Pennsylvania Department of Environmental Protection

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0083691**
Facility Type	**Industrial**	APS ID	**275287**
Major / Minor	**Minor**	Authorization ID	**1498281**

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

Applicant and Facility Information

Applicant Name	**West Earl Township**	Facility Name	**West Earl Township Water Authority System**
Applicant Address	157 W Metzler Road, PO Box 787	Facility Address	161 Turtle Hill Road
	Brownstown, PA 17508		Brownstown, PA 17508
Applicant Contact	Jenna Reigle	Facility Contact	Cory Imler
Applicant Phone	(717) 859-3201	Facility Phone	
Client ID	117402	Site ID	264287
SIC Code	4941	Municipality	West Earl Township
SIC Description	Trans. & Utilities - Water Supply	County	Lancaster
Date Application Received	September 3, 2024	EPA Waived?	Yes
Date Application Accepted	September 18, 2024	If No, Reason	

Purpose of Application: NPDES Renewal.

Summary of Review

West Earl Township has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its National Pollutant Discharge Elimination System (NPDES) permit. The existing permit was issued on February 24, 2020, and became effective on March 1, 2020, authorizing discharge of treated sewage from the Walnut Street Water Treatment Facility West Earl Township Water Authority System into an Unnamed Tributary (UNT) of Conestoga River. The existing permit expiration date was February 28, 2025, and the permit has been administratively extended since that time.

Per the previous fact sheet, the West Earl Water Authority System is an anion exchange system to remove nitrate. Well water is treated by nitrate reduction, pH adjustment, and chlorination. During a previous renewal cycle Outfall 001, the water softener discharge, was discontinued. The softener equipment was old and needed replaced; the Authority decided it was more economical to remove the equipment from service. The only outfall evaluated for this permit renewal was Outfall 002. The wastewater flows are held in a tank which is valved to release the flow over a 24-hour period. The UNT starts at the pump house from a spring. At the time of the previous site evaluation, the stream delivered a large amount of flow. The discharge from this facility immediately mixes with the spring overflow and flows into a small pond, which flows underneath a road and then discharges to the Conestoga River.

Changes in this renewal: A Total Residual Chlorine (TRC) limit has been added to this permit. Flow reporting has been revised to a 1/day calculation.

Supplemental information for this facility is provided at the end of this fact sheet.

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*,

Approve	Deny	Signatures	Date
X		Benjamin R. Lockwood Benjamin R. Lockwood / Environmental Engineering Specialist	September 17, 2025
X		Maria D. Bebenek for Daniel W. Martin, P.E. / Environmental Engineer Manager	September 19, 2025

Summary of Review
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.	002	Design Flow (MGD)	.0030
Latitude	40º 7' 51"	Longitude	76º 11' 54"
Quad Name		Quad Code	
Wastewater Description:	Nitrate Reduction Unit Backwash Water		
Receiving Waters	UNT of Conestoga River (WWF)	Stream Code	7754
NHD Com ID	57462575	RMI	0.1
Drainage Area	1.75 mi^2	Yield (cfs/mi^2)	0.329
Q_{7-10} Flow (cfs)	0.575	Q_{7-10} Basis	USGS PA StreamStats
Elevation (ft)	292	Slope (ft/ft)	
Watershed No.	7-J	Chapter 93 Class.	WWF
Existing Use	**N/A**	Existing Use Qualifier	N/A
Exceptions to Use	N/A	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	**Siltation, Pathogens, Pathogens**		
Source(s) of Impairment	**Agriculture, Agriculture, Urban Runoff/Storm Sewers**		
TMDL Status	**N/A**	Name	**N/A**
Nearest Downstream Public Water Supply Intake	Lancaster City Water Bureau		
PWS Waters	Conestoga River	Flow at Intake (cfs)	
PWS RMI	23.6	Distance from Outfall (mi)	11.7

Changes Since Last Permit Issuance: USGS PA StreamStats provided a drainage area of 1.75 mi^2 and a Q_{7-10} of 0.575 cfs.

