

Application Type Renewal
Facility Type Industrial
Major / Minor Minor

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

Application No. PA0097110
APS ID 1088390
Authorization ID 1439531

Applicant and Facility Information

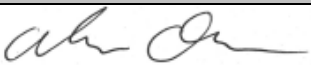
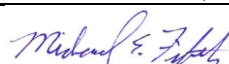
Applicant Name	<u>Shade Landfill Inc.</u>	Facility Name	<u>Shade Landfill</u>
Applicant Address	<u>1176 No 1 Road</u> <u>Cairnbrook, PA 15924-8406</u>	Facility Address	<u>1176 No 1 Road</u> <u>Cairnbrook, PA 15924-8406</u>
Applicant Contact	<u>Ryan Czarnota</u>	Facility Contact	<u>Same as applicant</u>
Applicant Phone	<u>716.262.6970</u>	Facility Phone	<u>Same as applicant</u>
Applicant Email	<u>rczarnot@wm.com</u>	Facility Email	<u>Same as applicant</u>
Client ID	<u>111792</u>	Site ID	<u>240842</u>
SIC Code	<u>4953</u>	Municipality	<u>Shade Township</u>
SIC Description	<u>Trans. & Utilities - Refuse Systems</u>	County	<u>Somerset</u>
Date Application Received	<u>May 4, 2023</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>May 10, 2023</u>	If No, Reason	<u></u>
Purpose of Application	<u>Renewal NPDES permit Coverage</u>		

Summary of Review

The Department received an NPDES permit renewal application from Civil & Environmental Consultants, Inc. on behalf of Shade Landfill, Inc. for continued coverage of the Shade Landfill located in Shade Township, Somerset County. Shade Landfill is an existing municipal solid waste landfill, with a SIC code of 4953, Refuse Systems. There are no modifications being proposed to the site as part of this renewal permit.

The site has six outfalls, Outfall 001 through 006. The discharge from Outfalls 001 and 002 are treated wastewater from the on-site leachate treatment facility and underdrain treatment system, respectively. Outfalls 003 through 006 are stormwater only outfalls. Outfall 001 discharges to Dark Shade Creek, designated in 25 PA Code Chapter 93 as a Cold-Water Fishery (CWF). Outfall 002 through 003 discharge to Laurel Run, designated in 25 PA Code Chapter 93 as a Cold-Water Fishery (CWF).

As mentioned above, Outfall 001 is the discharge from the leachate treatment facility. The landfill leachate collection system is gravity fed into Impoundment 1, which is equipped with aerators. Aerated leachate is then pumped into an outdoor holding tank and temporarily stored until the treatment plant calls for more water. Leachate is then pumped into the plant and passes through heat exchangers to increase temperature and stored in a pH holding tank. Depending on the cycle of the plant, leachate is then pumped into Sequence Batch Reactor 1 or 2. When pH reaches a set level, it is decanted into Sequence Batch Reactor 3, mixed with a polymer, and aerated to allow solids to settle out prior to decant through the weir (sampling point for Outfall 001) and then ultimately discharged into Dark Shade Creek. Solids from Sequence Batch Reactor 3 are pumped to Sequence Batch Reactor 4, mixed with lime, and passed through a plate frame press creating filter cake. The filter cake is disposed of off-site.

Approve	Deny	Signatures	Date
X		 Adam Olesnanik, P.E. / Environmental Engineer	March 6, 2024
X		 Michael E. Fifth, P.E. / Environmental Engineer Manager	March 15, 2024

Summary of Review

As mention above, Outfall 002 is the discharge from the underdrain treatment system. AMD-impacted groundwater is gravity fed into the underdrain holding pond (Pond 1) where it is then pumped to a silo for treatment with lime and aeration. From there it flows into treatment Pond 2 and then to Pond 3 for settling. Overflow piping with Pond 3 gravity feeds the treated groundwater to holding Pond 4, which is ultimately gravity fed and discharged via Outfall 002 to Laurel Run.

Outfall 003 discharges stormwater from Sedimentation Basin 3.

Outfall 004 discharges stormwater from Sedimentation Basin A.

Outfall 005 discharges stormwater from Sedimentation Basin D.

Outfall 006 discharges stormwater from Sedimentation Basin LPT-2.

The site was last inspected on August 21, 2023, no violations were noted. The site has no open violations.

