, respectively. With the proposed permit limits, the facility should be able to meet the new permit limits.

Supplementary Review of Other Dischargers on Dunning Creek

The effluent limits for CBOD and ammonia nitrogen for the dischargers on the segment of Dunning Creek are in the table.

Both current limits and proposed limits are summarized.

Reynoldsdale will retain the BOD effluent limit at 8 mg/l during the summer months and 16 mg/l during the winter months. The facility has requested that the parameter CBOD be changed to be sampled as BOD in the next renewal.

Ammonia nitrogen will be reduced from 2.5 mg/l to 2 mg/l during the summer. Winter limits will be 3x summer limits.

East St. Clair Stone Creek and East St. Clair Fishertown appear to be unaffected.

Chestnut Ridge will reduce CBOD to 20 mg/l and ammonia nitrogen to 7 mg/l. DMR data from July 2021 to June 2022 confirm that the facility shall not have issues with meeting the reduced effluent limits. The maximum monthly average CBOD and ammonia nitrogen were 5.4 mg/l and <2.7 mg/l, respectively.

Current Effluent Limits

Parameter	Units	Reynoldsdale FH	ESC Stone Creek	ESC Fishertown	Chestnut Ridge
CBOD (5/1 - 10/31)	mg/l	8	25	25	25
CBOD (11/1 - 4/30)	mg/l	16	25	25	25
Ammonia (5/1 - 10/31)	mg/l	2.5	-----	-----	8.5
Ammonia (11/1 - 4/30)	mg/l	7.5	-----	-----	-----

Proposed Effluent Limits

Parameter	Units	Reynoldsdale FH	ESC Stone Creek	ESC Fishertown	Chestnut Ridge
CBOD (5/1 - 10/31)	mg/l	x	25	25	20
CBOD (11/1 - 4/30)	mg/l	x	25	25	20
BOD (5/1 - 10/31)	mg/l	8	x	x	x
BOD (11/1 - 4/30)	mg/l	16	x	x	x
Ammonia (5/1 - 10/31)	mg/l	2	-----	-----	7
Ammonia (11/1 - 4/30)	mg/l	6	-----	-----	21

A summary of the recommended monitoring requirements and effluent limitations are itemized in the tables. The tables are categorized by (a) Conventional Pollutants and Disinfection, (b) Nitrogen Species and Phosphorus, and (c) Toxics.

6.1.1 Conventional Pollutants and Disinfection

Summary of Proposed NPDES Parameter Details for Conventional Pollutants and Disinfection PA0044059; Fish and Boat- Reynoldsdale Fish Hatchery			
Parameter	**Permit Limitation Required by[1]:**	**Recommendation**	
pH (S.U.)	TBEL	Monitoring:	The monitoring frequency shall be 1x/wk as a grab sample (Table 6-4).
		Effluent Limit:	Effluent limits may range from pH = 6.0 to 9.0
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-4 and the effluent limits assigned by Chapter 95.2(1).
Dissolved Oxygen	BPJ	Monitoring:	The monitoring frequency shall be 1x/wk as a grab sample (Table 6-4).
		Effluent Limit:	Effluent limits shall be greater than 5.0 mg/l.
		Rationale:	The monitoring frequency has been assigned in accordance with Table 6-4 and the effluent limits assigned by best professional judgement.
BOD	WQBEL	Monitoring:	The monitoring frequency shall be 2x/month as a 24-hr composite sample.
		Effluent Limit:	During the months of May 1 to October 31, effluent limits shall not exceed 106 lbs/day and 8 mg/l as an average monthly. During the months of November 1 to April 30, effluent limits shall not exceed 213 lbs/day and 16 mg/l as an average monthly.
		Rationale:	The monitoring frequency has been assigned in accordance with BPJ and PAG11. Water quality modeling recommends limits.
TSS	PAG11	Monitoring:	The monitoring frequency shall be 2x/month as a 24-hr composite sample (Table 6-4).
		Effluent Limit:	Effluent limits shall not exceed 133 lbs/day and 10 mg/l as an average monthly.
		Rationale:	The monitoring frequency has been assigned in accordance with the PAG11 and BPJ. Water quality modeling recommends limits.
Temperature	BPJ	Monitoring:	The monitoring frequency shall be continuous.
		Effluent Limit:	No effluent limit requirement
		Rationale:	Consistent with a letter from UAJA dated for December 16, 2019, temperature limits in future permits may be necessary. The proposed renewal cycle will collect temperature data to make determination for temperature limits in future permits.
Notes:			
1 The NPDES permit was limited by (a) anti-Backsliding, (b) Anti-Degradation, (c) SOP, (d) TBEL, (e) TMDL, (f) WQBEL, (g) WET, or (h) Other			
2 Monitoring frequency based on flow rate of 1.6 MGD.			
3 Table 6-4 (Self Monitoring Requirements for Industrial Discharges) in Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits) (Document # 362-0400-001) Revised 10/97			
4 Water Quality Antidegradation Implementaton Guidance (Document # 391-0300-002)			
5 Phase 2 Watershed Implementation Plan Wastewater Supplement, Revised September 6, 2017			

6.1.2 Nitrogen Species and Phosphorus

Summary of Proposed NPDES Parameter Details for Nitrogen Species and Phosphorus

PA0044059; Fish and Boat- Reynoldsdale Fish Hatchery

Parameter	Permit Limitation Required by[1]:	Recommendation	
Ammonia-Nitrogen	WQBEL	Monitoring:	The monitoring frequency shall be 2x/month as a 24-hr composite sample
		Effluent Limit:	During the months of May 1 to October 31, effluent limits shall not exceed 26 lbs/day and 2.0 mg/l as an average monthly. During the months of November 1 to April 30, effluent limits shall not exceed 80 lbs/day and 6.0 mg/l as an average monthly.
		Rationale:	Water quality modeling recommends effluent limits.
Nitrate-Nitrite as N	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/quarter as a 24-hr composite sample
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/quarter.
Total Nitrogen	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/quarter as a calculation
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/quarter.
TKN	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/quarter as a 24-hr composite sample
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/quarter.
Total Phosphorus	Chesapeake Bay TMDL	Monitoring:	The monitoring frequency shall be 1x/quarter as a 24-hr composite sample
		Effluent Limit:	No effluent requirements.
		Rationale:	Due to the Chesapeake Bay Implementation Plan, the facility is required to be monitored on a frequency at least 1x/quarter.
Notes:			

1 The NPDES permit was limited by (a) anti-Backsliding, (b) Anti-Degradation, (c) SOP, (d) TBEL, (e) TMDL, (f) WQBEL, (g) WET, or (h) Other

2 Monitoring frequency based on flow rate of 1.6 MGD.

3 Table 6-4 (Self Monitoring Requirements for Industrial Discharges) in Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits) (Document # 362-0400-001) Revised 10/97

4 Water Quality Antidegradation Implementaton Guidance (Document # 391-0300-002)

5 Phase 2 Watershed Implementation Plan Wastewater Supplement, Revised September 6, 2017

6.1.3 Toxics

A table summarizing the facility's requested usage rate and the proposed allowable usage rates is shown. The facility shall be limited to the usage rates itemized in the column Proposed Permit Maximum Allowable Usage Rate (lbs/day).

The table was updated from the original draft Fact Sheet that was transmitted to the facility in March 2022.

Drug/Chemical Additive	Facility Requested Usage Rate (lbs/day)	Proposed Permit Maximum Allowable Usage Rate (lbs/day)
Chloramine- T	7.5[A]	1.95
Diquat Dibromide (Reward)	12.5	0.18
Florfenicol	1.1	38
Hydrogen Peroxide	62	1.1
Lysol Professional	1.0[A]	0.017
Parasite-S	4.5	1.1
Romet TC	1.8	9.84
Slimy Grimy	-----	5.41
Sodium Chloride	1200[A]	143
Terramycin 200	37	0.13
Notes:		
- Requested drug usage based on NPDES application unless otherwise noted		
[A] Based upon letter from facility dated April 20, 2022		

The facility has indicated that hydrogen peroxide dissipates after 30 minutes. The allowable usage for hydrogen peroxide is listed in the table with a permit limit as guidance. The actual allowable maximum usage for hydrogen peroxide may exceed the limit in the table provided (1) the usage is reasonable (2) the facility ensures that at least 30 minutes of detention time occurs before discharge.

Fish and Boat submitted literature papers for chloramine and Lysol requesting higher drug usage rates. No literature papers were submitted for sodium chloride. DEP contacted Fish and Boat multiple times requesting supporting calculations to show that their drug usage limits do not impact water quality. The facility's most recent reply on November 3, 2022 indicated that Fish and Boat were unable to provide supporting calculations.

6.2 Summary of Changes From Existing Permit to Proposed Permit

A summary of how the proposed NPDES permit differs from the existing NPDES permit is summarized as follows.

- In prior correspondences from University Area Joint Authority (UAJA), UAJA requested that all fish hatcheries uniformly include temperature limits in NPDES permits. DEP anticipates that temperature limits shall be included in fish hatchery NPDES permits as the NPDES permits are renewed.
- DEP's approach to evaluating safe usage levels for drugs/chemicals differs from previous renewals. Prior renewals for Reynoldsdale utilized bioassay results or INAD/VMD levels to determine safe usage levels of drugs/chemicals. For the proposed permit renewal, DEP Central Office has directed DEP Regional Offices to determine safe usage levels of drugs/chemicals using the standard operating procedures for toxics analysis. This involves using DEP's standardized Toxics Management Spreadsheet (TMS). DEP anticipates that this approach shall be used for all fish hatcheries as the NPDES permits are renewed.
- The table in Section 6.1.3 itemizes the maximum allowable usage rates for drugs utilized at the facility.
- The average flow rate for DMR monitoring period January 2020 to August 2022 was 1.67 MGD. The design flow rate for the facility is 1.6 MGD. Mass loadings were based on a flow rate of 1.6 MGD.

Changes in Permit Monitoring or Effluent Quality

Parameter	Existing Permit	Draft Permit
BOD	During the months of May 1 to October 31, effluent limits shall not exceed 111 lbs/day and 8 mg/l as an average monthly. During the months of November 1 to April 30, effluent limits shall not exceed 222 lbs/day and 16 mg/l as an average monthly. Monitoring frequency is 1x/wk	PAG11 allows use of BOD in lieu of CBOD. During the months of May 1 to October 31, effluent limits shall not exceed 106 lbs/day and 8 mg/l as an average monthly. During the months of November 1 to April 30, effluent limits shall not exceed 213 lbs/day and 16 mg/l as an average monthly. The mass loading was adjusted to reflect the discharge flow rate of 1.6 MGD. Monitoring frequency shall be 2x/month.
Total Suspended Solids	Effluent limits shall not exceed 139 lbs/day and 10 mg/l as an average monthly. Monitoring frequency is 1x/wk.	Effluent limits shall not exceed 133 lbs/day and 10 mg/l as an average monthly. The mass loading was adjusted to reflect the discharge flow rate of 1.6 MGD. Monitoring frequency shall be 2x/month.
Temperature	No monitoring or effluent limit requirements.	Consistent with a letter from UAJA dated for December 16, 2019, temperature limits in future permits may be necessary. The proposed renewal cycle will collect temperature data to make determination for temperature limits in future permits.
Ammonia-Nitrogen	During the months of May 1 to October 31, effluent limits shall not exceed 34 lbs/day and 2.5 mg/l as an average monthly. During the months of November 1 to April 30, effluent limits shall not exceed 104 lbs/day and 7.5 mg/l as an average monthly. Monitoring frequency is 1x/wk.	During the months of May 1 to October 31, effluent limits shall not exceed 26 lbs/day and 2.0 mg/l as an average monthly. During the months of November 1 to April 30, effluent limits shall not exceed 80 lbs/day and 6.0 mg/l as an average monthly. The mass loading was adjusted to reflect the discharge flow rate of 1.6 MGD. Monitoring frequency shall be 2x/month.
Nitrate-Nitrite as N	No monitoring or effluent limit requirements.	Due to the Chesapeake Bay WIP, monitoring shall be required 1x/quarter
Total Nitrogen	No monitoring or effluent limit requirements.	Due to the Chesapeake Bay WIP, monitoring shall be required 1x/quarter
TKN	No monitoring or effluent limit requirements.	Due to the Chesapeake Bay WIP, monitoring shall be required 1x/quarter
Total Phosphorus	No monitoring or effluent limit requirements.	Due to the Chesapeake Bay WIP, monitoring shall be required 1x/quarter
Formaldehyde	Effluent limits shall not exceed 13.5 lbs/day and 0.97 mg/l as an average monthly.	PAG11 allows elimination of this paramater. No monitoring or effluent requirements.
Drug Usages	Unclear if current permit has drug usage limitation	The permit includes maximum daily usages for drugs/chemicals

6.3.1 Summary of Proposed NPDES Effluent Limits

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.

