Pennsylvania Department of Environmental Protection

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0098787**
Facility Type	**Industrial**	APS ID	**1122202**
Major / Minor	**Minor**	Authorization ID	**1500441**

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

Applicant and Facility Information

Applicant Name	**Portage Borough Municipal Authority**	Facility Name	**Bens Creek Water Treatment Plant**
Applicant Address	606 Cambria Street	Facility Address	500 Strawberry Road
	Portage, PA 15946-1516		Portage, PA 15946
Applicant Contact	Chuck Gouse	Facility Contact	Chuck Gouse
Applicant Phone	(814) 736-9642	Facility Phone	(814) 736-9642
Client ID	118359	Site ID	256155
SIC Code	4941	Municipality	Portage Township
SIC Description	Water Supply	County	Cambria
Date Application Received	September 17, 2024	EPA Waived?	Yes
Date Application Accepted	September 24, 2024	If No, Reason	

Purpose of Application: Renewal of Individual NPDES permit

Summary of Review

The Department received a NPDES permit application from Portage Borough Municipal Authority for renewal coverage of the Bens Creek Water Treatment Plant on 9/17/2024. The current permit was issued on 12/23/2019 with an effective date of 2/1/2020 and an expiration date of 1/31/2025.

Facility Description

Bens Creek Water Treatment Plant is a potable water treatment plant (WTP); the facility flow diagram is shown in Figure 1. Raw water enters the plant from the reservoir or from wells and is initially treated with prechlorination, DelPAC (polyaluminum chloride), and potassium permanganate for the coagulation, flocculation, and sedimentation (clarifying) process. The clarified water then undergoes filtration followed by the addition of zinc orthophosphate, post-chlorination, and soda ash. Finished water is then ready for distribution. Sludge created from the clarifying process along with filter backwash water reside in a sump until pumped to the sedimentation lagoon for treatment, which discharges via Outfall 001 to Bens Creek. According to the application, Outfall 001 has a design flow up to 1 MGD, but actual average daily maximum from DMR data is around 0.034 MGD. The facility does not have a flow meter for Outfall 001—flow is based off of an estimation from backwash water volume. Bens Creek has a 25 PA Code Chapter 93 Exceptional Value designation and is not impaired at Outfall 001. Lagoon sludge is stored in a drying bed and hauled to a landfill.

The permittee has five open violations under the Safe Drinking Water Program, but the Safe Drinking Water Program has confirmed that these should not impact NPDES permit renewal. A NPDES compliance evaluation inspection was performed by Kristin Gearhart on 5/2/2024 with one violation noted for 16 effluent exceedances, mostly for Ammonia-Nitrogen with one for Total Phosphorus.

Approve	Deny	Signatures	Date
X		Jace W. Marsh / Environmental Engineering Specialist	January 16, 2025
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	February 3, 2025