Other Comments: None

Compliance History	
Summary of DMRs:	A summary of the past 12-month DMR effluent data is presented on the next page of this fact sheet.
Summary of Inspections:	10/31/2024: A routine inspection was conducted. At the time of inspection, the nitrate filter backwash tank had minimal flow. The bottom of the tank had white deposits with minimal leaf accumulation near the composite sampler collection point on the effluent end of the tank. A clear discharge was observed was observed leaving Outfall 002's discharge pipe. Some white staining was observed on rocks and the stream bed immediately in front of the discharge point. Pieces of declor tablet were observed nearby. Minimal flow was observed leaving the property through a farm field, and no concerns were noted downstream. The effluent appeared clear. A field reading for TRC of 1.67 mg/l was recorded at the time of inspection. The inspector recommended a TRC limit be added to the permit. Additionally, due to more regular contributing flows from the CL17 units and the softener unit, the inspector recommended flow reporting be adjusted. Flow is currently only reported weekly. 12/9/2024: A Notice of Violation (NOV) was issued for the unpermitted discharge of chlorinated water. West Earl Township submitted a response on 12/31/24. 1/23/2025: A follow up inspection was conducted to confirm that the recommendations from the previous inspection had been implemented. Dechlor tablets were observed in the tablet feeder and a clear discharge was observed discharging to the floor drain leading to the nitrate filter backwash tank. A clear discharge was observed at Outfall 002 and no concerns were noted in the receiving stream. Field tests were within permitted limits.

Other Comments: There are no open violations for this Applicant.

Compliance History

DMR Data for Outfall 002 (from June 1, 2024 to May 31, 2025)

Parameter	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24
Flow (MGD) Average Monthly	0.001	0.002	0.001	0.001	0.001	0.001	0.003	0.003	0.003	0.003	0.003	0.003
Flow (MGD) Daily Maximum	0.004	0.011	0.004	0.004	0.007	0.004	0.003	0.003	0.003	0.003	0.003	0.003
pH (S.U.) Instantaneous Minimum	7.8	7.0	7.3	7.9	7.8	7.8	8.0	8.1	8.2	7.9	8.0	7.8
pH (S.U.) Instantaneous Maximum	8.4	8.0	8.2	8.1	8.1	8.3	8.4	8.4	8.3	8.3	8.4	8.2
Total Dissolved Solids (mg/L) Daily Maximum			21956.00			33604.00			36095.00			20718.00
Osmotic Pressure (mOs/kg) Daily Maximum	937.0	1030.0	574.0	646	961.0	1030.0	1020.0	1070.0	1100.0	1090.0	990	338.0
Nitrate-Nitrite (mg/L) Daily Maximum			73.30			< 34.60			132.50			< 93.00
Nitrate-Nitrite (lbs) Average Quarterly			0.58			< 0.01			3.32			< 2.33
Total Nitrogen (mg/L) Daily Maximum			< 73.80			< 35.10			< 133.00			< 93.50
Total Nitrogen (lbs) Average Quarterly			< 0.59			< 0.03			< 3.33			< 2.34
Total Nitrogen (lbs) Total Annual									< 487			
Ammonia (mg/L) Daily Maximum			< 0.50			< 0.50			< 0.50			< 0.50
Ammonia (lbs) Average Quarterly			< 0.01			< 0.02			< 0.01			< 0.01
Ammonia (lbs) Total Annual									< 2			
TKN (mg/L) Daily Maximum			< 0.50			< 0.50			< 0.50			< 0.50
TKN (lbs) Average Quarterly			< 0.01			< 0.02			< 0.01			< 0.01

Total Phosphorus (mg/L) Daily Maximum			0.10			< 0.05			0.06			0.06
Total Phosphorus (lbs) Average Quarterly			0.01			< 0.01			0.01			0.01
Total Phosphorus (lbs) Total Annual									0.8			
Sulfate (mg/L) Daily Maximum			1310.34			514.03			953.92			872.85
Total Thallium (mg/L) Daily Maximum			< 0.03			< 0.06			< 0.06			< 0.03
Chloride (mg/L) Daily Maximum			< 1.50			4661.80			12500.00			5000.00
Bromide (mg/L) Daily Maximum			2.22			1.91			6.94			2.95

Existing Effluent Limitations and Monitoring Requirements

Outfall 002

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Estimated
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/week	Grab
Total Dissolved Solids	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	4-Hr Composite
Sulfate	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	4-Hr Composite
Chloride	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	4-Hr Composite
Bromide	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	4-Hr Composite
Osmotic Pressure (mOs/kg)	XXX	XXX	XXX	XXX	1,500	1,875	2/month	4-Hr Composite
Thallium, Total	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	4-Hr Composite

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

at Outfall 002

Outfall 002 (cont.)