The proposed NPDES effluent limitations are summarized in the table below.

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. A. For Outfall 001 , **Latitude** 40º 9' 20.00" , **Longitude** 78º 34' 29.00" , **River Mile Index** 14.8 , **Stream Code** 14586

Receiving Waters: Unnamed Tributary to Dunning Creek (WWF, MF)

Type of Effluent: Aquaculture Discharge

1. The permittee is authorized to discharge during the period from **Permit Effective Date** through **Permit Expiration Date**.
2. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements and Footnotes).

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/week	Grab
Dissolved Oxygen	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/week	Grab
Temperature (deg F) (ºF)	XXX	XXX	XXX	XXX	Report	XXX	Continuous	I-S
Biochemical Oxygen Demand (BOD5) Nov 1 - Apr 30	213	427	XXX	16.0	32.0	40	2/month	24-Hr Composite
Biochemical Oxygen Demand (BOD5) May 1 - Oct 31	106	213	XXX	8.0	16.0	20	2/month	24-Hr Composite
Total Suspended Solids	133	266	XXX	10.0	20.0	25	2/month	24-Hr Composite
Nitrate-Nitrite as N	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Nitrogen	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	80	160	XXX	6.0	12.0	15	2/month	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	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Ammonia-Nitrogen May 1 - Oct 31	26	53	XXX	2.0	4.0	5	2/month	24-Hr Composite
Total Kjeldahl Nitrogen	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Phosphorus	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

at Outfall 001

6.3.2 Summary of Proposed Permit Part C Conditions

The subject facility has the following Part C conditions.

- Chesapeake Bay Nutrient Definitions
- Drug and Chemical Usage for Aquaculture

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☒	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: New and Reissuance Industrial Waste and Industrial Stormwater, rev October 11, 2013
☐	Other:

Attachment A

Stream Stats/Gauge Data

Table 1. List of U.S. Geological Survey streamgage locations in and near Pennsylvania with updated streamflow statistics.—Continued

[Latitude and Longitude in decimal degrees; mi², square miles]

Streamgage number	Streamgage name	Latitude	Longitude	Drainage area (mi²)	Regulated[1]
01541303	West Branch Susquehanna River at Hyde, Pa.	41.005	-78.457	474	Y
01541308	Bradley Run near Ashville, Pa.	40.509	-78.584	6.77	N
01541500	Clearfield Creek at Dimeling, Pa.	40.972	-78.406	371	Y
01542000	Moshannon Creek at Osceola Mills, Pa.	40.850	-78.268	68.8	N
01542500	WB Susquehanna River at Karthaus, Pa.	41.118	-78.109	1,462	Y
01542810	Waldy Run near Emporium, Pa.	41.579	-78.293	5.24	N
01543000	Driftwood Branch Sinnemahoning Creek at Sterling Run, Pa.	41.413	-78.197	272	N
01543500	Sinnemahoning Creek at Sinnemahoning, Pa.	41.317	-78.103	685	N
01544000	First Fork Sinnemahoning Creek near Sinnemahoning, Pa.	41.402	-78.024	245	Y
01544500	Kettle Creek at Cross Fork, Pa.	41.476	-77.826	136	N
01545000	Kettle Creek near Westport, Pa.	41.320	-77.874	233	Y
01545500	West Branch Susquehanna River at Renovo, Pa.	41.325	-77.751	2,975	Y
01545600	Young Womans Creek near Renovo, Pa.	41.390	-77.691	46.2	N
01546000	North Bald Eagle Creek at Milesburg, Pa.	40.942	-77.794	119	N
01546400	Spring Creek at Houserville, Pa.	40.834	-77.828	58.5	N
01546500	Spring Creek near Axemann, Pa.	40.890	-77.794	87.2	N
01547100	Spring Creek at Milesburg, Pa.	40.932	-77.786	142	N
01547200	Bald Eagle Creek below Spring Creek at Milesburg, Pa.	40.943	-77.786	265	N
01547500	Bald Eagle Creek at Blanchard, Pa.	41.052	-77.604	339	Y
01547700	Marsh Creek at Blanchard, Pa.	41.060	-77.606	44.1	N
01547800	South Fork Beech Creek near Snow Shoe, Pa.	41.024	-77.904	12.2	N
01547950	Beech Creek at Monument, Pa.	41.112	-77.702	152	N
01548005	Bald Eagle Creek near Beech Creek Station, Pa.	41.081	-77.549	562	Y
01548500	Pine Creek at Cedar Run, Pa.	41.522	-77.447	604	N
01549000	Pine Creek near Waterville, Pa.	41.313	-77.379	750	N
01549500	Blockhouse Creek near English Center, Pa.	41.474	-77.231	37.7	N
01549700	Pine Creek below Little Pine Creek near Waterville, Pa.	41.274	-77.324	944	Y
01550000	Lycoming Creek near Trout Run, Pa.	41.418	-77.033	173	N
01551500	WB Susquehanna River at Williamsport, Pa.	41.236	-76.997	5,682	Y
01552000	Loyalsock Creek at Loyalsockville, Pa.	41.325	-76.912	435	N
01552500	Muncy Creek near Sonestown, Pa.	41.357	-76.535	23.8	N
01553130	Sand Spring Run near White Deer, Pa.	41.059	-77.077	4.93	N
01553500	West Branch Susquehanna River at Lewisburg, Pa.	40.968	-76.876	6,847	Y
01553700	Chillisquaque Creek at Washingtonville, Pa.	41.062	-76.680	51.3	N
01554000	Susquehanna River at Sunbury, Pa.	40.835	-76.827	18,300	Y
01554500	Shamokin Creek near Shamokin, Pa.	40.810	-76.584	54.2	N
01555000	Penns Creek at Penns Creek, Pa.	40.867	-77.048	301	N
01555500	East Mahantango Creek near Dalmatia, Pa.	40.611	-76.912	162	N
01556000	Frankstown Branch Juniata River at Williamsburg, Pa.	40.463	-78.200	291	N
01557500	Bald Eagle Creek at Tyrone, Pa.	40.684	-78.234	44.1	N
01558000	Little Juniata River at Spruce Creek, Pa.	40.613	-78.141	220	N
01559000	Juniata River at Huntingdon, Pa.	40.485	-78.019	816	LF
01559500	Standing Stone Creek near Huntingdon, Pa.	40.524	-77.971	128	N
01559700	Sulphur Springs Creek near Manns Choice, Pa.	39.978	-78.619	5.28	N
01560000	Dunning Creek at Belden, Pa.	40.072	-78.493	172	N

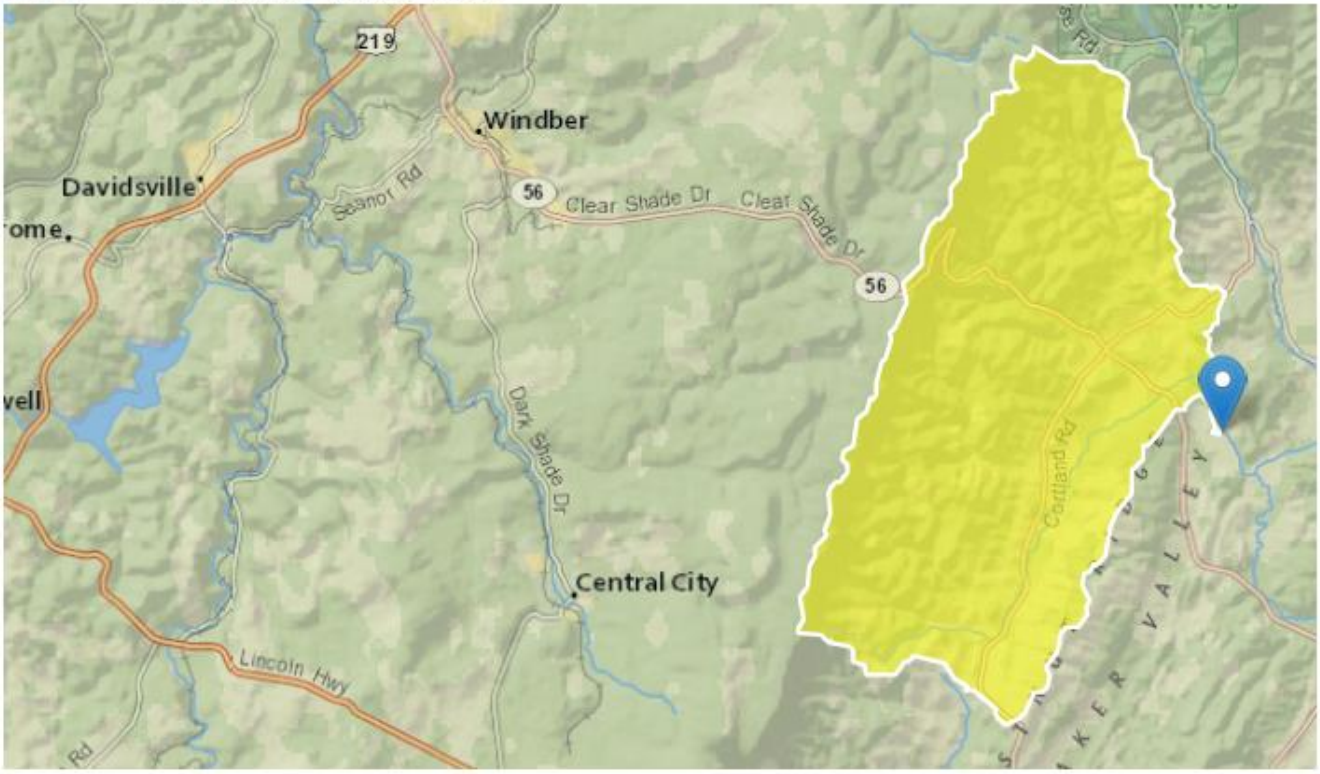
Table 2. Selected low-flow statistics for streamgage locations in and near Pennsylvania.—Continued

[ft³/s; cubic feet per second; —, statistic not computed; <, less than]

Streamgage number	Period of record used in analysis[1]	Number of years used in analysis	1-day, 10-year (ft³/s)	7-day, 10-year (ft³/s)	7-day, 2-year (ft³/s)	30-day, 10-year (ft³/s)	30-day, 2-year (ft³/s)	90-day, 10-year (ft³/s)
01546000	1912–1934	17	1.8	2.2	6.8	3.7	12.1	11.2
01546400	1986–2008	23	13.5	14.0	19.6	15.4	22.3	18.7
01546500	1942–2008	67	26.8	29.0	41.3	31.2	44.2	33.7
01547100	1969–2008	40	102	105	128	111	133	117
01547200	1957–2008	52	99.4	101	132	106	142	115
01547500	[2]1971–2008	38	28.2	109	151	131	172	153
01547500	[3]1956–1969	14	90.0	94.9	123	98.1	131	105
01547700	1957–2008	52	.5	.6	2.7	1.1	3.9	2.2
01547800	1971–1981	11	1.6	1.8	2.4	2.1	2.9	3.5
01547950	1970–2008	39	12.1	13.6	28.2	17.3	36.4	23.8
01548005	[2]1971–2000	25	142	151	206	178	241	223
01548005	[3]1912–1969	58	105	114	147	125	165	140
01548500	1920–2008	89	21.2	24.2	50.1	33.6	68.6	49.3
01549000	1910–1920	11	26.0	32.9	78.0	46.4	106	89.8
01549500	1942–2008	67	.6	.8	2.5	1.4	3.9	2.6
01549700	1959–2008	50	33.3	37.2	83.8	51.2	117	78.4
01550000	1915–2008	94	6.6	7.6	16.8	11.2	24.6	18.6
01551500	[2]1963–2008	46	520	578	1,020	678	1,330	919
01551500	[3]1901–1961	61	400	439	742	523	943	752
01552000	1927–2008	80	20.5	22.2	49.5	29.2	69.8	49.6
01552500	1942–2008	67	.9	1.2	3.1	1.7	4.4	3.3
01553130	1969–1981	13	1.0	1.1	1.5	1.3	1.8	1.7
01553500	[2]1968–2008	41	760	838	1,440	1,000	1,850	1,470
01553500	[3]1941–1966	26	562	619	880	690	1,090	881
01553700	1981–2008	28	9.1	10.9	15.0	12.6	17.1	15.2
01554000	[2]1981–2008	28	1,830	1,990	3,270	2,320	4,210	3,160
01554000	[3]1939–1979	41	1,560	1,630	2,870	1,880	3,620	2,570
01554500	1941–1993	53	16.2	22.0	31.2	25.9	35.7	31.4
01555000	1931–2008	78	33.5	37.6	58.8	43.4	69.6	54.6
01555500	1931–2008	78	4.9	6.5	18.0	9.4	24.3	16.6
01556000	1918–2008	91	43.3	47.8	66.0	55.1	75.0	63.7
01557500	1946–2008	63	2.8	3.2	6.3	4.2	8.1	5.8
01558000	1940–2008	69	56.3	59.0	79.8	65.7	86.2	73.7
01559000	1943–2008	66	104	177	249	198	279	227
01559500	1931–1958	28	9.3	10.5	15.0	12.4	17.8	15.8
01559700	1963–1978	16	.1	.1	.2	.1	.3	.2
01560000	1941–2008	68	8.5	9.4	15.6	12.0	20.2	16.2
01561000	1932–1958	27	.4	.5	1.6	.8	2.5	1.7
01562000	1913–2008	96	64.1	67.1	106	77.4	122	94.5
01562500	1931–1957	27	1.1	1.6	3.8	2.3	5.4	3.7
01563200	[2]1974–2008	35	—	—	—	112	266	129
01563200	[3]1948–1972	25	10.3	28.2	86.1	64.5	113	95.5
01563500	[2]1974–2008	35	384	415	519	441	580	493
01563500	[3]1939–1972	34	153	242	343	278	399	333
01564500	1940–2008	69	3.6	4.2	10.0	6.2	14.4	10.6