Summary of Review

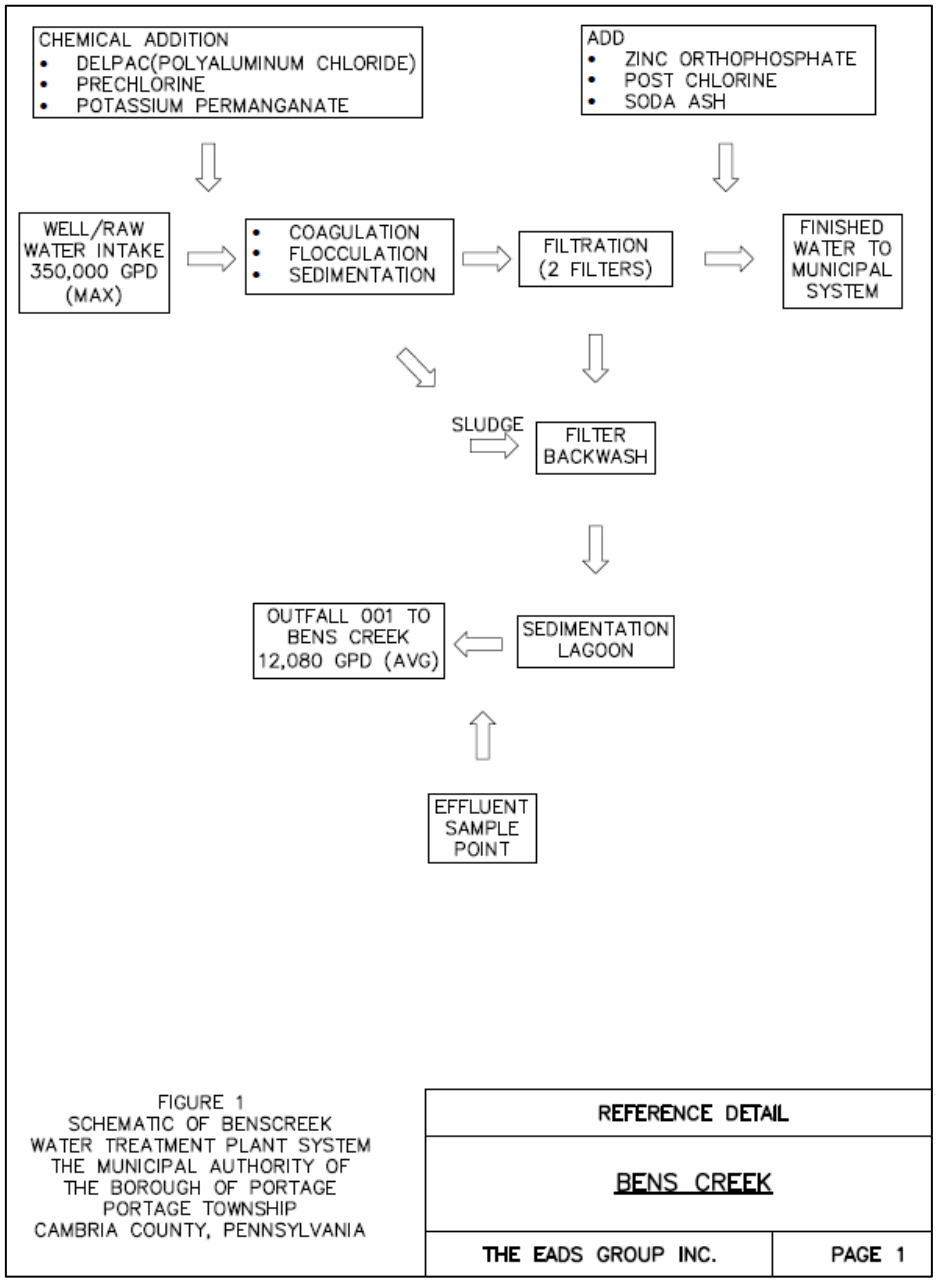


Figure 1. Bens Creek Water Treatment Plant flow diagram

Facility History

In 1986, the PA Department of Environmental Resources (DER, now DEP) sampled the Bens Creek Reservoir and Martindale Reservoir, the sources for the municipal water supply system maintained by Portage Borough Municipal Authority, identifying the presence of giardia cysts. Giardia is a microscopic, one-celled animal which when ingested by humans can cause an intestinal illness known as giardiasis. As a result of this identification, the DER ordered the Authority to develop a short term and a long term plan to deal with the problem. A Water Source Study & Evaluation, prepared June 1986 and amended April 1988, was provided for the Portage Borough Municipal Authority by EADS Group in response.

We will focus on the Bens Creek portion of the report. The Bens Creek intake reservoir is situated at the Confluence of Bens Creek and Earnest Run with historic treatment only consisting of flow proportional, gas solution chlorination housed within a small concrete block structure. Periodic high turbidity levels in Bens Creek were a concern of the US EPA and PA DER due to turbidity's tendency to "mask" the presence of harmful organisms such as giardia and coliforms by increasing the difficulty

Summary of Review

of destroying them with standard disinfection methods already in place. Several options were presented on how the Authority could move forward, but ultimately it was chosen to build a proper drinking water treatment plant on Bens Creek that utilizes filtration to deal with turbidity issues.

The initial NPDES permit was issued on November 16, 1988, with the same technology-based potable WTP limits that DEP uses to this day. The WQM permit for the clarifier sludge and filter backwash lagoon was approved on 2/14/1989. The exact completion date of facility construction is unknown, but the earliest NPDES compliance inspection report dates from 5/6/1992 so the facility must have been operating since at least that date. The WTP has not undergone expansion since construction. The NPDES permit has been renewed five times since initial issuance with the same technology-based potable WTP limits until renewal in 2018 which imposed non-degrading limits.

Basis for Reconsideration of Antidegradation Effluent Limits

In the previous permit issued on 12/23/2018, an antidegradation analysis was performed because of discharge to an Exceptional Value (EV) stream which resulted in non-degrading limits imposed at Outfall 001 for the first time in the permit's history. Portage Borough Municipal Authority did not submit any comments regarding these proposed limits during the Draft permit comment period. Bens Creek WTP has since had numerous exceedances of its Ammonia-Nitrogen limit—see Compliance History on Page 6 for exceedances in only the last year. Jeremy Miller, DEP Wastewater Treatment Operations Advisor, visited the site on 9/19/2024 with Kristin Gearhart, DEP Water Quality Specialist, to assess issues that could be causing these exceedances, and his Wastewater Treatment System Site Assessment can be referenced in Attachment A. Following internal discussion, the Department decided to reevaluate the discharge to determine if antidegradation limits are applicable to Outfall 001.

As Stated in the Facility History section above, the facility has been discharging from Outfall 001 since at least 5/6/1992. Bens Creek was initially designated as a Conservation Area in the final form rulemaking published in the *Pennsylvania Bulletin* at 3 Pa.B. 778 (April 28, 1973). The Conservation Area designation was generally equivalent to, and ultimately replaced by, the current Chapter 93 Special Protection designated use of High Quality (HQ). This change in use was adopted in the Department's 1st triennial review of water quality standards published as a final form rulemaking in the *Pennsylvania Bulletin* at 9 Pa.B. 3051 (September 8, 1979). The Bens Creek basin was subsequently reevaluated in the mid-to-late 1990s in response to a request from the Pennsylvania Fish & Boat Commission. The Department's evaluation determined that the upper portion of the Bens Creek Basin was achieving an existing use of EV and the lower portion of the basin had been incorrectly designated as HQ-CWF. The EV designation was based on macroinvertebrate scores greater than 92% of the EV reference stream scores (25 Pa Code § 93.4b). These redesignation recommendations were included in the Hay Creek Rulemaking Package, which was proposed in the Pennsylvania Bulletin on August 16, 1997 (27 Pa.B. 4094) and finalized on November 27, 1999 (29 Pa.B. 5999).

Point source discharges in existence prior to an HQ or EV designation are "grandfathered" and considered to be part of the existing quality of the waterbody if they are not new, additional, or increased. Since the Bens Creek WTP was constructed after Bens Creek HQ designation, but prior to Bens Creek EV redesignation, the discharge from Outfall 001 was de facto considered with final EV achievement. No antidegradation analysis was performed upon initial NPDES permit issuance even though it was known Bens Creek was considered HQ at the time. Part of the reason for this oversight is presumed to be due to the lack of comprehensive DEP guidance for antidegradation evaluations at that time—current antidegradation guidance was not formalized until 2003. Since antidegradation was not evaluated when the lagoon discharge was originally proposed, the Department did, by default, approve the technology-based effluent limitations as adequate and protective of the receiving waterway at that time. The Department's most recent antidegradation evaluation associated with the 2018 permit renewal was conducted to rectify past oversight, not in response to a new, additional, or increased pollutant discharge. The Department now recognizes that evaluation was inappropriate in this case.