Parameter	Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs)		Concentrations (mg/L)			Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Daily Maximum		
Ammonia--N	Report	Report	XXX	XXX	Report	1/quarter	4-Hr Composite
Kjeldahl--N	Report	XXX	XXX	XXX	Report	1/quarter	4-Hr Composite
Nitrite-Nitrate as N	Report	XXX	XXX	XXX	Report	1/quarter	4-Hr Composite
Total Nitrogen	Report	Report	XXX	XXX	Report	1/quarter	Calculation
Total Phosphorus	Report	Report	XXX	XXX	Report	1/quarter	4-Hr Composite

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

at Outfall 002

Development of Effluent Limitations

Outfall No.	002	**Design Flow (MGD)**	.0030
Latitude	40º 7' 51"	**Longitude**	76º 11' 54"

Wastewater Description: Nitrate Reduction Unit Backwash Water

Flow

The existing permit includes a weekly estimate reporting for flow. Due to more regular contributing flows from the CL 17 units and the softener unit, flow reporting will be revised to a daily reporting frequency. In West Earl Township's NOV response dated December 31, 2024, they stated that a meter was installed on the softener line, and the flows from the softener would be included in the daily calculation with the CL 17 unit flow and nitrate filter backwash flow.

pH

PA Code §§ 95.2(1) requires effluent pH limits of 6.0 to 9.0 S.U. at all times in effluent. The permit will continue to require pH limit of 6.0 to 9.0 S.U.

Total Residual Chlorine

The attached computer printout utilizes the equations and calculations as presented in the Department's May 1, 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID No. 391-2000-015) for developing chlorine limitations. The Guidance references Chapter 92, Section 92.2d (3) which establishes a standard BAT limit of 0.5 mg/l unless a facility-specific BAT has been developed. The attached printout indicates that a water quality limit of 0.5 mg/l would be needed to prevent toxicity concerns. DEP's Compliance Evaluation Inspection (CEI) dated October 31, 2024, found a high TRC concentration in the effluent, as well as observable impacts in the receiving stream. West Earl Township has since installed a dechlorination system. As a result it is recommended that a TRC limit of 0.5 mg/l monthly average and 1.6 mg/l instantaneous maximum be included in the renewal permit.

Toxics

Effluent sample results for toxic pollutants reported on the renewal application were entered into DEP's Toxics Management Spreadsheet Version 1.3 to develop appropriate permit requirements for toxic pollutants of concern. The Toxics Management Spreadsheet combines the functions of PENTOXSD and DEP's Toxics Screening Analysis. A stream hardness value of 271 mg/l and pH of 8.4 were used in modeling. These values were based off a 90th percentile analysis of the stream hardness data from the WQN Station ID 273 from October 2004 to May 2018. A discharge hardness of 472 mg/l was used in modeling. Based on effluent sample results reported on the application, the Toxics Management Spreadsheet did not recommend any additional parameters receive monitoring or limits.

This data was analyzed based on the guidelines found in DEP's Water Quality Toxics Management Strategy (Document No. 361-0100-003) and DEP's SOP No. BPNPSM-PMT-033. The results are attached to this fact sheet. The Toxics Management Spreadsheet uses the following logic:

a. Establish average monthly and IMAX limits in the draft permit where the maximum reported concentration exceeds 50% of the WQBEL.
b. For non-conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL.
c. For conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 10%-50% of the WQBEL.

Since the reported maximum concentrations were less than 10% of their respective WQBEL, per DEP's SOP No. BPNPSM-PMT-033, no additional limits or monitoring are necessary.