StreamStats Report

Region ID: PA
Workspace ID: PA20220726181829433000
Clicked Point (Latitude, Longitude): 40.15602, -78.56965
Time: 2022-07-26 14:18:49 -0400



Dunning Creek- Modeling for Reynoldsdale, East. St. Clair Stone Creek/Fishertown, Chestnut Ridge Modeling Point #1 July 2022

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	0.28	percent
DRNAREA	Area that drains to a point on a stream	57.5	square miles
PRECIP	Mean Annual Precipitation	39	inches
ROCKDEP	Depth to rock	3.9	feet

Parameter Code	Parameter Description	Value	Unit
STRDEN	Stream Density -- total length of streams divided by drainage area	2.22	miles per square mile

Low-Flow Statistics

Low-Flow Statistics Parameters [100.0 Percent (57.5 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	57.5	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	39	inches	35	50.4
STRDEN	Stream Density	2.22	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	3.9	feet	3.32	5.65
CARBON	Percent Carbonate	0.28	percent	0	99

Low-Flow Statistics Flow Report [100.0 Percent (57.5 square miles) Low Flow Region 2]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	3.65	ft^3/s	38	38
30 Day 2 Year Low Flow	5.25	ft^3/s	33	33
7 Day 10 Year Low Flow	1.5	ft^3/s	51	51
30 Day 10 Year Low Flow	2.22	ft^3/s	46	46
90 Day 10 Year Low Flow	3.83	ft^3/s	36	36

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

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Application Version: 4.10.1
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

StreamStats Report

Region ID: PA
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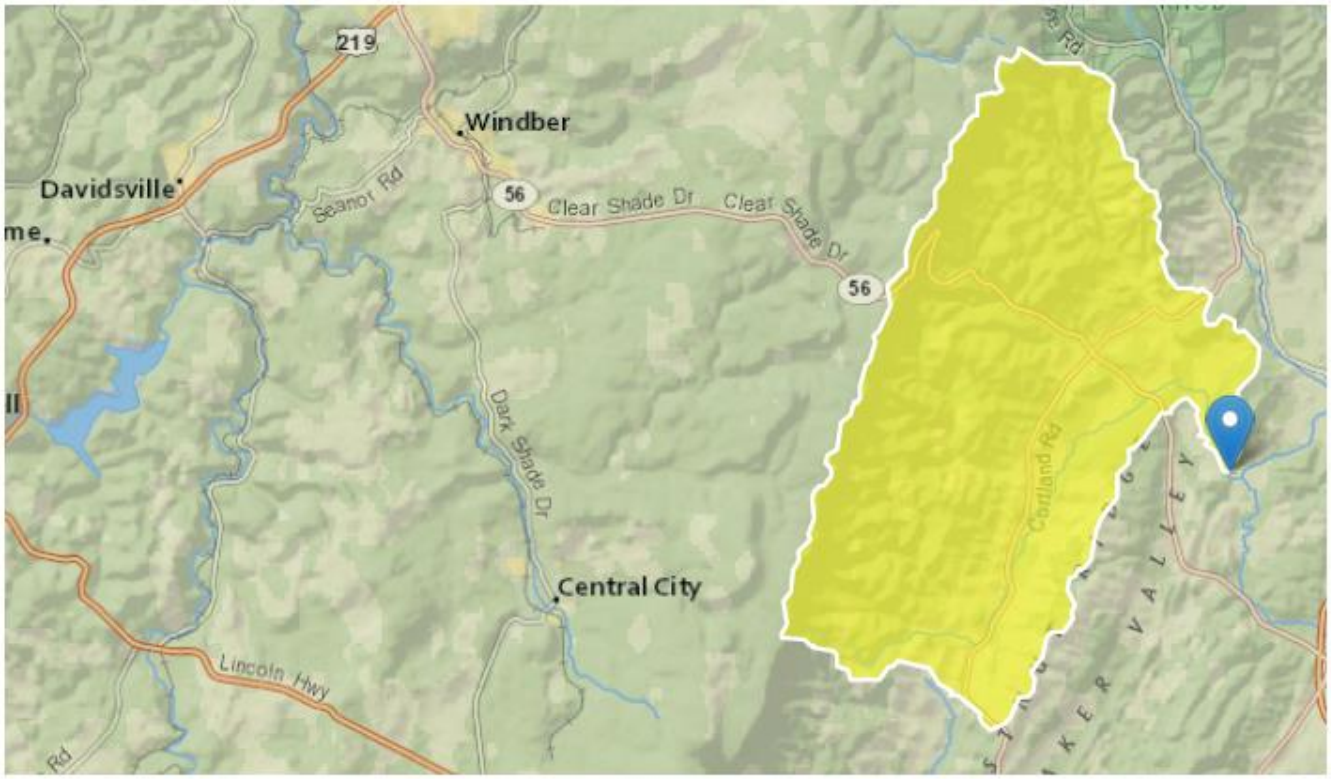

Dunning Creek- Modeling for Reynoldsdale, East. St. Clair Stone Creek/Fishertown, Chestnut Ridge Modeling Point #2 July 2022

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	0.27	percent
DRNAREA	Area that drains to a point on a stream	59.4	square miles
PRECIP	Mean Annual Precipitation	39	inches
ROCKDEP	Depth to rock	3.9	feet

Parameter Code	Parameter Description	Value	Unit
STRDEN	Stream Density -- total length of streams divided by drainage area	2.21	miles per square mile

Low-Flow Statistics

Low-Flow Statistics Parameters [100.0 Percent (59.4 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	59.4	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	39	inches	35	50.4
STRDEN	Stream Density	2.21	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	3.9	feet	3.32	5.65
CARBON	Percent Carbonate	0.27	percent	0	99

Low-Flow Statistics Flow Report [100.0 Percent (59.4 square miles) Low Flow Region 2]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	3.8	ft^3/s	38	38
30 Day 2 Year Low Flow	5.46	ft^3/s	33	33
7 Day 10 Year Low Flow	1.57	ft^3/s	51	51
30 Day 10 Year Low Flow	2.31	ft^3/s	46	46
90 Day 10 Year Low Flow	3.99	ft^3/s	36	36

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

StreamStats Report

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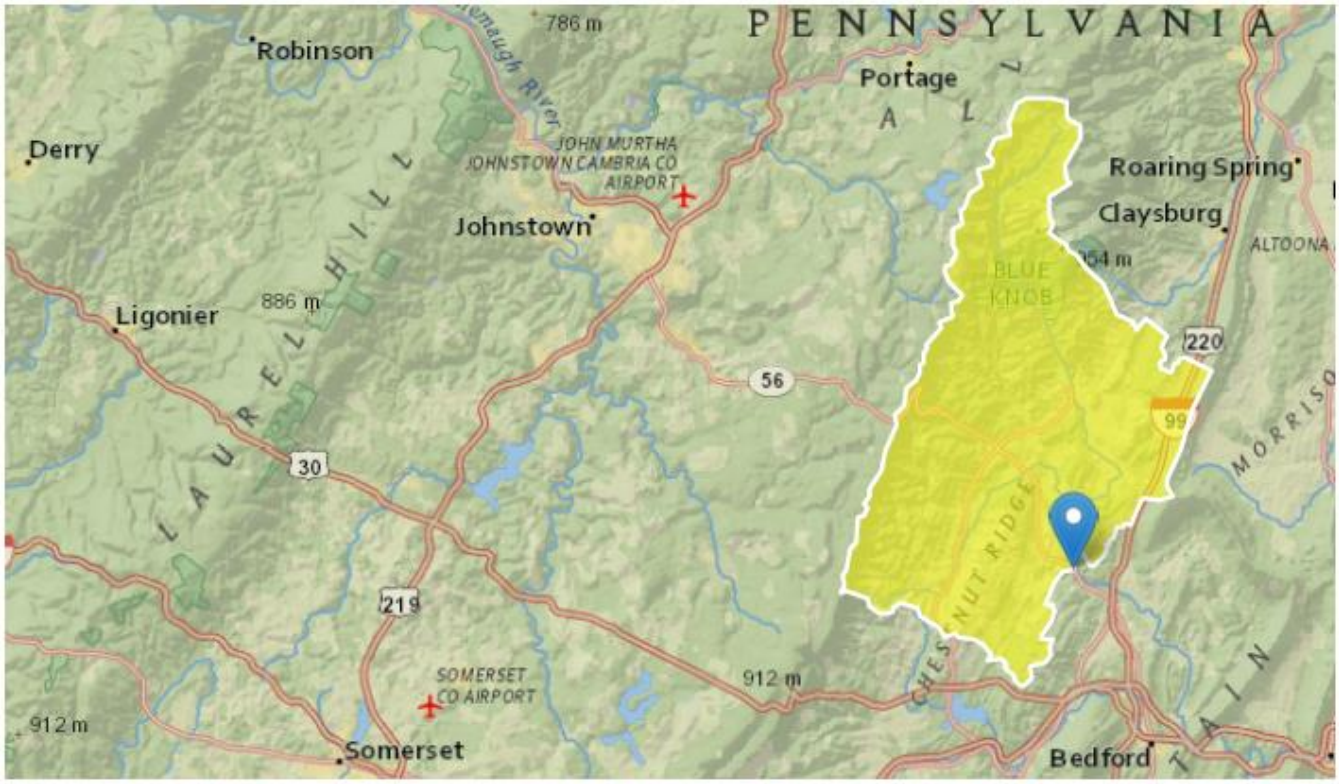

Dunning Creek- Modeling for Reynoldsdale, East. St. Clair Stone Creek/Fishertown, Chestnut Ridge Modeling Point #3 July 2022

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	2.75	percent
DRNAREA	Area that drains to a point on a stream	146	square miles
PRECIP	Mean Annual Precipitation	39	inches
ROCKDEP	Depth to rock	4	feet

Parameter Code	Parameter Description	Value	Unit
STRDEN	Stream Density -- total length of streams divided by drainage area	2.29	miles per square mile

Low-Flow Statistics

Low-Flow Statistics Parameters [100.0 Percent (146 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	146	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	39	inches	35	50.4
STRDEN	Stream Density	2.29	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4	feet	3.32	5.65
CARBON	Percent Carbonate	2.75	percent	0	99

Low-Flow Statistics Flow Report [100.0 Percent (146 square miles) Low Flow Region 2]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	10.7	ft^3/s	38	38
30 Day 2 Year Low Flow	15	ft^3/s	33	33
7 Day 10 Year Low Flow	4.85	ft^3/s	51	51
30 Day 10 Year Low Flow	6.92	ft^3/s	46	46
90 Day 10 Year Low Flow	11.3	ft^3/s	36	36