Although the Department always has the option of correcting past oversight and permitting omissions, it has determined that it was not appropriate to perform an antidegradation analysis nearly 30 years after initial NDPES permit issuance. Imposition of antidegradation limitations so long after approved treatment for Outfall 001 was constructed could result in an unexpected burden for the plant. Accordingly, the Department will remove the antidegradation limits that are in the current permit as part of this renewal application. However, the Department would like to note that any future upgrades or expansions to the Bens Creek WTP facility could trigger an antidegradation analysis and the facility could receive new non-degrading limitations.

Regulation cited for this determination is provided in detail within the Anti-Backsliding section of Outfall 001 in this Draft fact sheet on Pages 10-11.

Summary of Review

Draft Effluent Limitation Summary

Effluent limitations for Outfall 001 in the Draft permit originate from DEP Best Practicable Technology Currently Available (BPT) effluent limits for wastewater from treatment of WTP sludge and filter backwash and the Kiskiminetas-Conemaugh River Watersheds TMDL. Monthly inspections and quarterly cleanouts of the lagoon will be required as a Part C condition in the Draft permit to ensure no excess buildup of organic matter.

Public Participation

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

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	1.0
Latitude	40º 23' 21"	Longitude	-78º 36' 45"
Quad Name	Cresson	Quad Code	1517
Wastewater Description:	Discharge of lagoon treating clarifier sludge and filter backwash		
Receiving Waters	Bens Creek (EV)	Stream Code	46098
NHD Com ID	123717946	RMI	1.98
Drainage Area	5.07 mi^2	Yield (cfs/mi^2)	0.107
Q_{7-10} Flow (cfs)	0.541	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	2117	Slope (ft/ft)	0.12
Watershed No.	18-E	Chapter 93 Class.	EV
Existing Use	n/a	Existing Use Qualifier	n/a
Exceptions to Use	n/a	Exceptions to Criteria	n/a
Assessment Status	Attaining use at point of discharge		
Cause(s) of Impairment	n/a		
Source(s) of Impairment	n/a		
TMDL Status	Final	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Buffalo Township Municipal Authority Freeport		
PWS Waters	Allegheny River	Flow at Intake (cfs)	2390
PWS RMI	29.4	Distance from Outfall (mi)	>60

Changes Since Last Permit Issuance: Saltsburg Municipal Waterworks intake is inactive so is no longer the nearest downstream PWS intake.

Other Comments: none

Compliance History

Effluent Violations for Outfall 001, from: January 1, 2024 To: November 30, 2024

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Ammonia	08/31/24	Avg Mo	0.07	mg/L	.03	mg/L
Ammonia	05/31/24	Avg Mo	1.64	mg/L	.03	mg/L
Ammonia	01/31/24	Avg Mo	0.035	mg/L	.03	mg/L
Ammonia	05/31/24	Daily Max	3.27	mg/L	.05	mg/L
Ammonia	08/31/24	Daily Max	0.12	mg/L	.05	mg/L
Ammonia	01/31/24	Daily Max	0.06	mg/L	.05	mg/L

Summary of Inspections: A NPDES compliance evaluation inspection was performed by Kristin Gearhart on 5/2/2024 with one violation noted for 16 effluent exceedances, mostly for Ammonia-Nitrogen with one for Total Phosphorus.

Other Comments: The permittee has five open violations under the Safe Drinking Water Program, but the Safe Drinking Water Program has confirmed that these should not impact NPDES permit renewal.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 1
Latitude 40º 23' 21" **Longitude** -78º 36' 45"
Wastewater Description: Discharge of lagoon treating clarifier sludge and filter backwash

001.A. Technology-Based Limitations

Federal Effluent Limitation Guidelines

Bens Creek WTP is not subject to Federal Effluent Limitation Guidelines (ELGs).

Regulatory Effluent Standards and Monitoring Requirements

The pH effluent range for all Industrial waste process and non-process discharges pursuant with 25 Pa. Code § 92a.48(a)(2) and 25 Pa. Code § 95.2 is indicated in Table 1 below.

Flow monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(1) as indicated in Table 1 below.

Pursuant to 25 Pa. Code § 95.2(4) effluent standards for industrial wastes may not contain more than 7 mg/L of dissolved iron as indicated in Table 1 below.

Pursuant to 25 Pa. Code § 92a.48(b) the imposition of technology-based Total Residual Chlorine (TRC) limits for facilities that use chlorination and that are not already subject to TRC limits based on applicable federal ELG's or a facility specific BPJ evaluation as indicated in Table 1 below.

Table 1. Regulatory Effluent Standards

Parameter	Monthly Avg	Daily Max	Instantaneous Max
Flow (MGD)	Monitor	Monitor	----
Iron, Dissolved	----	----	7.0 mg/L
pH (S.U.)	Wastes must have a pH of not less than 6.0 nor greater than 9.0		
Total Residual Chlorine	0.5 mg/L	----	----

Total Dissolved Solids (TDS)

This facility is exempt from 25 Pa. Code § 95.10 which outlines treatment requirements for new and expanding mass loadings of TDS and clarifies which facilities are exempt. The relevant section qualifying the exemption states:

> *(a) The following are not considered new and expanding mass loadings of TDS and are exempt from the treatment requirements in this section:*
>
> *(1) Maximum daily discharge loads of TDS or specific conductivity levels that were authorized by the Department prior to August 21, 2010. These discharge loads will be considered existing mass loadings by the Department.*

Best Practicable Control Technology Currently Achievable (BPT)

The Department's reference document *Technology-Based Control Requirements for Water Treatment Plant Wastes* (DEP-ID 362-2183-003) established BPT for discharges of WTPs wastewater, which are shown in Table 2 below.