PFAS-Related Compounds

DEP's NPDES renewal application for Major Sewage Facilities now requires effluent testing for PFAS related compounds as part of Pollutant Group 1: Perfluorooctanoic acid (PFOA), Perfluorooctanesulfonic acid (PFOS), Perfluorobutanesulfonic acid (PFBS), and Hexafluoropropylene oxide dimer acid (HFPO-DA). PFAS monitoring in NPDES permits will not be

required for water treatment plant backwash unless there is a treatment process in place designed to remove PFAS from drinking water. Therefore, monitoring for these parameters will not be required in the permit.

Chesapeake Bay Total Maximum Daily Load (TMDL)

DEP developed a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). This strategy can be located in the Pennsylvania Chesapeake Watershed Implementation Plan (WIP), dated January 11, 2011. Subsequently, an update to the WIP was published as the Phase 2 WIP. As part of the Phase 2 WIP, a Phase 2 Watershed Implementation Plan Wastewater Supplement (Phase 2 Supplement) was developed, providing an update on TMDL implementation for point sources and DEP's current implementation strategy for wastewater. The Phase 2 Supplement was most recently revised on September 6, 2017. Industrial discharges have been prioritized by Central Office based on their delivered TN and TP loadings to the Bay. Significant industrial wastewater dischargers are facilities that discharge more than 75 lbs/day of TN or 25 lbs/day of TP on an average annual basis and the rest are classified as non-significant dischargers. DEP developed a Chesapeake Bay industrial waste (IW) monitoring plan for all industrial facilities that discharge to the Chesapeake Bay. This facility is classified as a non-significant discharger with little or no potential to introduce nutrients to the receiving stream. TN and TP monitoring was included in previous renewals and will remain the permit.

Total Dissolved Solids (TDS)

DEP's SOP No. BCW-PMT-032 states that at a minimum, a monitoring requirement should be established for TDS for any discharge that exceeds 1,000 mg/l. Columbia Water Company reported a maximum effluent value of 33,394 mg/l for TDS in the NPDES application. Therefore, monitoring for TDS will continue to be required.

Osmotic Pressure

According to 25 Pa. Code § 93.7(a), the in-stream osmotic pressure criteria is a maximum of 50 mOs/kg. The previous permit writer assumed a background osmotic pressure of 11 mOs/kg.

Using a mass balance equation with the below values, the osmotic pressure limit may be calculated as follows:

Osmotic pressure criteria: 50 mOs/kg
Background osmotic pressure: 11 mOs/kg
Discharge flow: 0.003 MGD * 1.547 cfs/MGD = 0.0046 cfs
Stream flow: 0.493 cfs

Q_{stream} (11 mOs/kg) + $Q_{discharge}$ (Max. Daily Limit) = Q_{total} (50 mOs/kg)

Max. Daily Limit = [Q_{total} (50 mOs/kg) - Q_{stream} (11 mOs/kg)] / $Q_{discharge}$
Max. Daily Limit = [(0.493 cfs + 0.0046 cfs)(50 mOs/kg) – (0.493 cfs)(11 mOs/kg)] / 0.0046 cfs
Max. Daily Limit = 4,230 mOs/kg

This limit is less stringent than the existing limit. Per anti-backsliding policy, the existing daily maximum limit of 1,500 mOs/kg will remain in the permit.

Anti-Degradation

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

303(d) Listed Streams

The discharge is located on a stream segment that is designated on the 303(d) list as impaired. There is an aquatic life impairment for siltation due to agriculture. There is a recreational impairment for pathogens due to agriculture and urban runoff / storm sewers. This discharge will not significantly contribute to these impairments.

Class A Wild Trout Fisheries

No Class A Wild Trout Fisheries are impacted by this discharge.