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

StreamStats Report

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Workspace ID: PA20220726183107966000
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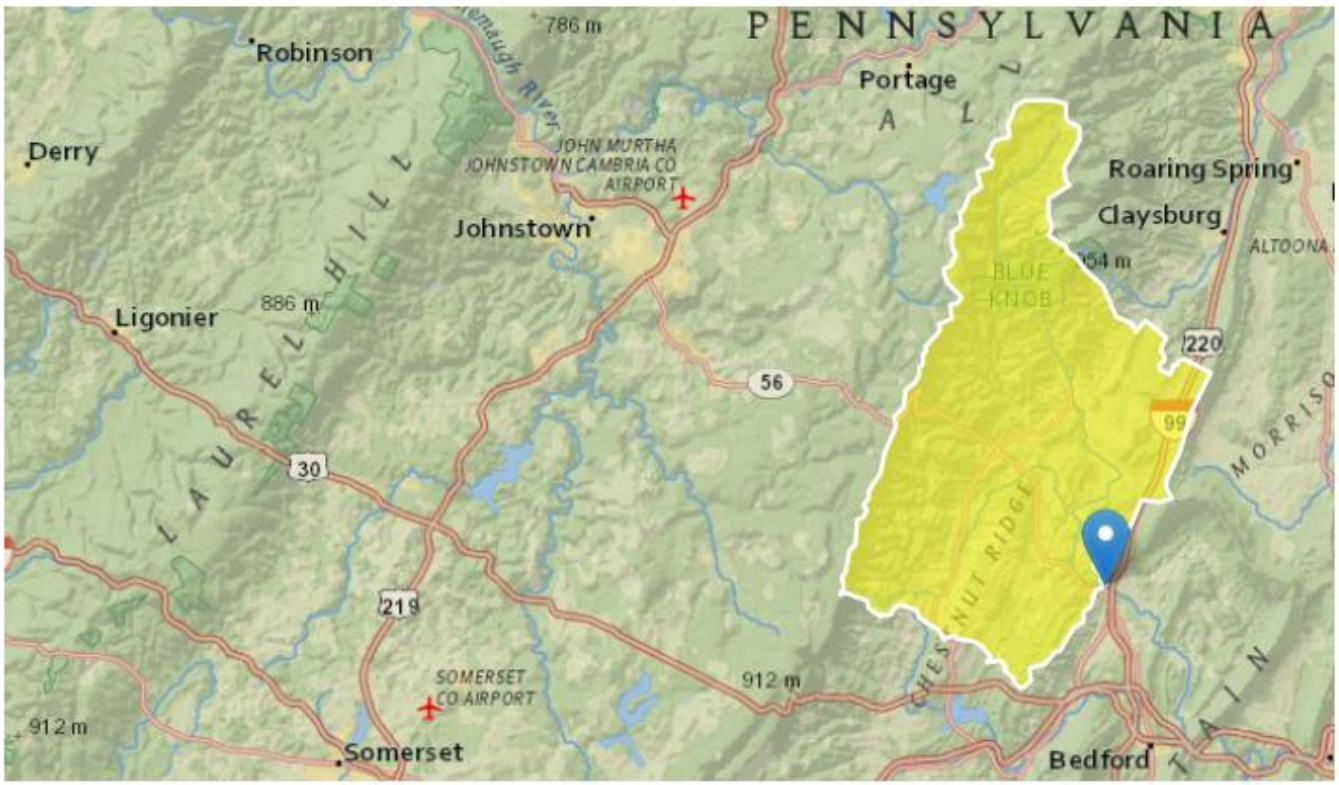

Dunning Creek- Modeling for Reynoldsdale, East. St. Clair Stone Creek/Fishertown, Chestnut Ridge Modeling Point #4 July 2022

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	2.68	percent
DRNAREA	Area that drains to a point on a stream	150	square miles
PRECIP	Mean Annual Precipitation	39	inches
ROCKDEP	Depth to rock	4	feet

Parameter Code	Parameter Description	Value	Unit
STRDEN	Stream Density -- total length of streams divided by drainage area	2.3	miles per square mile

Low-Flow Statistics

Low-Flow Statistics Parameters [100.0 Percent (150 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	150	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	39	inches	35	50.4
STRDEN	Stream Density	2.3	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4	feet	3.32	5.65
CARBON	Percent Carbonate	2.68	percent	0	99

Low-Flow Statistics Flow Report [100.0 Percent (150 square miles) Low Flow Region 2]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	11	ft^3/s	38	38
30 Day 2 Year Low Flow	15.4	ft^3/s	33	33
7 Day 10 Year Low Flow	4.98	ft^3/s	51	51
30 Day 10 Year Low Flow	7.1	ft^3/s	46	46
90 Day 10 Year Low Flow	11.6	ft^3/s	36	36

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

StreamStats Report

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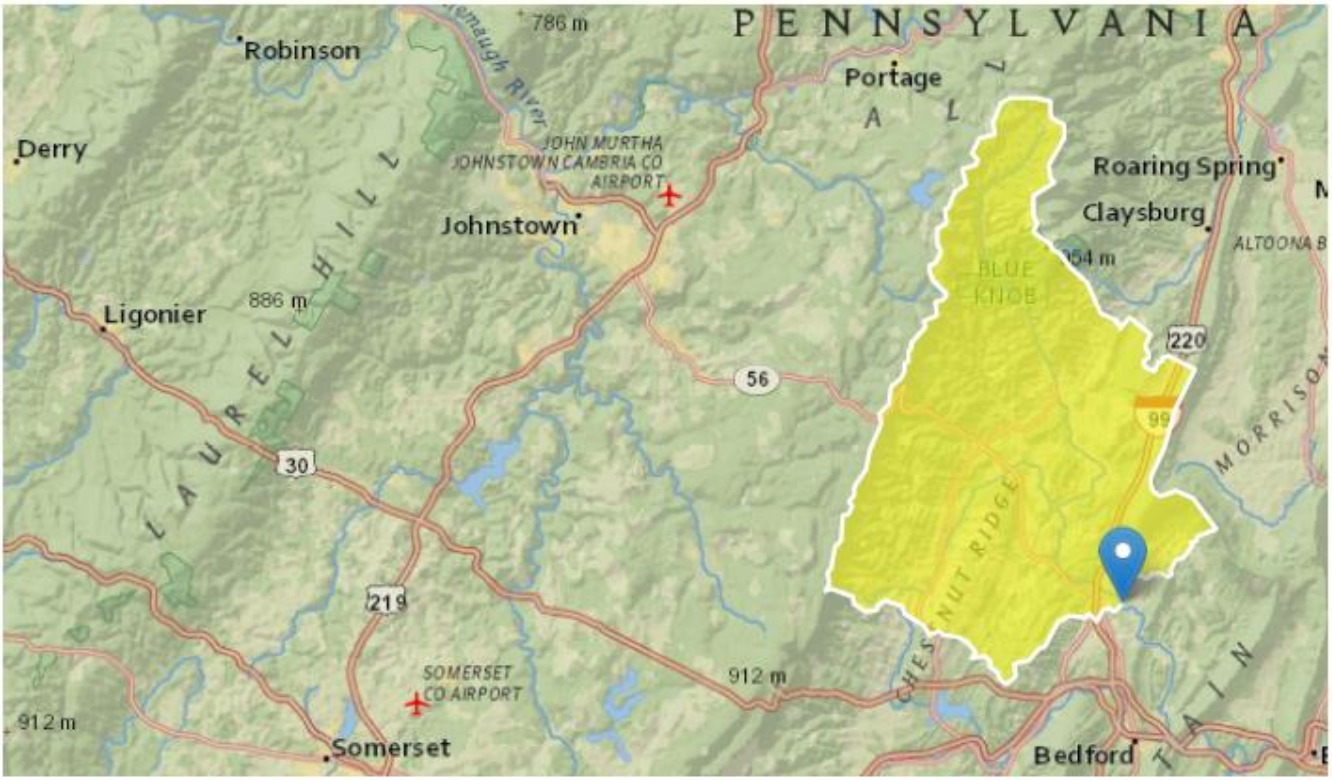

Dunning Creek- Modeling for Reynoldsdale, East. St. Clair Stone Creek/Fishertown, Chestnut Ridge Modeling Point #5 July 2022

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	3.13	percent
DRNAREA	Area that drains to a point on a stream	164	square miles
PRECIP	Mean Annual Precipitation	39	inches
ROCKDEP	Depth to rock	4	feet

Parameter Code	Parameter Description	Value	Unit
STRDEN	Stream Density -- total length of streams divided by drainage area	2.32	miles per square mile

Low-Flow Statistics

Low-Flow Statistics Parameters [100.0 Percent (164 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	164	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	39	inches	35	50.4
STRDEN	Stream Density	2.32	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4	feet	3.32	5.65
CARBON	Percent Carbonate	3.13	percent	0	99

Low-Flow Statistics Flow Report [100.0 Percent (164 square miles) Low Flow Region 2]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	12.1	ft^3/s	38	38
30 Day 2 Year Low Flow	16.9	ft^3/s	33	33
7 Day 10 Year Low Flow	5.52	ft^3/s	51	51
30 Day 10 Year Low Flow	7.85	ft^3/s	46	46
90 Day 10 Year Low Flow	12.7	ft^3/s	36	36

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

StreamStats Report

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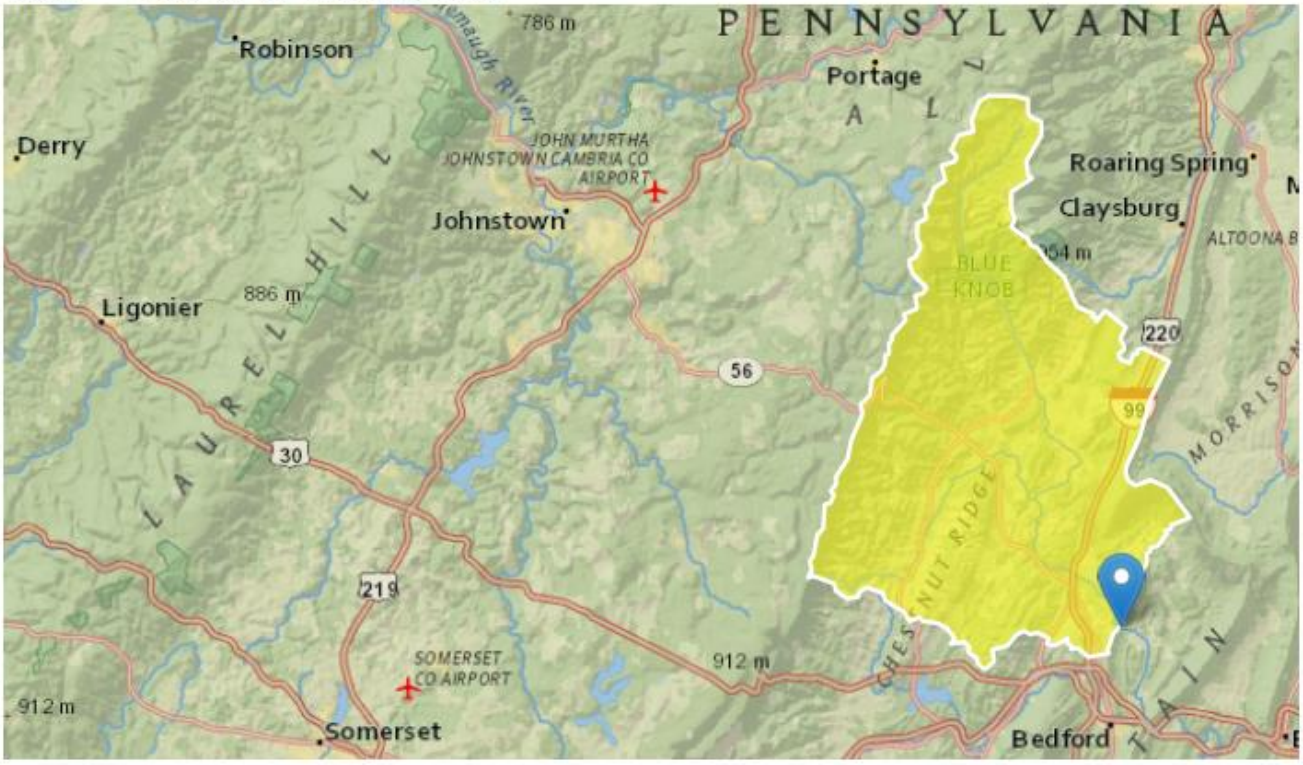

Dunning Creek - Modeling for Reynoldsdale, East ST. Clair Stone Creek/Fishertown, Chestnut Ridge Modeling Point #6 July 2022

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	4.47	percent
DRNAREA	Area that drains to a point on a stream	172	square miles
PRECIP	Mean Annual Precipitation	39	inches
ROCKDEP	Depth to rock	4	feet

Parameter Code	Parameter Description	Value	Unit
STRDEN	Stream Density -- total length of streams divided by drainage area	2.34	miles per square mile

Low-Flow Statistics

Low-Flow Statistics Parameters [100.0 Percent (172 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	172	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	39	inches	35	50.4
STRDEN	Stream Density	2.34	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4	feet	3.32	5.65
CARBON	Percent Carbonate	4.47	percent	0	99

Low-Flow Statistics Flow Report [100.0 Percent (172 square miles) Low Flow Region 2]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	12.9	ft^3/s	38	38
30 Day 2 Year Low Flow	17.9	ft^3/s	33	33
7 Day 10 Year Low Flow	5.91	ft^3/s	51	51
30 Day 10 Year Low Flow	8.39	ft^3/s	46	46
90 Day 10 Year Low Flow	13.5	ft^3/s	36	36