Table 2. BPT Limits for WTP Filter Backwash Wastewater

Parameter	Monthly Avg (mg/L)	Daily Max (mg/L)
Total Suspended solids (TSS)	30.0	60.0
Total Iron	2.0	4.0
Total Aluminum	4.0	8.0
Total Manganese	1.0	2.0
Flow	Monitor	----
pH (S.U.)	6-9 at all times	
Total Residual Chlorine	0.5	1.0

001.B. Water Quality-Based Effluent Limitations (WQBEL)

Total Maximum Daily Load (TMDL)

Wastewater discharges from the Bens Creek WTP are located within the Kiskiminetas-Conemaugh River Watersheds for which the Department has developed a TMDL. The TMDL was finalized on January 29, 2010 and establishes wasteload allocations (WLAs) for the discharge of aluminum, iron and manganese within the Kiskiminetas-Conemaugh River Watersheds. Bens Creek WTP's permit, PA0098787, is listed in the Appendix G of the Kiskiminetas-Conemaugh River Watershed TMDL, requiring load allocations displayed below in Table 3. Section 303(d) of the Clean Water Act and the U.S. Environmental Protection Agency's Water Quality Planning and Management Regulations (codified at Title 40 of the Code of Federal Regulations Part 130) require states to develop a TMDL for impaired water bodies. A TMDL establishes the amount of a pollutant that a water body can assimilate without exceeding the water quality criteria for that pollutant. TMDLs provide the scientific basis for a state to establish water quality-based controls to reduce pollution from both point and non-point sources in order to restore and maintain the quality of the state's water resources (USEPA 1991a). Stream reaches within the Kiskiminetas-Conemaugh River Watersheds are included in the state's 2008 Section 303(d) list because of various impairments, including metals, pH and sediment. The TMDL includes consideration for each river and tributary within the target watershed and its impairment sources. Stream data is then used to calculate minimum pollutant reductions that are necessary to attain water quality criteria levels. Target concentrations published in the TMDL were based on established water quality criteria of 0.750 $^{mg}/_{L}$ total recoverable aluminum, 1.5 $^{mg}/_{L}$ total recoverable iron based on a 30-day average and 1.0 $^{mg}/_{L}$ total recoverable manganese. The reduction needed to meet the minimum water quality standards is then divided between each known point and non-point pollutant source in the form of a watershed allocation. TMDLs prescribe allocations that minimally achieve water quality criteria (i.e., 100 percent use of a stream's assimilative capacity).

Table 3. Kiskiminetas-Conemaugh River Watershed TMDL PA0098787 Wasteload Allocations

Kiskiminetas River Watershed Major Non-Mining Wasteload Allocations									
Region	SWS	PERMIT	PIPE	Metal	Baseline Load (lbs/yr)	Baseline Concentration (mg/L)	Allocated Load (lbs/yr)	Allocated Concentration (mg/L)	% Reduction
5	4337	PA0098787	001	Aluminum	402	4.00	75	0.75	81
5	4337	PA0098787	001	Iron	201	2.00	201	2.00	0
5	4337	PA0098787	001	Manganese	101	1.00	101	1.00	0

Aluminum: The specific water quality criterion for aluminum is expressed as an acute or maximum daily in 25 Pa. Code Chapter 93.8(c). Discharges of aluminum may only be authorized to the extent that they will not cause or contribute to any violation of the water quality standards. Therefore, the allocated concentration is imposed as a maximum daily effluent limit (MDL). Whenever the most stringent criterion is selected for the MDL, the Department should also impose an average monthly limit (AML) and instantaneous maximum limit (IMAX) if applicable. The imposition of an AML that is more stringent than the MDL is typically not appropriate because the water quality concerns have already been fully addressed by setting the MDL equal to the most stringent applicable criterion. Therefore, where the MDL is set at the value of the most stringent applicable criterion, the AML should be set equal to the MDL. Accordingly, TMDL aluminum limits are proposed for Outfall 001 at 0.75 mg/L for both the AML and MDL.

Iron: The specific water quality criterion for iron is expressed as a 30-day average of 1.5 $^{mg}/_{L}$ in 25 Pa. Code § 93.7(a). The criterion is based on the protection of aquatic life and is associated with chronic exposure. There are no other criteria for total iron. Since the duration of the total iron criterion coincides with the 30-day duration of the AML, the 30-day average criterion for total iron is set equal to the AML. In addition, because the total iron criterion is associated

with chronic exposure, the MDL (representing acute exposure) and the IMAX may be made less stringent according to established procedures described in Section III.C.3.h on Page 13 of the Water Quality Toxics Management Strategy (Doc. # 361-0100-003). These procedures state that a MDL and IMAX may be set at 2 times and 2.5 times the AML, respectively, or there is the option to use multipliers from EPA's Technical Support Document for Water Quality-based Toxics Control, if data are available to support the use of alternative multipliers. The 2x multiplier was chosen for the MDL. Accordingly, TMDL iron limits are proposed for Outfall 001 at 2.0 mg/L for the AML and 4.0 mg/L for the MDL.