Anti-Backsliding

Pursuant to 40 CFR § 122.44(l)(1), all proposed permit requirements addressed in this fact sheet are at least as stringent as the requirements implemented in the existing NPDES permit unless any exceptions are addressed by DEP in this fact sheet.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

Outfall 002, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/day	Calculation
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/week	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
Total Dissolved Solids	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	4-Hr Composite
Osmotic Pressure (mOs/kg)	XXX	XXX	XXX	XXX	1500	1875	2/month	4-Hr Composite
Sulfate	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	4-Hr Composite
Total Thallium	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	4-Hr Composite
Chloride	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	4-Hr Composite
Bromide	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	4-Hr Composite

Compliance Sampling Location: Outfall 002

Other Comments: None

Proposed Effluent Limitations and Monitoring Requirements

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

Outfall 002, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Daily Maximum	Instant. Maximum		
Ammonia	Report	Report	XXX	XXX	Report	XXX	1/quarter	4-Hr Composite
TKN	Report	XXX	XXX	XXX	Report	XXX	1/quarter	4-Hr Composite
Nitrite-Nitrate	Report	XXX	XXX	XXX	Report	XXX	1/quarter	4-Hr Composite
Total Nitrogen	Report	Report	XXX	XXX	Report	XXX	1/quarter	Calculation
Total Phosphorus	Report	Report	XXX	XXX	Report	XXX	1/quarter	4-Hr Composite

Compliance Sampling Location: Outfall 002

Other Comments: None

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, 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: BCW-PMT-032, No. BPNPSM-PMT-001
☐	Other:

West Earl Township PA0083691 Outfall 001

Region ID: PA
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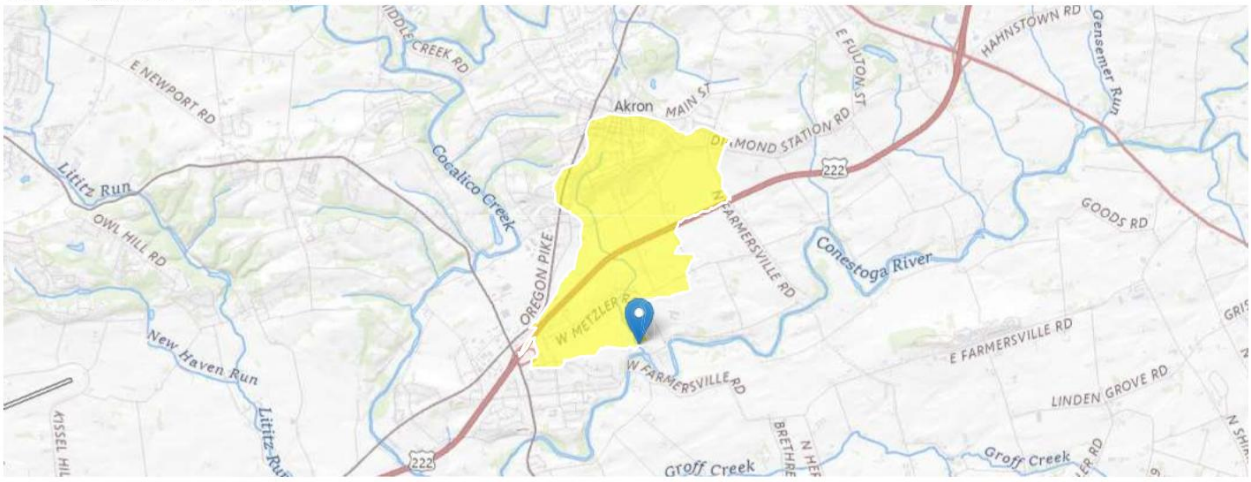

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Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	4.0398	degrees
DRNAREA	Area that drains to a point on a stream	1.75	square miles
ROCKDEP	Depth to rock	5.7	feet
URBAN	Percentage of basin with urban development	29.2205	percent

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
BSLOPD	Mean Basin Slope degrees	4.0398	degrees	1.7	6.4
DRNAREA	Drainage Area	1.75	square miles	4.78	1150
ROCKDEP	Depth to Rock	5.7	feet	4.13	5.21
URBAN	Percent Urban	29.2205	percent	0	89

Low-Flow Statistics Disclaimers [Low Flow Region 1]

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 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	1.04	ft^3/s
30 Day 2 Year Low Flow	1.26	ft^3/s

Statistic	Value	Unit
7 Day 10 Year Low Flow	0.575	ft^3/s
30 Day 10 Year Low Flow	0.703	ft^3/s
90 Day 10 Year Low Flow	1.02	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/)