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

Attachment B

WQM 7.0 Modeling Output Values
Toxics Management Spreadsheet Output Values

WQM Run #1

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
11C	14586	DUNNING 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)
14.800	Reynolsdale	PA0044059-1	1.670	CBOD5	18.77		
				NH3-N	2.81	5.62	
				Dissolved Oxygen			5

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
11C	14586	DUNNING 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
14.800	Reynolsdale	15.03	23.41	15.03	23.41	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
14.800	Reynolsdale	1.68	2.81	1.68	2.81	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
14.80	Reynolsdale	18.77	18.77	2.81	2.81	5	5	0	0

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
11C	14586	DUNNING CREEK	**14.800**	1112.00	57.50	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	0.026	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Reynolsdale	PA0044059-1	1.6700	1.6700	1.6700	0.000	20.00	6.93

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
11C	14586	DUNNING CREEK	**13.900**	1097.00	59.40	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	0.026	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
STONECREEK	PA0082732-2	0.0420	0.0420	0.0420	0.000	20.00	7.59

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 D.O.Simulation

SWP Basin	Stream Code	Stream Name
11C	14586	DUNNING CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
14.800	1.670	21.837	6.954
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
33.193	0.675	49.193	0.182
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
12.61	1.048	1.78	0.806
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.192	5.713	Tsivoglou	5
Reach Travel Time (days)			
0.302			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.030	12.18	1.74	5.85
0.060	11.77	1.69	5.58
0.090	11.37	1.65	5.38
0.121	10.99	1.61	5.23
0.151	10.62	1.57	5.13
0.181	10.26	1.54	5.07
0.211	9.91	1.50	5.04
0.241	9.58	1.46	5.03
0.271	9.25	1.43	5.04
0.302	8.94	1.39	5.07

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
11C	14586	DUNNING 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												
14.800	1.50	0.00	1.50	2.5835	0.00316	.675	33.19	49.19	0.18	0.302	21.84	6.95
Q1-10 Flow												
14.800	1.44	0.00	1.44	2.5835	0.00316	NA	NA	NA	0.18	0.304	21.79	6.95
Q30-10 Flow												
14.800	1.73	0.00	1.73	2.5835	0.00316	NA	NA	NA	0.19	0.293	22.00	6.96

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	0.96	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.15	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM Run #2

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
11C	14586	DUNNING 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)
14.800	Reynolsdale	PA0044059-1	1.670	CBOD5	6.62		
				NH3-N	1.99	3.98	
				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)
13.900	STONECREEK	PA0082732-2	0.042	CBOD5	25		
				NH3-N	20.26	40.52	
				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)
10.400	EST Fishertown	PA0082694-3	0.057	CBOD5	25		
				NH3-N	25	50	
				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)
8.900	CHESTNUT	PA0087661-4	0.546	CBOD5	20.12		
				NH3-N	7.04	14.08	
				Dissolved Oxygen			5

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
11C	14586	DUNNING 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
14.800	Reynolsdale	15.03	23.41	15.03	23.41	0	0
13.900	STONECREEK	11.13	50	14.94	50	0	0
10.400	EST Fishertown	11.1	50	13.25	50	0	0
8.900	CHESTNUT	11.99	50	13.65	50	0	0
7.260		NA	NA	13.5	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
14.800	Reynolsdale	1.68	2.81	1.68	2.81	0	0
13.900	STONECREEK	1.38	25	1.68	25	0	0
10.400	EST Fishertown	1.37	25	1.54	25	0	0
8.900	CHESTNUT	1.44	10.35	1.57	10.35	0	0
7.260		NA	NA	1.56	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)		
14.80	Reynolsdale	7.72	6.62	2.32	1.99	5	5	2	14
13.90	STONECREEK	25	25	25	20.26	5	5	2	14
10.40	EST Fishertown	25	25	25	25	5	5	0	0
8.90	CHESTNUT	20.12	20.12	7.04	7.04	5	5	0	0
7.26		NA	NA	NA	NA	NA	NA	NA	NA

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
11C	14586	DUNNING CREEK	**14.800**	1112.00	57.50	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	0.026	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Reynolsdale	PA0044059-1	1.6700	1.6700	1.6700	0.000	20.00	6.93

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
11C	14586	DUNNING CREEK	**13.900**	1097.00	59.40	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	0.026	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
STONECREEK	PA0082732-2	0.0420	0.0420	0.0420	0.000	20.00	7.59

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
11C	14586	DUNNING CREEK	**10.400**	1085.00	146.00	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	0.033	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
EST Fishertown	PA0082694-3	0.0570	0.0570	0.0570	0.000	20.00	7.70

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
11C	14586	DUNNING CREEK	**8.900**	1071.00	150.00	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	0.033	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
CHESTNUT	PA0087661-4	0.5460	0.5460	0.5460	0.000	20.00	6.92

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
11C	14586	DUNNING CREEK	**7.260**	1063.00	164.00	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	0.034	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	0.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	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
11C	14586	DUNNING CREEK	**4.900**	1055.00	172.00	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	0.034	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	0.00	7.00

Parameter Data

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

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
11C	14586	DUNNING CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
14.800	1.670	21.837	6.954
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
33.193	0.675	49.193	0.182
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
4.92	0.334	1.26	0.806
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.192	5.713	Tsivoglou	5
Reach Travel Time (days)			
0.302			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.030	4.87	1.23	6.41
0.060	4.81	1.20	6.60
0.090	4.76	1.17	6.77
0.121	4.71	1.14	6.91
0.151	4.66	1.11	7.03
0.181	4.61	1.09	7.14
0.211	4.56	1.06	7.23
0.241	4.51	1.03	7.31
0.271	4.46	1.01	7.38
0.302	4.41	0.98	7.45

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
13.900	1.712	21.847	6.960
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
36.630	0.711	51.533	0.161
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
4.70	0.359	1.27	0.807
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.420	1.040	Tsivoglou	5
Reach Travel Time (days)			
1.326			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.133	4.46	1.14	6.72
0.265	4.24	1.03	6.19
0.398	4.02	0.92	5.79
0.530	3.82	0.83	5.50
0.663	3.63	0.74	5.30
0.796	3.44	0.67	5.18
0.928	3.27	0.60	5.12
1.061	3.10	0.54	5.11
1.194	2.95	0.49	5.14
1.326	2.80	0.44	5.20

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
11C	14586	DUNNING CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
10.400	1.769	23.090	6.980
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
47.781	0.773	61.810	0.194
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.75	0.296	0.56	0.888
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.418	3.505	Tsivoglou	5
Reach Travel Time (days)			
0.473			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.047	2.71	0.54	6.60
0.095	2.66	0.52	6.76
0.142	2.62	0.50	6.90
0.189	2.58	0.48	7.03
0.236	2.54	0.46	7.14
0.284	2.50	0.44	7.23
0.331	2.46	0.42	7.32
0.378	2.42	0.40	7.40
0.425	2.38	0.39	7.47
0.473	2.34	0.37	7.53

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
8.900	2.315	22.800	6.974
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
51.850	0.800	64.809	0.196
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
4.18	0.638	1.06	0.868
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.279	1.841	Tsivoglou	5
Reach Travel Time (days)			
0.511			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.051	4.03	1.01	6.99
0.102	3.88	0.97	6.74
0.153	3.74	0.92	6.53
0.204	3.60	0.88	6.36
0.255	3.47	0.85	6.21
0.306	3.35	0.81	6.10
0.358	3.23	0.77	6.00
0.409	3.11	0.74	5.93
0.460	3.00	0.71	5.88
0.511	2.89	0.68	5.84

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
11C	14586	DUNNING CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
7.260	2.315	22.921	6.975
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
54.508	0.820	66.471	0.193
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.84	0.323	0.64	0.876
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.974	1.260	Tsivoglou	5
Reach Travel Time (days)			
0.749			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.075	2.76	0.60	5.93
0.150	2.69	0.56	5.90
0.225	2.61	0.53	5.89
0.299	2.54	0.49	5.90
0.374	2.47	0.46	5.91
0.449	2.40	0.43	5.94
0.524	2.34	0.40	5.97
0.599	2.27	0.38	6.01
0.674	2.21	0.35	6.06
0.749	2.15	0.33	6.11

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
11C	14586	DUNNING 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												
14.800	1.50	0.00	1.50	2.5835	0.00316	.675	33.19	49.19	0.18	0.302	21.84	6.95
13.900	1.55	0.00	1.55	2.6485	0.00065	.711	36.63	51.53	0.16	1.326	21.85	6.96
10.400	4.43	0.00	4.43	2.7366	0.00177	.773	47.78	61.81	0.19	0.473	23.09	6.98
8.900	4.56	0.00	4.56	3.5813	0.00092	.8	51.85	64.81	0.20	0.511	22.80	6.97
7.260	5.03	0.00	5.03	3.5813	0.00064	.82	54.51	66.47	0.19	0.749	22.92	6.98
Q1-10 Flow												
14.800	1.44	0.00	1.44	2.5835	0.00316	NA	NA	NA	0.18	0.304	21.79	6.95
13.900	1.49	0.00	1.49	2.6485	0.00065	NA	NA	NA	0.16	1.337	21.80	6.96
10.400	4.25	0.00	4.25	2.7366	0.00177	NA	NA	NA	0.19	0.479	23.04	6.98
8.900	4.38	0.00	4.38	3.5813	0.00092	NA	NA	NA	0.19	0.517	22.75	6.97
7.260	4.83	0.00	4.83	3.5813	0.00064	NA	NA	NA	0.19	0.759	22.87	6.97
Q30-10 Flow												
14.800	1.73	0.00	1.73	2.5835	0.00316	NA	NA	NA	0.19	0.293	22.00	6.96
13.900	1.78	0.00	1.78	2.6485	0.00065	NA	NA	NA	0.17	1.287	22.01	6.96
10.400	5.09	0.00	5.09	2.7366	0.00177	NA	NA	NA	0.20	0.450	23.25	6.98
8.900	5.24	0.00	5.24	3.5813	0.00092	NA	NA	NA	0.21	0.488	22.97	6.98
7.260	5.79	0.00	5.79	3.5813	0.00064	NA	NA	NA	0.20	0.714	23.09	6.98

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	0.96	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.15	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Reynoldsdale Fish Hatchery** NPDES Permit No.: **PA0044059** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Effluent Discharge**

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
1.6	100	6.93						

					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											
	Chloride (PWS)	mg/L											
	Bromide	mg/L											
	Sulfate (PWS)	mg/L											
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L											
	Total Antimony	µg/L											
	Total Arsenic	µg/L											
	Total Barium	µg/L											
	Total Beryllium	µg/L											
	Total Boron	µg/L											
	Total Cadmium	µg/L											
	Total Chromium (III)	µg/L											
	Hexavalent Chromium	µg/L											
	Total Cobalt	µg/L											
	Total Copper	µg/L											
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L											
	Total Lead	µg/L											
	Total Manganese	µg/L											
	Total Mercury	µg/L											
	Total Nickel	µg/L											
	Total Phenols (Phenolics) (PWS)	µg/L											
	Total Selenium	µg/L											
	Total Silver	µg/L											
	Total Thallium	µg/L											
	Total Zinc	µg/L											
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	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											
	Chloramine-T	µg/L		1E+12									
	Diquat Dibromide (Reward)	µg/L		1E+12									
	Florfenicol	µg/L		1E+12									
	Hydrogen Peroxide	µg/L		1E+12									
	Lysol Professional	µg/L		1E+12									
	Parasite-S	µg/L		1E+12									
	Romet TC	µg/L		1E+12									
	Slimy Grimy	µg/L		1E+12									
	Sodium Chloride	µg/L		1E+12									
	Terramycin 200	µg/L		1E+12									

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Reynoldsdale Fish Hatchery, NPDES Permit No. PA0044059, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Dunning Creek**

No. Reaches to Model: 1

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	014586	14.8	1112	57.5			Yes
End of Reach 1	014586	4.9	1055	172			Yes

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

Location	RMI	LFY (cfs/mi^2)*	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	14.8	0.0261										96	8		
End of Reach 1	4.9	0.0344										96	8		

Q_h

Location	RMI	LFY (cfs/mi^2)	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	14.8														
End of Reach 1	4.9														

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Reynoldsdale Fish Hatchery, NPDES Permit No. PA0044059, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 12.520 PMF: 1 Analysis Hardness (mg/l): 98.49 Analysis pH: 7.11