Manganese: The specific water quality criterion for manganese is expressed as an acute or maximum daily of 1.0 mg/L in 25 Pa. Code § 93.7(a). The criterion is based on the protection of human health and is associated with chronic exposure associated with a potable water supply. Since no duration is given in Chapter 93 for the manganese criterion, a duration of 30 days is used based on the water quality criteria duration for Threshold Human Health (THH) criteria given in Section III.C.3.a., Table 1 on Page 10 of DEP's Water Quality Toxics Management Strategy. The 30-day duration for THH criteria coincides with the 30-day duration of an AML, which is why the manganese criterion is set equal to the AML for a "permitting at criteria" scenario. Because the manganese criterion is interpreted as having chronic exposure, the manganese MDL may be made less stringent according to procedures explained in the "Iron" section above. Accordingly, TMDL manganese limits are proposed for Outfall 001 at 1.0 mg/L for the AML and 2.0 mg/L for the MDL.

Table 4. TMDL Limits for Outfall 001

Parameter	Monthly Average (mg/L)	Daily Max (mg/L)
Total Aluminum	0.75	0.75
Total Iron	2.0	4.0
Total Manganese	1.0	2.0

Toxics Management Spread Sheet

The Department of Environmental Protection has developed the DEP Toxics Management Spreadsheet ("TMS") to facilitate calculations necessary for completing a reasonable potential (RP) analysis and determining water quality-based effluent limitations for discharges of toxic pollutants. The TMS is a macro-enabled Excel binary file that combines the functions of the PENTOXSD model and the Toxics Screening Analysis spreadsheet to evaluate the reasonable potential for discharges to cause excursions above water quality standards and to determine WQBELs. The TMS is a single discharge, mass-balance water quality calculation spread sheet that includes consideration for mixing, first-order decay and other factors to determine recommended WQBELs for toxic substances and several non-toxic substances. Required input data including stream code, river mile index, elevation, drainage area, discharge name, NPDES permit number, discharge flow rate and the discharge concentrations for parameters in the permit application or in DMRs, which are entered into the spread sheet to establish site-specific discharge conditions. Other data such as low flow yield, reach dimensions and partial mix factors may also be entered to further characterize the conditions of the discharge and receiving water. Discharge concentrations for the parameters are chosen to represent the "worst case" quality of the discharge (i.e., maximum reported discharge concentrations). The spread sheet then evaluates each parameter by computing a Waste Load Allocation for each applicable criterion, determining a recommended maximum WQBEL and comparing that recommended WQBEL with the input discharge concentration to determine which is more stringent. Based on this evaluation, the TMS recommends average monthly and maximum daily WQBELs.

Reasonable Potential Analysis and WQBEL Development for Outfall 001

Discharges from Outfall 001 are evaluated based on concentrations reported on the application and on DMRs; data from those sources are entered into the TMS. The maximum reported value of the parameters from the application form or from previous DMRs is used as the input concentration in the TMS. All 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 considered to be pollutants of concern. This includes pollutants reported as "Not Detectable" or as "<MDL" where the method detection limit for the analytical method used by the applicant is greater than the most stringent water quality criterion. The TMS is run with the discharge and receiving stream characteristics shown in Table 5. Pollutants for which water quality standards have not been promulgated (e.g., TSS, oil and grease) are excluded from the analysis. All the parameters are evaluated using the model to determine the water quality-based effluent limits applicable to the discharge and the receiving stream. The spreadsheet then compares the reported discharge concentrations to the calculated water quality-based effluent limitations to determine if a reasonable potential exists to exceed the calculated WQBELs. Effluent limitations are established in the draft permit where a pollutant's maximum reported discharge concentration equals or exceeds 50% of the WQBEL. For non-conservative pollutants, monitoring requirements are established where the

maximum reported concentration is between 25% - 50% of the WQBEL. For conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 10% - 50% of the WQBEL.

Taken from the average of the past two years of daily maximum flow DMR data, a discharge flow of 0.034 MGD was used. No WQBELs were recommended. The Output from the TMS is included in Attachment B.

Table 5. TMS Inputs for Outfall 001

Discharge Information	
Parameter	**Value**
River Mile Index	1.98
Discharge Flow (MGD)	0.034
Basin/Stream Information	
Parameter	**Value**
Drainage Area (mi^2)	5.07
Q_{7-10} (cfs)	0.541
Low-flow yield (cfs/mi^2)	0.107
Elevation (ft)	2117

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and discharge chlorine demands for the receiving stream, the number of samples taken per month, coefficients of TRC variability, partial mix factors, and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria that are then converted to long term averages using calculated multipliers. The multipliers are functions of the number of samples taken per month and the TRC variability coefficients (normally kept at default values unless site specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/L from 25 Pa. Code § 92a.48(b)(2). The more stringent of these average monthly TRC limitations is then proposed. The results of the modeling, included in Attachment C, indicate that average monthly limits of 0.5 mg/L and daily maximum limits of 1.17 mg/L are required for TRC.

Table 6. TRC limits from TRC_CALC

Parameter	Monthly Average (mg/L)	Daily Max (mg/L)
Total Residual Chlorine	0.5	1.17

001.C. Anti-Backsliding

Typically, anti-backsliding policy outlined in 40 CFR 122.44(l)(2) is cited to require limits at least as stringent as the prior permit. As stated in the "Summary of Review" section on Page 2, antidegradation limits were imposed at this facility for the first time with the previous permit renewal, but this Draft permit renewal proposes to remove these limits according to an exception case outlined in 40 CFR 122.44(l)(2)(i):

> *(i) Exceptions—A permit with respect to which paragraph (l)(2) of this section applies may be renewed, reissued, or modified to contain a less stringent effluent limitation applicable to a pollutant, if—*
>
> *…*
>
> *(B)*
>
> *…*
>
> *(2) The Administrator determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(b);*

In accordance with the Department's Standard Operating Procedures for New and Reissued Individual NPDES permits, the application manager will conduct an antidegradation analysis for discharges to High Quality (HQ) or Exceptional Value (EV) streams only when there is a new, additional, or increased discharge to the HQ or EV waters. The previous NPDES renewal application did not include any new, additional, or increased discharges to HQ or EV waters therefore antidegradation analysis was not justified at the time of the 2019 permit renewal. Previous limits are shown in Table 7 for reference.