Application Version: 4.29.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

West Earl Township PA0083691 RMI = 0.0

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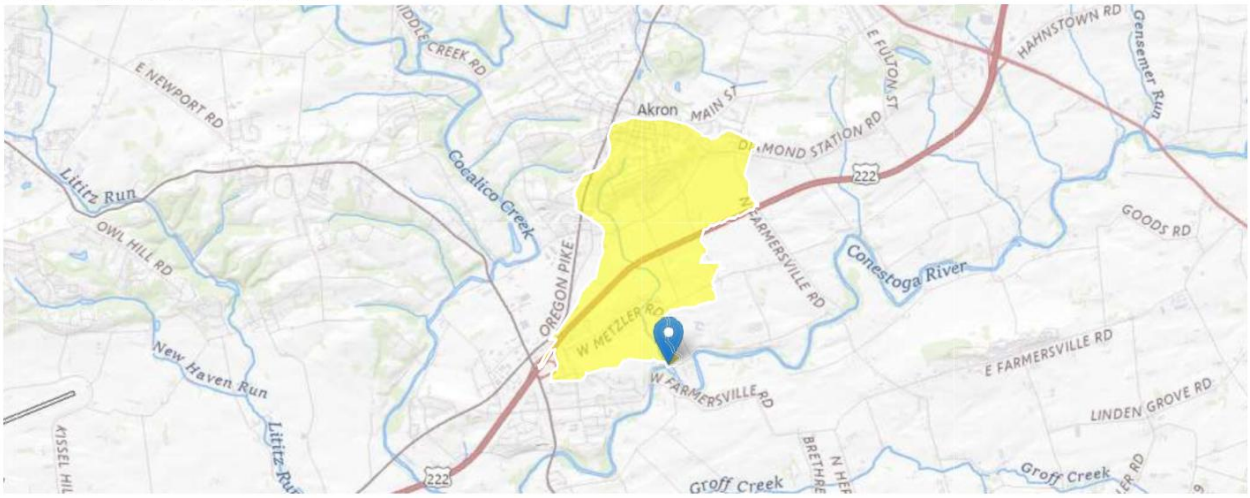

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Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	4.0589	degrees
DRNAREA	Area that drains to a point on a stream	1.76	square miles
ROCKDEP	Depth to rock	5.7	feet
URBAN	Percentage of basin with urban development	29.0664	percent

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
BSLOPD	Mean Basin Slope degrees	4.0589	degrees	1.7	6.4
DRNAREA	Drainage Area	1.76	square miles	4.78	1150
ROCKDEP	Depth to Rock	5.7	feet	4.13	5.21
URBAN	Percent Urban	29.0664	percent	0	89

Low-Flow Statistics Disclaimers [Low Flow Region 1]

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 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	1.05	ft^3/s

Statistic	Value	Unit
30 Day 2 Year Low Flow	1.27	ft^3/s
7 Day 10 Year Low Flow	0.581	ft^3/s
30 Day 10 Year Low Flow	0.71	ft^3/s
90 Day 10 Year Low Flow	1.03	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/)

Application Version: 4.29.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **West Earl Township** NPDES Permit No.: **PA0083691** Outfall No.: **002**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Nitrate reduction unit backwash water**

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
0.003	472	7						

					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		472									
	Chloride (PWS)	mg/L		1.5									
	Bromide	mg/L		0.05									
	Sulfate (PWS)	mg/L		42.85									
	Fluoride (PWS)	mg/L	<	0.05									
Group 2	Total Aluminum	µg/L	<	20									
	Total Antimony	µg/L	<	30									
	Total Arsenic	µg/L	<	20									
	Total Barium	µg/L		36									
	Total Beryllium	µg/L	<	5									
	Total Boron	µg/L	<	200									
	Total Cadmium	µg/L		0.005									
	Total Chromium (III)	µg/L	<	5									
	Hexavalent Chromium	µg/L		2.75									
	Total Cobalt	µg/L	<	5									
	Total Copper	µg/L		13									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	10									
	Dissolved Iron	µg/L		60									
	Total Iron	µg/L		60									
	Total Lead	µg/L		10									
	Total Manganese	µg/L	<	5									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L	<	0.01									
	Total Phenols (Phenolics) (PWS)	µg/L	<	2									
	Total Selenium	µg/L		0.02									
	Total Silver	µg/L		0.01									
	Total Thallium	µg/L	<	2									
	Total Zinc	mg/L	<	0.01									
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