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Chloramine-T	0	0		0	525.1	525	843	
Diquat Dibromide (Reward)	0	0		0	48.7	48.7	78.2	
Florfenicol	0	0		0	23,571	23,571	37,862	
Hydrogen Peroxide	0	0		0	296.2	296	476	
Lysol Professional	0	0		0	4.1	4.1	6.59	
Parasite-S	0	0		0	296.3	296	476	
Romet TC	0	0		0	2646.9	2,647	4,252	
Slimy Grimy	0	0		0	1,455	1,455	2,337	
Sodium Chloride	0	0		0	39,462	39,462	63,388	
Terramycin 200	0	0		0	6455.7	6,456	10,370	

☑ ***CFC*** CCT (min): 12.520 PMF: 1 Analysis Hardness (mg/l): 98.49 Analysis pH: 7.11

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Chloramine-T	0	0		0	58.3	58.3	93.6	
Diquat Dibromide (Reward)	0	0		0	5.4	5.4	8.67	
Florfenicol	0	0		0	1,137	1,137	1,826	
Hydrogen Peroxide	0	0		0	32.9	32.9	52.8	
Lysol Professional	0	0		0	0.5	0.5	0.8	
Parasite-S	0	0		0	32.9	32.9	52.8	
Romet TC	0	0		0	294.1	294	472	
Slimy Grimy	0	0		0	161.7	162	260	
Sodium Chloride	0	0		0	4273.6	4,274	6,865	
Terramycin 200	0	0		0	717.3	717	1,152	

☑ ***THH*** CCT (min): 12.520 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Chloramine-T	0	0		0	N/A	N/A	N/A	
Diquat Dibromide (Reward)	0	0		0	40	40.0	64.3	
Florfenicol	0	0		0	N/A	N/A	N/A	
Hydrogen Peroxide	0	0		0	N/A	N/A	N/A	
Lysol Professional	0	0		0	3,000	3,000	4,819	
Parasite-S	0	0		0	700	700	1,124	
Romet TC	0	0		0	N/A	N/A	N/A	
Slimy Grimy	0	0		0	17,300	17,300	27,789	
Sodium Chloride	0	0		0	250,000	250,000	401,579	
Terramycin 200	0	0		0	4	4.0	6.43	

☑ ***CRL*** CCT (min): 26.326 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Chloramine-T	0	0		0	N/A	N/A	N/A	
Diquat Dibromide (Reward)	0	0		0	N/A	N/A	N/A	
Florfenicol	0	0		0	N/A	N/A	N/A	
Hydrogen Peroxide	0	0		0	N/A	N/A	N/A	
Lysol Professional	0	0		0	N/A	N/A	N/A	
Parasite-S	0	0		0	N/A	N/A	N/A	
Romet TC	0	0		0	N/A	N/A	N/A	
Slimy Grimy	0	0		0	N/A	N/A	N/A	
Sodium Chloride	0	0		0	N/A	N/A	N/A	
Terramycin 200	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
Chloramine-T	1.25	1.95	93.6	146	234	µg/L	93.6	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Diquat Dibromide (Reward)	0.12	0.18	8.67	13.5	21.7	µg/L	8.67	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Florfenicol	24.4	38.0	1,826	2,849	4,566	µg/L	1,826	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Hydrogen Peroxide	0.71	1.1	52.8	82.5	132	µg/L	52.8	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Lysol Professional	0.011	0.017	0.8	1.25	2.01	µg/L	0.8	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Parasite-S	0.71	1.1	52.8	82.5	132	µg/L	52.8	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Romet TC	6.3	9.84	472	737	1,181	µg/L	472	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Slimy Grimy	3.47	5.41	260	405	649	µg/L	260	CFC	Discharge Conc ≥ 50% WQBEL (RP)

Sodium Chloride	91.6	143	6,865	10,710	17,162	µg/L	6,865	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Terramycin 200	0.086	0.13	6.43	10.0	16.1	µg/L	6.43	THH	Discharge Conc ≥ 50% WQBEL (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

Correspondence

Hong, Nicholas

From: McClenahan, Mindy
Sent: Tuesday, February 1, 2022 3:37 PM
To: Hong, Nicholas
Cc: Wade, Harry; Niewinski, Brian; Cochran Ii, Thomas; Brallier, Scott
Subject: RE: Reynoldsdale NPDES renewal
Attachments: Formalin (Parasite-S).pdf

Hello Nick,

I have attached the WQM Permit, which answers a lot of your questions. I have also added our responses below in blue for each of your bullet points.

Questions:

- Confirm the annual design flow rate and hydraulic design flow rates for the facility?
  - Annual Average Design Flow rate is 1.44 MGD (in the WQM permit)
  - Design capacity is 1.6 MGD; 2 x 0.8 MGD process trains (in the WQM permit)
- Confirm the hydraulic design flow for the Actiflo treatment system?
  - Design capacity is 1.6 MGD; 2 x 0.8 MGD process trains (in the WQM permit)
- Is the Actiflo system being hydraulically overloaded? Below is a summary of flow from the last 12 months.
  - No, it is not overloaded.
- Attached a copy of the WQM Part 2 permit for the Actiflo treatment?
  - Waiting on this from our Engineering Department and I will pass it along once I receive it.
- Per discussions with Fish and Boat, Hydrogen Peroxide will dissipate after 30 minutes. Confirm if Reynolsdale would have the 30 minute window for hydrogen peroxide to dissipate.
  - A dye test was preformed after construction was completed and we have the 30 minute window for dissipation of Hydrogen Peroxide.
- Summarize biosolids disposal for 2021. Include the amount disposed and the location the solids were disposed.
  - All biosolid disposal information (amount and location) can be found in the comments section of each DMR submitted.
- Is formalin the same as Parasite-S? If not which one is used at Reynolsdale?
  - Parasite-S is the product name by the company who provides the Formalin mixture (37% Formaldehyde). I've attached the SDS, if needed, for further clarification.

Like I mentioned above, I will send along the WQM permit Post Construction Certification when I received it from our Engineering department.

Please let me know if you have any further questions or concerns with any of the answers provided. Thank you for the opportunity to verify this information prior to the draft permit.

Thanks,
Mindy

Mindy McClenahan, BSWQL Unit Leader
mmcclenaha@pa.gov
814-353-2229

From: Hong, Nicholas <nhong@pa.gov>
Sent: Thursday, January 27, 2022 11:07 AM
To: McClenahan, Mindy <mmcclenaha@pa.gov>
Cc: Wade, Harry <hwade@pa.gov>
Subject: Reynolsdale NPDES renewal

Mindy.

DEP will be completing the NPDES renewal permit for Reynolsdale Fish Hatchery in the next few weeks. Fish and Boat should anticipate receiving a draft Fact Sheet and draft NPDES permit. Subsequently the final NPDES will be sent after the PA Bulletin period.

We have the preliminary comments on the renewal.

- Confirm the annual design flow rate and hydraulic design flow rates for the facility?
- Confirm the hydraulic design flow for the Actiflo treatment system?
- Is the Actiflo system being hydraulically overloaded? Below is a summary of flow from the last 12 months.

Parameter	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20
Flow (MGD) Average Monthly	1.4784	1.5112	1.6011	1.5381	1.5822	1.6024	1.64	1.6648	1.7086	1.6455	1.6717	1.6489
Flow (MGD) Daily Maximum	1.584	1.6013	1.9008	1.62	1.7179	1.7439	1.7871	1.8187	2.1183	1.8461	1.8907	2.1269

- Attached a copy of the WQM Part 2 permit for the Actiflo treatment?
- The drug usage limits will be calculated using the same approach as Huntsdale. The preliminary usage limits are shown in the table. This was based upon a flow rate of 1.61 MGD.

Drug/Chemical Additive	Facility Requested Usage Rate (lbs/day)	Proposed Permit Maximum Allowable Usage Rate (lbs/day)
Chloramine T	11	2.76
Diquat Dibromide (Reward)	12.5	0.26
Florfenicol	1.1	53.9
Hydrogen Peroxide	62	0.49
Lysol Professional	4.5	0.024
Perasite-S	75	1.56
Romet TC	1.8	12.9
Sodium Chloride	3750	203
Terramycin 200	37	34

- Per discussions with Fish and Boat, Hydrogen Peroxide will dissipate after 30 minutes. Confirm if Reynolsdale would have the 30 minute window for hydrogen peroxide to dissipate.
- Summarize biosolids disposal for 2021. Include the amount disposed and the location the solids were disposed.

2

- Is formalin the same as Parasite-S? If not which one is used at Reynolsdale?

We would like responses by 2/1/22.

Nick Hong, PE | Environmental Engineer
PA Department of Environmental Protection
Clean Water Programs
Southcentral Regional Office
909 Elmerton Avenue | Harrisburg, PA 17110
Phone: 717.705.4824 | Fax: 717.705.4760
www.dep.pa.gov

THE SOUTHCENTRAL REGIONAL OFFICE AFTER HOURS REPORTING & 24 HOUR EMERGENCY RESPONSE NUMBER IS 1-800-541-2050

Hong, Nicholas

From: McClenahan, Mindy
Sent: Wednesday, February 2, 2022 3:44 PM
To: Hong, Nicholas
Cc: Niewinski, Brian; Cochran II, Thomas
Subject: RE: Reynoldsdale NPDES renewal
Attachments: Reynoldsdale FH IWTP 12-18-19.pdf; WQM II PERMIT.pdf

Nick,

- I have attached the DEP inspection report from 12/18/2019, that explains on page 2 in the comments that "approximately 50% of the hatchery raceway water is sent to the treatment plant and 50% is discharged from the raceways directly to the receiving stream" (well directly to our effluent ditch). So our Actiflo system is not being hydraulicly overloaded as it is not filtering all of the hatcheries discharged water. The flows reported over the last year (or more) are correct and we do not have any plans to expand on the Actiflo treatment building/system.
- I have also attached the WQM II Permit. This is all we have, so hopefully this is what you are looking for.
- I did not respond originally to the chemical usage chart, as the majority of those levels are greatly below what would be needed to effectively treat our fish for any diseases or sickness that may occur. Is this something you'd like to address now, or after the draft is issued in by using the draft comments? It's not something we can immediately respond to since some research and internal conversations would need to happen on our end. We can certainly start work on doing this, but if you are trying to meet a specific deadline on issuing the draft on your end we may want to wait for the draft comments. What are your thoughts here?
- Finally, the chart below summarizes our biosolids disposals for 2021. I'm not aware of a "biosolids disposal supplemental form", as none of our 14 hatcheries have this supplemental form as a requirement in our NPDES permits. If any additional information is needed about biosolids it can likely be found in the comments section for the eDMR's that have already been submitted through Greenport, as this information is summarized monthly in the comments section at the end of each submission.

Month	Amount of Biosolids Removed, gals	Disposal Field (specific gals per Field)
January	4,300	Field 1 (900); Field 2 (2,000); Field 3 (1,400)
February	4,750	Field 2 (1,750); Field 3 (1,500); Sludge Storage Tank (1,500)
March	5,700	Field 1 (3,300); Field 2 (2,400)
April	11,350	Field 1 (7,350); Field 2 (1,800); Field 3 (2,200)
May	15,400	Field 1 – all 15,400
June	10,650	Field 1 (5,650); Sludge Storage Tank (5,000)
July	9,950	Field 1 (7,800); Field 2 (750); Field 3 (1,400)
August	19,850	Field 1 (14,650); Field 2 (900); Field 3 (600); Sludge Storage Tank (3,700)
September	11,600	Field 1 (4,950); Field 2 (6,650)
October	15,200	Field 1 (2,000); Field 2 (12,000); Field 3 (1,200)
November	15,350	Field 1 (9,575); Field 2 (1,875); Field 3 (3,000); Sludge Storage Tank (900)
December	10,000	Field 1 (6,000); Field 2 (4,000)

1

Please let me know if you need anything else. I'll be in the office tomorrow 8-4 and working from home on Friday for the same hours. My cell is 814-591-6638, in case you'd like to contact me by phone on Friday. My office phone is 814-353-2229.

Thanks,
Mindy

Mindy McClenahan, BSWQL Unit Leader
mmcclenaha@pa.gov
814-353-2229

From: Hong, Nicholas <nhong@pa.gov>
Sent: Wednesday, February 2, 2022 7:10 AM
To: McClenahan, Mindy <mmcclenaha@pa.gov>
Cc: Wade, Harry <hwade@pa.gov>; Niewinski, Brian <bniewinski@pa.gov>; Cochran Ii, Thomas <tcochranii@pa.gov>; Brallier, Scott <sbrallier@pa.gov>
Subject: RE: Reynoldsdale NPDES renewal

Mindy.

- The Actiflo is rated for 1.6 MGD. The DMR's from Dec 2020 to May 2021 show the average flow exceeding 1.6 MGD. A *hydraulic overload* is the condition that occurs when the monthly average flow entering a plant exceeds the hydraulic design capacity for 3-consecutive months out of the preceding 12 months or when the flow in a portion of the sewer system exceeds its hydraulic carrying capacity.

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Clarify if there is a need for plant expansion.