Table 7. Effluent limitations from previous permit

Parameter	Mass (pounds)		Concentration (mg/L)		Samples	
	Average Monthly	Daily Maximum	Average Monthly	Daily Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	2/month	Measure
Total Suspended Solids (mg/L)	—	—	8.6	13.4	2/month	Grab
Total Residual Chlorine (mg/L)	—	—	0.5	1.0	2/month	Grab
Total Aluminum (mg/L)	—	—	0.75	0.75	2/month	Grab
Total Iron (mg/L)	—	—	2.0	4.0	2/month	Grab
Total Manganese (mg/L)	—	—	1.0	2.0	2/month	Grab
Ammonia-Nitrogen (mg/L)	—	—	0.03	0.05	2/month	Grab
Barium (µg/L)	—	—	266.0	414.5	2/month	Grab
Boron (µg/L)	—	—	344.0	536.0	2/month	Grab
Bromide (µg/L)	—	—	43.0	67.0	2/month	Grab
Total Phosphorous (mg/L)	—	—	0.02	0.03	2/month	Grab
Sulfate (mg/L)	—	—	Monitor	Monitor	2/month	Grab
pH (S.U.)	—	—	6.0-9.0		2/month	Grab

001.D. <u>Proposed Effluent Limitations and Monitoring Requirements</u>

Effluent limits applicable at Outfall 001 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements as summarized in Table 8. Previous antidegradation limits have been removed in the Draft permit and have been replaced with a combination of BPT limits for WTP filter backwash wastewater and metals WLAs from the Kiskiminetas-Conemaugh River Watershed TMDL. Monthly inspections and quarterly cleanouts of the lagoon will be required as a Part C condition in the Draft permit to ensure no excess buildup of organic matter.

Table 8. Effluent limits and monitoring requirements for Outfall 001

Parameter	Mass (pounds)		Concentration (mg/L)		Samples	
	Average Monthly	Daily Maximum	Average Monthly	Daily Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	—	—	2/month	Measure
Total Residual Chlorine	—	—	0.5	1.0	2/month	Grab
Total Suspended Solids	—	—	30.0	60.0	2/month	Grab
Total Iron	—	—	2.0	4.0	2/month	Grab
Total Aluminum	—	—	0.75	0.75	2/month	Grab
Total Manganese	—	—	1.0	2.0	2/month	Grab
pH (S.U.)	—	—	6.0-9.0 at all times		2/month	Grab

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see Attachment C)
☒	TRC Model Spreadsheet (see Attachment D)
☐	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, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
☐	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, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 386-2000-010, 3/1999.
☐	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: Establishing Effluent Limits for Individual Industrial Permits (BCW-PMT-032)
☒	Other: USGS StreamStats (see Attachment B)

Attachment A

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

December 9, 2024

Wastewater Treatment System Site Assessment

For

Portage Borough Municipal Water Authority
Bens Creek WTP
Portage Township, Cambria County
PA0098787

Prepared by:
Jeremy D. Miller, Wastewater Treatment Operations Advisor
Bureau of Clean Water, Wastewater Operations Section

On November 19, 2024, Jeremy Miller, Wastewater Treatment Operations Advisor and Kristin Gearhart, Water Quality Specialist met with DJ Moore, Water Plant Operator, and Anthony Thompson, Water Plant Operator at the site to discuss ammonia compliance issues with the treatment plant. The facility consists of a drinking water filtration plant that draws source water from a reservoir or wells. The plant filters and treats the water before the finished water is distributed to the drinking water supply lines. The filter backwash from the drinking water plant is discharged into a sedimentation lagoon and then discharged to Ben's Creek, designated in 25 PA Code Chapter 93 as Exceptional Value Waters.

Ammonia

Ammonia is highly toxic to aquatic life and is often treated in wastewater plants biologically through a process called nitrification. Lagoons struggle to nitrify mostly due to the water temperature getting too cold for nitrification to occur. Another reason nitrification suffers in lagoons is organics at the bottom of the lagoon decomposes and as a result create additional ammonia to the lagoon effluent.

This lagoon does not receive ammonia from sewage as a traditional sewage treatment lagoon. The sources are a reservoir (surface water) and wells, neither of which are likely to contain ammonia. It is likely that the small amount of ammonia that has shown up in testing results of the lagoon effluent is from the decay of organic material at the bottom of the lagoon. It is recommended that the sludge be removed from the lagoon and the basin be cleaned. A maintenance schedule be developed to remove sludge from the lagoon on a more regular basis, possibly in early Spring each year, to prevent the buildup of organics in the lagoon that may decay and produce ammonia.

NPDES Permit Limit

The ammonia limit in the NPDES permit was set as an anti-degradation limit. Bens Creek is within the Kiskiminetas-Conemaugh River Watershed, for which the Department has developed Total Maximum Daily Loads for the discharge. The permit was issued on February 1, 2020, and was given a compliance schedule with ammonia limits becoming effective February 1, 2023. It is recommended that the facility contact the Southwest Regional permit staff to discuss possible changes to the strict ammonia limits.