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

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

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Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

West Earl Township, NPDES Permit No. PA0083691, Outfall 002

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **UNT to Conestoga River**

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	007754	0.1	292	1.75			Yes
End of Reach 1	007754	0	288	1.76			Yes

Q_{7-10}

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	0.1	0.1	0.575									271	8.4		
End of Reach 1	0	0.1	0.581									271	8.4		

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	0.1														
End of Reach 1	0														

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Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

West Earl Township, NPDES Permit No. PA0083691, Outfall 002

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 3.910 PMF: 1 Analysis Hardness (mg/l): 272.61 Analysis pH: 8.32

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	93,672	
Total Antimony	0	0		0	1,100	1,100	137,385	
Total Arsenic	0	0		0	340	340	42,465	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	2,622,810	
Total Boron	0	0		0	8,100	8,100	1,011,655	
Total Cadmium	0	0		0	5.334	5.91	738	Chem Translator of 0.902 applied
Total Chromium (III)	0	0		0	1295.396	4,099	511,992	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	2,035	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	11,865	
Total Copper	0	0		0	34.573	36.0	4,498	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	188.732	293	36,553	Chem Translator of 0.645 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	206	Chem Translator of 0.85 applied
Total Nickel	0	0		0	1093.785	1,096	136,883	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	18.053	21.2	2,653	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	8,118	
Total Zinc	0	0		0	274.087	280	35,002	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 3.910 PMF: 1 Analysis Hardness (mg/l): 272.61 Analysis pH: 8.32

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	27,477	
Total Arsenic	0	0		0	150	150	18,734	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	512,072	
Total Boron	0	0		0	1,600	1,600	199,833	
Total Cadmium	0	0		0	0.493	0.57	71.1	Chem Translator of 0.867 applied
Total Chromium (III)	0	0		0	168.504	196	24,471	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	1,298	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	2,373	
Total Copper	0	0		0	21.099	22.0	2,745	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	187,344	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	7.355	11.4	1,424	Chem Translator of 0.645 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	113	Chem Translator of 0.85 applied
Total Nickel	0	0		0	121.486	122	15,219	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	623	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	1,624	
Total Zinc	0	0		0	276.329	280	35,002	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 3.910 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	699	
Total Arsenic	0	0		0	10	10.0	1,249	
Total Barium	0	0		0	2,400	2,400	299,750	
Total Boron	0	0		0	3,100	3,100	387,177	
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	37,469	
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	124,896	
Total Mercury	0	0		0	0.050	0.05	6.24	
Total Nickel	0	0		0	610	610	76,186	
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	30.0	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 1.013 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	Discharge Conc < TQL
Total Aluminum	60,040	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	699	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	1,249	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	299,750	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	199,833	µg/L	Discharge Conc < TQL
Total Cadmium	71.1	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	24,471	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	1,298	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	2,373	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	2,745	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	37,469	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	187,344	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	1,424	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	124,896	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	6.24	µg/L	Discharge Conc < TQL
Total Nickel	15,219	µg/L	Discharge Conc < TQL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	623	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	1,700	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	30.0	µg/L	Discharge Conc < TQL
Total Zinc	22.4	mg/L	Discharge Conc ≤ 10% WQBEL

TRC_CALC

1A	B	C	D	E	F	G
2	**TRC EVALUATION**					
3	Input appropriate values in B4:B8 and E4:E7					
4	0.575	= Q stream (cfs)		0.5	= CV Daily	
5	0.003	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
	0	= % Factor of Safety (FOS)			=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA afc = 39.542		1.3.2.iii	WLA cfc = 38.543
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= 14.734		5.1d	LTA_cfc = 22.407
14						
15	Source		Effluent Limit Calculations			
16	PENTOXSD TRG	5.1f	AML MULT = 1.231			
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500		BAT/BPJ	
18			INST MAX LIMIT (mg/l) = 1.635			

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