We are requesting a copy of the WQM Part 2 permit. We are not looking for the WQM Part 2 Post Construction Certification.

- The drug usage limits will be calculated using the same approach as Huntsdale. The preliminary usage limits are shown in the table. This was based upon a flow rate of 1.61 MGD. Feel free to confirm that the maximum usage limits is acceptable to Fish and Boat.

Drug/Chemical Additive	Facility Requested Usage Rate (lbs/day)	Proposed Permit Maximum Allowable Usage Rate (lbs/day)
Chloramine-T	11	2.76
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Lysol Professional	4.5	0.024
Perasite-S	75	1.56
Romet TC	1.8	13.9
Sodium Chloride	3750	203
Terramycin 200	37	34

- DEP has not been receiving the biosolids disposal supplemental forms. Summarize biosolids disposal for 2021. We are looking for volume of biosolids disposed and locaton of disposal. Attach copies of the biosolids disposal for 2021.

Nick Hong, PE | Environmental Engineer
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THE SOUTHCENTRAL REGIONAL OFFICE AFTER HOURS REPORTING & 24 HOUR EMERGENCY RESPONSE NUMBER IS 1-800-541-2050

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To: Hong, Nicholas <nhong@pa.gov>
Cc: Wade, Harry <hwade@pa.gov>; Niewinski, Brian <bniewinski@pa.gov>; Cochran Ii, Thomas <tcochranii@pa.gov>; Brallier, Scott <sbrallier@pa.gov>
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3

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4

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Lysol Professional	4.5	0.024
Parasite-S	75	1.56
Romet TC	1.8	13.9
Sodium Chloride	3750	203
Terramycin 200	37	34

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We would like responses by 2/1/22.

Nick Hong, PE | Environmental Engineer
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Sodium Chloride	3750	203
Terramycin 200	37	34

- Per discussions with Fish and Boat, Hydrogen Peroxide will dissipate after 30 minutes. Confirm if Reynolsdale would have the 30 minute window for hydrogen peroxide to dissipate.
- Summarize biosolids disposal for 2021. Include the amount disposed and the location the solids were disposed.
- Is formalin the same as Parasite-S? If not which one is used at Reynolsdale?

We would like responses by 2/1/22.

Nick Hong, PE | Environmental Engineer
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Clean Water Programs
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THE SOUTHCENTRAL REGIONAL OFFICE AFTER HOURS REPORTING & 24 HOUR EMERGENCY RESPONSE NUMBER IS 1-800-541-2050

pennsylvania
FISH AND BOAT COMMISSION

April 20, 2022

Nicholas Hong
Environmental Engineer, Clean Water Program
Pennsylvania Department of Environmental Protection
Southcentral Regional Office
909 Elmerton Avenue
Harrisburg, PA 17110-8200

Dear Mr. Hong:

The Pennsylvania Fish and Boat Commission (Commission) has reviewed the National Pollutant Discharge Elimination System (NPDES) draft permit for the Reynoldsdale State Fish Hatchery (SFH). Please accept the following comments that are filed within the 30-day public comment period following the posting of the draft permit in the *Pennsylvania Bulletin* on March 26, 2022.

On page 1, please change PA Fish & Boat Comm Fisheries Bureau to Pennsylvania Fish and Boat Commission.

In Part A, Section I.A. on page 2, the Commission recommends that the "Parameter" Carbonaceous Biochemical Oxygen Demand (CBOD5) be changed to Biochemical Oxygen Demand (BOD5). This recommendation is in line with other Commission hatcheries that have similar Concentrated Aquatic Animal Production (CAAP) limitations. This recommendation also aligns with the Department's PAG-11 Fact Sheet guidance document.

In Part A, Section I.A. on pages 2-3, the Commission recommends that the "Minimum Measurement Frequency" for CBOD5, Total Suspended Solids (TSS), and Ammonia-Nitrogen (NH-3) be changed to 2/month instead of 1/week. Historical data proves that there is little fluctuation in the results for these parameters (Figures 1 & 2). Additionally, the Department's PAG-11 Fact Sheet recommends BOD5 to be monitored once per quarter.

In Part A, Section I.A. on page 3, the Commission recommends that the monitoring requirements for Formaldehyde be removed. The usage of Formaldehyde is controlled by the daily maximum usage rate listed in Part C, Section IV. on page 21. Having both a monitoring requirement and a daily maximum usage rate is redundant and unnecessary.

Benner Spring Water Quality Laboratory
1735 Shiloh Road | State College, PA 16801 | Phone: 814.353.2229 | Fax: 814.355.8264 | fishandboat.com

In Part A, Section I.A. Supplemental Information on page 4, the Commission recommends that the effluent discharge rate of 4.7304 MGD be changed to 1.4012 MGD, as that is the average flow rate that was in the renewal application.

In Part A, Section III.E. on page 14, the Commission requests changing the CAAP Individual Permit fee from $1,500 to $0 because the Commission is exempt from these fees.

In Part C, Section IV., page 21, the Commission recommends removing Parasite-S and the usage rate from the Drug/Chemical Additive table. Parasite-S is the brand name for the Formaldehyde solution that is used at the hatchery. It is also redundant because there is already a Maximum Allowable Usage Rate for Formaldehyde in this table.

The Commission recommends the usage rate for Chloramine-T in Part C, Section IV., page 21, be changed from 2.76 lbs./day to 7.5 lbs./day. The Commission believes that when treating at concentrations up to 20 mg/L for up to 60 minutes, Chloramine-T is not expected to have a significant impact on the environment, as stated in the Finding of No Significant Impact (FONSI) report for Chloramine-T (Halamid Aqua) that was completed by the United States Geological Survey (USGS):
https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFonsi/81.
In addition, the conclusion of the Environmental Assessment of the Effects of Chloramine-T Use in and Discharge by Freshwater Aquaculture states *"The use and subsequent discharge of chloramine-T from intensive aquaculture facilities is not likely to result in acute or chronic effects to populations of aquatic organisms nor is it likely to be a potential threat to public health or safety. We based this conclusion on the following: (1) that it is unlikely that chloramine-T at concentrations proposed for aquaculture use will produce either free chlorine or inorganic chloramine or other compounds more toxic than chloramine-T, (2) that the production of substantial amounts of mutagenic or electrophilic compounds from chloramine-T use or discharge is also not likely, and (3) that chloramine-T is the species on which it is appropriate to model our assessment of potential environmental risk."* This statement and additional information can be found at:
https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadEA/81.

The Commission recommends the usage rate for Lysol Professional in Part C, Section IV., page 21, be changed from 0.024 lbs./day to 1.0 lb./day. Lysol Professional is not expected to have a significant impact on the environment when being discharged as a result of a typical wastewater effluent, as stated in the "Assessment of Ecological Hazards and Environmental Fate of Disinfectant Quaternary Ammonium Compounds" journal article for quaternary ammonium compound, which describes Lysol Professional's main active ingredient, benzyl-C12-16-alkyldimethyl. This article can be found in the Ecotoxicology and Environmental Safety Journal published on December 15, 2020:
https://www.sciencedirect.com/science/article/pii/S0147651320309556.
The conclusion states *"Disinfectant Quats are largely removed from wastewater through*

biodegradation and sorption to wastewater biosolids, and traces that may be discharged to surface water or soil will bind to sediment or soil and reduce the available exposure concentration to potential receptors. By one estimate, the bioavailable fraction of quaternary ammonium surfactants in environmental waters is reduced by up to 95%." This statement and additional information can be found at the link mentioned above.

The Commission recommends the usage rate for Sodium Chloride in Part C, Section IV., page 21, be changed from 203 lbs./day to 1,200 lbs./day. Sodium chloride is commonly used in aquaculture and is approved for use on food fish by the U.S. Food and Drug Administration (FDA) and assists with osmoregulation and helps to reduce stress.

As always, the Commission appreciates the opportunity to provide comments on NPDES permits in the draft stage.

Sincerely,

Mindy L. McClenahan, Chemist 3
Fish Production Services

Cc: R. Brown
B. Wisner
B. Niewinski
T. Cochran
H. Wade
R. Caccese

Figure 1. Monthly average CBOD and TSS values at the Reynoldsdale SFH Outfall 001 from February 2017 through February 2022.

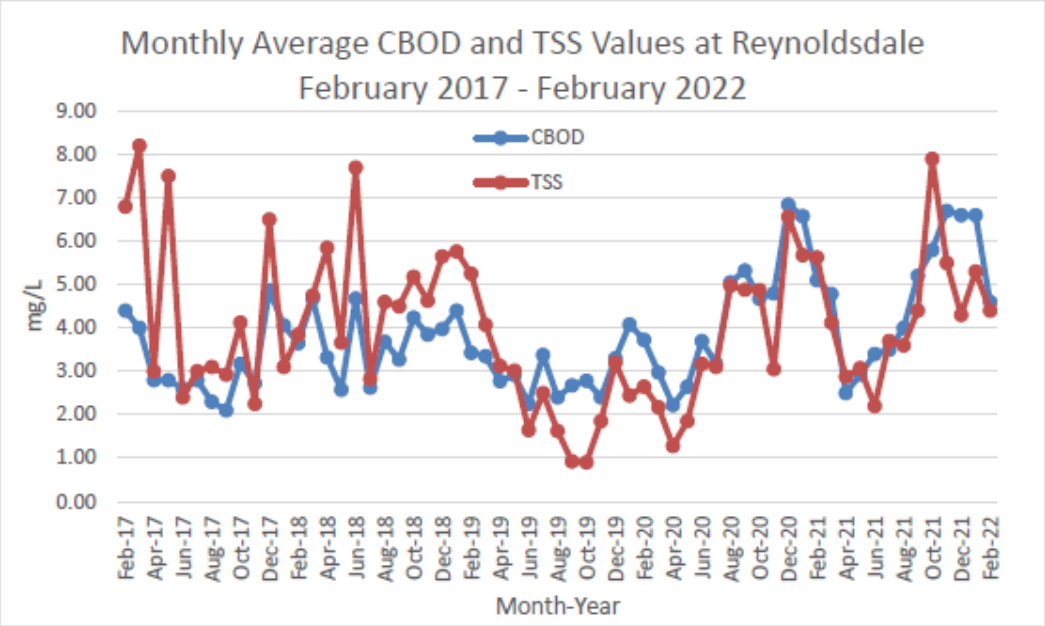
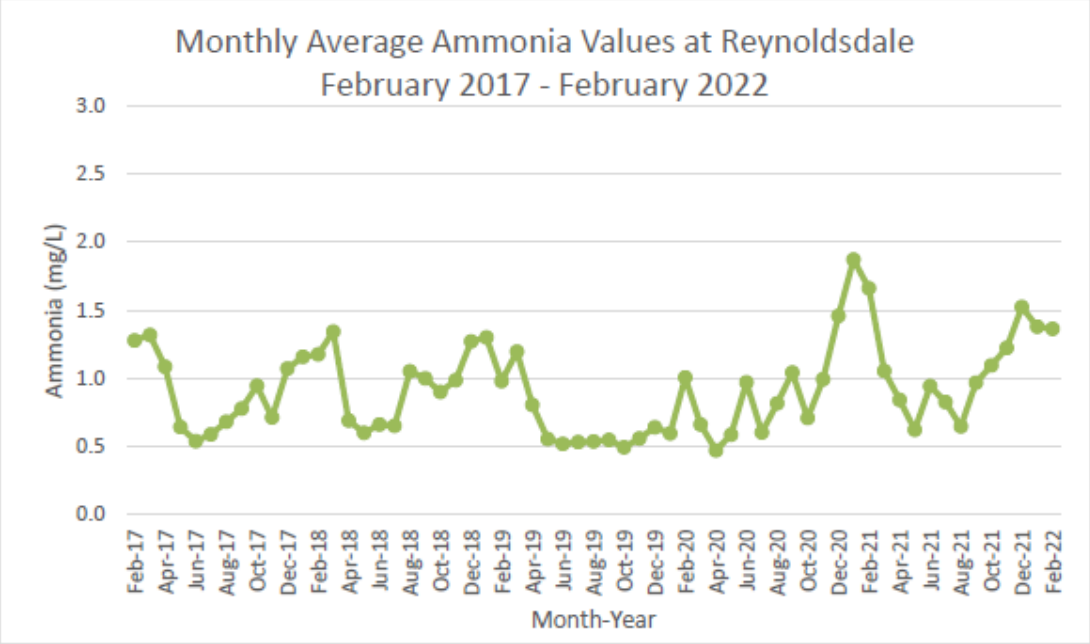


Figure 2. Monthly average ammonia levels at the Reynoldsdale SFH Outfall 001 during February 2017 through February 2022.