Recommendations

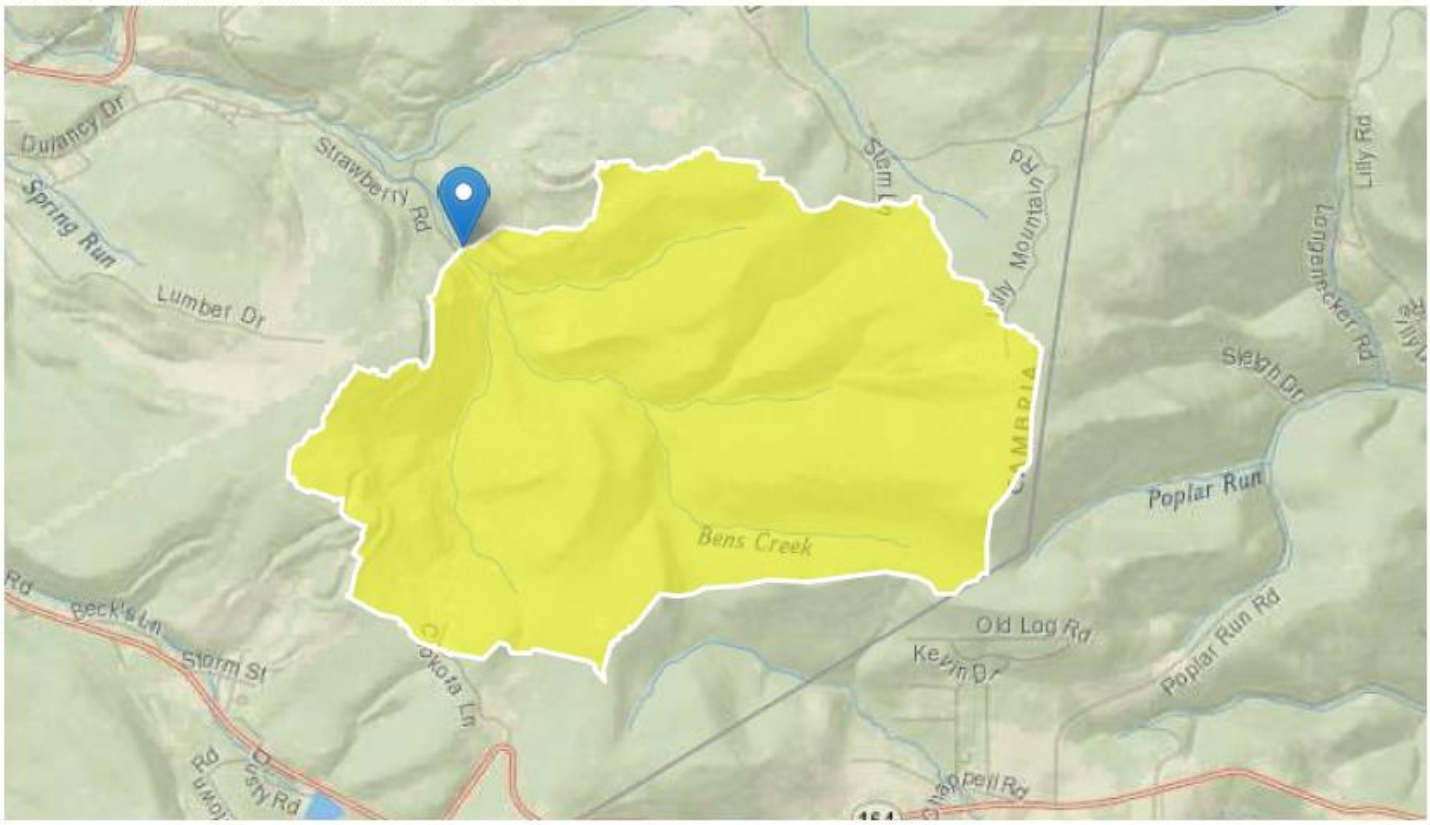
It is recommended that the sludge be removed from the lagoon and the basin be cleaned. A maintenance schedule be developed to remove sludge from the lagoon on a more regular basis, possibly in early Spring each year, to prevent the buildup of organics in the lagoon that may decay and produce ammonia.

It is recommended that the facility contact the DEP Southwest Regional permit staff to discuss possible changes to the strict ammonia limits.

Attachment B:
USGS StreamStats at Point of Discharge

PA0098787 StreamStats Report

Region ID: PA
Workspace ID: PA20250107154342947000
Clicked Point (Latitude, Longitude): 40.38995, -78.61164
Time: 2025-01-07 10:44:11 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	6.8687	degrees
DRNAREA	Area that drains to a point on a stream	5.07	square miles
ELEV	Mean Basin Elevation	2519	feet
PRECIP	Mean Annual Precipitation	49	inches

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5.07	square miles	2.33	1720
ELEV	Mean Basin Elevation	2519	feet	898	2700
PRECIP	Mean Annual Precipitation	49	inches	38.7	47.9

Low-Flow Statistics Disclaimers [Low Flow Region 3]

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

Low-Flow Statistics Flow Report [Low Flow Region 3]

Statistic	Value	Unit
7 Day 2 Year Low Flow	1.03	ft^3/s
30 Day 2 Year Low Flow	1.49	ft^3/s
7 Day 10 Year Low Flow	0.541	ft^3/s
30 Day 10 Year Low Flow	0.678	ft^3/s
90 Day 10 Year Low Flow	0.968	ft^3/s

Low-Flow Statistics Citations

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

Attachment C:
Toxics Management Spreadsheet

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: Bens Creek Water Treatment Plant NPDES Permit No.: PA0098787 Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: IW Process Effluent without ELG