Hong, Nicholas

From: Hong, Nicholas
Sent: Tuesday, June 7, 2022 9:50 AM
To: McClenahan, Mindy
Cc: Martin, Daniel
Subject: Reynoldsdale Fish Hatchery comments / PA0044059

Mindy McClenahan:

DEP acknowledges receipt of Fish and Boat's comments on the draft Fact Sheet for Reynoldsdale State Fish Hatchery. DEP responses to your comments are as follows.

- The name of the facility has been updated to PA Fish and Boat Commission
- Consistent with the PAG-11, monitoring with limits shall be as BOD. Chapter 92a.47 of the regulations allows for sampling for either BOD or CBOD. The BOD/CBOD ratio is 1.2. The review for other fish hatchery notably Huntsdale Fish Hatchery have examined CBOD and BOD data and concluded that a BOD/CBOD ratio of 1 is achievable.
- The monitoring frequency for BOD, TSS, and ammonia-nitrogen will be reduced to 2x/month. A review of the DMR data from December 2020 until November 2021 shows that the facility is able to meet the effluent limits for BOD, TSS, and ammonia-nitrogen. In fact, the daily maximums for the pollutants (CBOD and ammonia nitrogen) from the DMRs are also below the average monthly permit limits. The daily maximums for TSS is below the daily maximum for the NPDES permit limits. Other PA state fish hatcheries have the 2x/month sampling frequency with comparable flow rate.

Parameter	21-Nov	21-Oct	21-Sep	21-Aug	21-Jul	21-Jun	21-May	21-Apr	21-Mar	21-Feb	21-Jan	20-Dec	Maximum
CBOD5 (mg/L) Average Monthly	7	5.8	5.2	4	3.5	< 3.0	2.9	3	5	5	7	6.8	7
CBOD5 (mg/L) Daily Maximum	8	6.6	7	5	3.9	3.8	3.8	3	7	6	8	7.4	8
TSS (mg/L) Average Monthly	5	8	4	4	3.7	2	3.1	3	4	6	6	6.6	8
TSS (mg/L) Daily Maximum	8	14	6	4	7.2	2.9	5.8	4	5	8	7	11.3	14
Ammonia (mg/L) Average Monthly	1.2	1.1	1	< 0.6	0.8	1	0.6	0.8	< 1.1	1.7	1.9	1.5	1.9
Ammonia (mg/L) Daily Maximum	1.5	1.4	1.1	1	0.9	1.019	0.7	1	1.4	1.8	2.2	1.6	2.2

- DEP can consider removing formaldehyde from the permit. The PAG-11 permit deemed it not necessary.
- Consistent with the PAG-11, phosphorus shall be monitored 1x/quarter
- Confirm if the facility is using Parasite-S or Formalin.
- The WQM part has a design flow rate of 1.6 MGD and an average annual flow rate of 1.44 MGD. Clarify the difference between the 1.44 MGD and the 1.4012 MGD in your comment letter. Toxics modeling will need to be re-done at the appropriate flow rate. This could impact maximum drug usage limits.
- The fee schedule are generic. Since Fish and Boat may have an arrangement with DEP for $0 exemption cost, the fee cost will be billed accordingly to the arrangement.
- DEP requests Fish and Boat to produce documentation on how the 7.5 lbs/day chloramine-T was arrived. Show calculations. The report indicates a NPDES limit of 0.13 mg/l. DEP is inclined to utilize this benchmark value for concentration and loading rates. This would give a maximum allowable usage of 1.51 lbs/day (0.13 mg/l * 1.4012 MGD * 8.34 = 1.51 lbs/day). Using TMS, the average monthly limit would be 1.67 lbs/day and 0.14 mg/l. Note the calculation was based upon a flow rate of 1.4012 MGD. So the TMS would be less stringent compared to the benchmark used in the literature paper.

- DEP requests Fish and Boat to produce documentation on how the 1.0 lbs/day Lysol Professional was arrived. Show calculations. While there may be similar/same ingredients used the report, the report does not specifically mention Lysol. A report specifically on Lysol evaluating water quality impacts would be suitable for our consideration. TMS would give a maximum allowable usage of 0.014 lbs/day (0.001 mg/l * 1.4012 MGD * 8.34 =0.014 lbs/day). Note the calculation was based upon a flow rate of 1.4012 MGD.
- DEP requests Fish and Boat to produce documentation on how the 1,200 lbs/day sodium chloride was arrived. Show calculations. Water quality modeling recommended 203 lbs/day daily maximum for sodium chloride. TMS arrives at the maximum loading based upon toxicity data from MSDS. TMS also utilizes stream flow rate and facility flow rate to give maximum daily usage. Are there supporting documentation to support the 1,200 lbs/day value.

We request a response within 7 business days from the date of this email.

Nick Hong, PE | Environmental Engineer
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THE SOUTHCENTRAL REGIONAL OFFICE AFTER HOURS REPORTING & 24 HOUR EMERGENCY RESPONSE NUMBER IS 1-800-541-2050

3

Hong, Nicholas

From: McClenahan, Mindy
Sent: Thursday, November 3, 2022 3:44 PM
To: Hong, Nicholas
Cc: Steckler, Zachary; Martin, Daniel; Niewinski, Brian; Wade, Harry; Cochran Ii, Thomas; Bebenek, Maria
Subject: RE: NPDES / Reynoldsdale Fish Hatchery

Nick,

As discussed before, we do not have any further calculations available to share with DEP when speaking about Chloramine-T and Lysol usage rates at Reynoldsdale State Fish Hatchery.

Thanks,
Mindy

Mindy McClenahan | Water Quality Unit Leader | Chemist 3
Pennsylvania Fish and Boat Commission | Fish Production Services
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Office: 814.353.2229
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From: Hong, Nicholas <nhong@pa.gov>
Sent: Tuesday, October 25, 2022 9:16 AM
To: McClenahan, Mindy <mmcclenaha@pa.gov>
Cc: Steckler, Zachary <zsteckler@pa.gov>; Martin, Daniel <daniemarti@pa.gov>; Niewinski, Brian <bniewinski@pa.gov>; Wade, Harry <hwade@pa.gov>; Cochran Ii, Thomas <tcochranii@pa.gov>; Bebenek, Maria <mbebenek@pa.gov>
Subject: RE: NPDES / Reynoldsdale Fish Hatchery

Mindy.

We are requesting additional information on the drug usage.

DEP may consider degradation of the drug through fate and fate transport as the literature papers suggest.

DEP requests that the usage rates in the letter dated for April 20, 2022 show supporting calculation on how Fish and Boat arrived at the usage rates for Chloramine at 7.5 lbs/day, Lysol at 1 lb/day, and sodium chloride at 1,200 lbs/day. Be advised that usage rates should be protective of the environment and not based on operational need.

DEP's obligation is to be able to show via calculation how the drug usage rates are arrived. We would be unable to accept a usage rate without basis.

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THE SOUTHCENTRAL REGIONAL OFFICE AFTER HOURS REPORTING & 24 HOUR EMERGENCY RESPONSE NUMBER IS 1-800-541-2050

From: McClenahan, Mindy <mmcclenaha@pa.gov>
Sent: Friday, October 7, 2022 9:04 AM
To: Hong, Nicholas <nhong@pa.gov>
Cc: Steckler, Zachary <zsteckler@pa.gov>; Martin, Daniel <daniemarti@pa.gov>; Niewinski, Brian <bniewinski@pa.gov>; Wade, Harry <hwade@pa.gov>; Cochran Ii, Thomas <tcochranii@pa.gov>
Subject: RE: NPDES / Reynoldsdale Fish Hatchery

Mr. Hong,

After discussions with our PA Fish and Boat Commission (PFBC) team, we recommend the same usage rate of 7.5 lbs./day for Chloramine-T. Our calculations are based on US Food and Drug Administration's (FDA) recommendations for the treatment of diseased fish and are calculated using the appropriate flow rates and raceway sizes. As stated in the Finding of No Significant Impact (FONSI) report for Chloramine-T (Halamid Aqua) that was completed by the United States Geological Survey (USGS), the PFBC agrees that when treating at concentrations up to 20 mg/L for up to 60 minutes (this concentration is not exceeded during treatments), Chloramine-T is not expected to have a significant impact on the environment.
https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFonsi/81.

To reiterate, the conclusion of the Environmental Assessment of the Effects of Chloramine-T Use in and Discharge by Freshwater Aquaculture states "The use and subsequent discharge of chloramine-T from intensive aquaculture facilities is not likely to result in acute or chronic effects to populations of aquatic organisms nor is it likely to be a potential threat to public health or safety. We based this conclusion on the following: (1) that it is unlikely that chloramine-T at concentrations proposed for aquaculture use will produce either free chlorine or inorganic chloramine or other compounds more toxic than chloramine-T, (2) that the production of substantial amounts of mutagenic or electrophilic compounds from chloramine-T use or discharge is also not likely, and (3) that chloramine-T is the species on which it is appropriate to model our assessment of potential environmental risk." This statement and additional information can be found at: https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadEA/81.

The PFBC also recommends the usage rate for Lysol Professional be changed from 0.024 lbs./day to 1.0 lb./day. Lysol Professional is not expected to have a significant impact on the environment when being discharged as a result of a typical wastewater effluent, as stated in the "Assessment of Ecological Hazards and Environmental Fate of Disinfectant Quaternary Ammonium Compounds" journal article for quaternary ammonium compound. This article can be found in the Ecotoxicology and Environmental Safety Journal published on December 15, 2020: https://www.sciencedirect.com/science/article/pii/S0147651320309556. The conclusion states "Disinfectant Quats are largely removed from wastewater through biodegradation and sorption to wastewater biosolids, and traces that may be discharged to surface water or soil will bind to sediment or soil and reduce the available exposure concentration to potential receptors. By one estimate, the bioavailable fraction of quaternary ammonium surfactants in environmental waters is reduced by up to 95%." This statement and additional information can be found at the link mentioned above.

The PFBC recommends that the usage rate for Sodium Chloride be 1,200 lbs./day. Sodium chloride is commonly used in aquaculture and is approved for use on food fish by the U.S. Food and Drug Administration (FDA) and assists with osmoregulation and helps to reduce stress.

The PFBC feels strongly that these recommended usage rates are protective of the environment and not solely based on operational needs. If you have any further questions or concerns, please feel free to reach out. As always, we appreciate the opportunity to discuss the NPDES permit in draft form.

Thank you,
Mindy

Mindy McClenahan | Water Quality Unit Leader | Chemist 3
Pennsylvania Fish and Boat Commission | Fish Production Services
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Office: 814.353.2229
fishandboat.com

From: Hong, Nicholas <nhong@pa.gov>
Sent: Thursday, September 15, 2022 10:28 AM
To: McClenahan, Mindy <mmcclenaha@pa.gov>
Cc: Steckler, Zachary <zsteckler@pa.gov>; Martin, Daniel <daniemarti@pa.gov>
Subject: NPDES / Reynoldsdale Fish Hatchery

Mindy.

In consultation with our DEP Central Office, we have reviewed the submitted literature articles in support for determining the maximum usage rates for drugs utilized at the facility.

DEP estimates for maximum drug usages were based upon safety and protection to the aquatic life. The Toxics Management Spreadsheet (TMS) utilizes information from MSDS to determine maximum usage rates. TMS determines effluent limit based upon a mass-balance calculation.

DEP may consider degradation of the drug through fate and fate transport as the literature papers suggest.

DEP requests that the usage rates in the letter dated for April 20, 2022 show supporting calculation on how Fish and Boat arrived at the usage rates for Chloramine at 7.5 lbs/day, Lysol at 1 lb/day, and sodium chloride at 1,200 lbs/day. Be advised that usage rates should be protective of the environment and not based on operational need.

Nick Hong, PE | Environmental Engineer
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Average Flow Rate

1/1/2020 to 8/1/2022

Monitoring Period Begin Date	Average Monthly Flow Rate
01/01/2020	1.9921
02/01/2020	2.0082
03/01/2020	2.0554
04/01/2020	2.0701
05/01/2020	1.9172
06/01/2020	1.8205
07/01/2020	1.7576
08/01/2020	1.7066
09/01/2020	1.6999
10/01/2020	1.6664
11/01/2020	1.6132
12/01/2020	1.6489
01/01/2021	1.6717
02/01/2021	1.6455
03/01/2021	1.7086
04/01/2021	1.6648
05/01/2021	1.64
06/01/2021	1.6024
07/01/2021	1.5822
08/01/2021	1.5381
09/01/2021	1.6011
10/01/2021	1.5112
11/01/2021	1.4784
12/01/2021	1.5919
01/01/2022	1.5431
02/01/2022	1.6336
03/01/2022	1.5504
04/01/2022	1.5681
05/01/2022	1.6389
06/01/2022	1.5138
07/01/2022	1.5038
08/01/2022	1.465
Average Flow Rate	**1.675271875**