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.034	40.8	7.88						

					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		76									
	Chloride (PWS)	mg/L		3.23									
	Bromide	mg/L	<	0.011									
	Sulfate (PWS)	mg/L		11.9									
	Fluoride (PWS)	mg/L		0.229									
Group 2	Total Aluminum	µg/L		305									
	Total Antimony	µg/L	<	0.07									
	Total Arsenic	µg/L	<	1									
	Total Barium	µg/L		135									
	Total Beryllium	µg/L	<	0.135									
	Total Boron	µg/L	<	56.5									
	Total Cadmium	µg/L	<	0.025									
	Total Chromium (III)	µg/L	<	1.99									
	Hexavalent Chromium	µg/L	<	1									
	Total Cobalt	µg/L		0.413									
	Total Copper	mg/L		0.000916									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	6									
	Dissolved Iron	µg/L	<	11.3									
	Total Iron	µg/L		74.6									
	Total Lead	µg/L		0.036									
	Total Manganese	µg/L		180									
	Total Mercury	µg/L	<	0.0932									
	Total Nickel	µg/L		1.28									
	Total Phenols (Phenolics) (PWS)	µg/L	<	2									
	Total Selenium	µg/L	<	0.9									
	Total Silver	µg/L	<	0.274									
	Total Thallium	µg/L		0.062									
	Total Zinc	mg/L		0.0105									
	Total Molybdenum	µg/L		0.134									

Stream / Surface Water Information

Bens Creek Water Treatment Plant, NPDES Permit No. PA0098787, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: Bens Creek

No. Reaches to Model: 1

(•) Statewide Criteria
( ) Great Lakes Criteria
( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	046098	1.98	2117	5.07			Yes
End of Reach 1	046098	1.24	1991	5.58			Yes

Q_{7-10}

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	1.98	0.107										100	7		
End of Reach 1	1.24	0.107													

Q_h

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	1.98														
End of Reach 1	1.24														

Model Results

Bens Creek Water Treatment Plant, NPDES Permit No. PA0098787, Outfall 001

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

☐ *Hydrodynamics*

☑ *Wasteload Allocations*

☑ *AFC* CCT (min): 1.593 PMF: 1 Analysis Hardness (mg/l): 94.767 Analysis pH: 7.03

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	8,485	
Total Antimony	0	0		0	1,100	1,100	12,445	
Total Arsenic	0	0		0	340	340	3,847	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	237,592	
Total Boron	0	0		0	8,100	8,100	91,643	
Total Cadmium	0	0		0	1.911	2.02	22.9	Chem Translator of 0.946 applied
Total Chromium (III)	0	0		0	545.229	1,725	19,521	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	184	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	1,075	
Total Copper	0	0		0	12.776	13.3	151	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	60.908	76.2	863	Chem Translator of 0.799 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	18.6	Chem Translator of 0.85 applied
Total Nickel	0	0		0	447.423	448	5,072	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	2.933	3.45	39.0	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	735	
Total Zinc	0	0		0	111.964	114	1,295	Chem Translator of 0.978 applied

☑ *CFC* CCT (min): 1.593 PMF: 1 Analysis Hardness (mg/l): 94.767 Analysis pH: 7.03

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	2,489	
Total Arsenic	0	0		0	150	150	1,697	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	46,387	
Total Boron	0	0		0	1,600	1,600	18,102	
Total Cadmium	0	0		0	0.237	0.26	2.94	Chem Translator of 0.911 applied
Total Chromium (III)	0	0		0	70.923	82.5	933	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	118	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	215	
Total Copper	0	0		0	8.554	8.91	101	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	16,971	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.373	2.97	33.6	Chem Translator of 0.799 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	10.2	Chem Translator of 0.85 applied
Total Nickel	0	0		0	49.695	49.8	564	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	56.4	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	147	
Total Zinc	0	0		0	112.880	114	1,295	Chem Translator of 0.986 applied

☑ *THH* CCT (min): 1.593 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	63.4	
Total Arsenic	0	0		0	10	10.0	113	
Total Barium	0	0		0	2,400	2,400	27,153	
Total Boron	0	0		0	3,100	3,100	35,073	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	

Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	300	300	3,394	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	11,314	
Total Mercury	0	0		0	0.050	0.05	0.57	
Total Nickel	0	0		0	610	610	6,901	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	2.72	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ *CRL* CCT (min): 0.499 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 4

Pollutants	*Mass Limits*		*Concentration Limits*				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	5,439	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	27,153	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	18,102	µg/L	Discharge Conc < TQL
Total Cadmium	2.94	µg/L	Discharge Conc < TQL
Total Chromium (III)	933	µg/L	Discharge Conc < TQL
Hexavalent Chromium	118	µg/L	Discharge Conc < TQL
Total Cobalt	215	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	0.097	mg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	3,394	µg/L	Discharge Conc < TQL
Total Iron	16,971	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	33.6	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	11,314	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.57	µg/L	Discharge Conc < TQL
Total Nickel	564	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	56.4	µg/L	Discharge Conc < TQL
Total Silver	25.0	µg/L	Discharge Conc < TQL
Total Thallium	2.72	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	0.83	mg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

Attachment D:
TRC Model Spreadsheet

TRC EVALUATION

0.541	= Q stream (cfs)	0.5	= CV Daily
0.034	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.995	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	3.284	1.3.2.iii	WLA cfc =	3.210
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	1.224	5.1d	LTA_cfc =	1.866

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) =	1.170	

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

(0.011/EXP(-K*CFC_tc/1440))+(((CFC_Yc*Qs*0.011)/(1.547*Qd)....
....*EXP(-K*CFC_tc/1440)))+Xd+(CFC_Yc*Qs*Xs/1.547*Qd))*(1-FOS/100)