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.	<u>001</u>	Design Flow (MGD)	<u>0.04</u>
Latitude	<u>40° 07' 12"</u>	Longitude	<u>-78° 48' 37"</u>
Quad Name	<u>Central City</u>	Quad Code	<u>1815</u>
Wastewater Description: <u>Landfill Leachate</u>			
Receiving Waters	<u>Dark Shade Creek</u>	Stream Code	<u>45330</u>
NHD Com ID	<u>123716596</u>	RMI	<u>2.1</u>
Drainage Area	<u>28.5</u>	Yield (cfs/mi ²)	<u>0.0747</u>
Q ₇₋₁₀ Flow (cfs)	<u>2.13</u>	Q ₇₋₁₀ Basis	<u>USGS StreamStats</u>
Elevation (ft)	<u>2145</u>	Slope (ft/ft)	<u>0.003</u>
Watershed No.	<u>18-E</u>	Chapter 93 Class.	<u>CWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u></u>	Exceptions to Criteria	<u></u>
Assessment Status	<u>Impaired</u>		
Cause(s) of Impairment	<u>Metals, pH</u>		
Source(s) of Impairment	<u>Abandoned Mine Drainage, Abandoned Mine Drainage</u>		
TMDL Status	<u>Final</u>	Name	<u>Kiskiminetas-Conemaugh River Watersheds TMDL</u>
Nearest Downstream Public Water Supply Intake		<u>Saltsburg Municipal Waterworks</u>	
PWS Waters	<u>Conemaugh River</u>	Flow at Intake (cfs)	<u>124</u>
PWS RMI	<u>0.66</u>	Distance from Outfall (mi)	<u>77.6</u>

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	002	Design Flow (MGD)	0.034
Latitude	40° 07' 25"	Longitude	-78° 47' 39"
Quad Name	Central City	Quad Code	1815
Wastewater Description: Landfill Underdrain System Water			
Receiving Waters	Laurel Run	Stream Code	45335
NHD Com ID	123716595	RMI	1.30
Drainage Area	2.05 mi ²	Yield (cfs/mi ²)	0.0653
Q ₇₋₁₀ Flow (cfs)	0.134	Q ₇₋₁₀ Basis	USGS StreamStats
Elevation (ft)	2210	Slope (ft/ft)	0.018
Watershed No.	18-E	Chapter 93 Class.	CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status	Final	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Saltsburg Municipal Waterworks		
PWS Waters	Conemaugh River	Flow at Intake (cfs)	124
PWS RMI	0.66	Distance from Outfall (mi)	79.0

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	<u>003</u>	Design Flow (MGD)	<u>0.0</u>
Latitude	<u>40° 07' 24"</u>	Longitude	<u>-78° 47' 40"</u>
Quad Name	<u>Central City</u>	Quad Code	<u>1815</u>
Wastewater Description: <u>Stormwater</u>			
Receiving Waters	<u>Laurel Run</u>	Stream Code	<u>45335</u>
NHD Com ID	<u>123716595</u>	RMI	<u>1.94</u>
Watershed No.	<u>18-E</u>	Chapter 93 Class.	<u>CWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u></u>	Exceptions to Criteria	<u></u>
Assessment Status	<u>Attaining Use(s)</u>		
Cause(s) of Impairment	<u></u>		
Source(s) of Impairment	<u></u>		
TMDL Status	<u>Final</u>	Name	<u>Kiskiminetas-Conemaugh River Watersheds TMDL</u>
Nearest Downstream Public Water Supply Intake	<u>Saltsburg Municipal Waterworks</u>		
PWS Waters	<u>Conemaugh River</u>	Flow at Intake (cfs)	<u>124</u>
PWS RMI	<u>0.66</u>	Distance from Outfall (mi)	<u>79.64</u>

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	<u>004</u>	Design Flow (MGD)	<u>0.0</u>
Latitude	<u>40° 07' 27"</u>	Longitude	<u>-78° 47' 36"</u>
Quad Name	<u>Central City</u>	Quad Code	<u>1815</u>
Wastewater Description: <u>Stormwater</u>			
Receiving Waters	<u>Laurel Run</u>	Stream Code	<u>45335</u>
NHD Com ID	<u>123716595</u>	RMI	<u>1.33</u>
Watershed No.	<u>18-E</u>	Chapter 93 Class.	<u>CWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u></u>	Exceptions to Criteria	<u></u>
Assessment Status	<u>Attaining Use(s)</u>		
Cause(s) of Impairment	<u></u>		
Source(s) of Impairment	<u></u>		
TMDL Status	<u>Final</u>	Name	<u>Kiskiminetas-Conemaugh River Watersheds TMDL</u>
Nearest Downstream Public Water Supply Intake	<u>Saltsburg Municipal Waterworks</u>		
PWS Waters	<u>Conemaugh River</u>	Flow at Intake (cfs)	<u>124</u>
PWS RMI	<u>0.66</u>	Distance from Outfall (mi)	<u>79.03</u>

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	<u>005</u>	Design Flow (MGD)	<u>0.0</u>
Latitude	<u>40° 07' 28"</u>	Longitude	<u>-78° 46' 58"</u>
Quad Name	<u>Central City</u>	Quad Code	<u>1815</u>
Wastewater Description: <u>Stormwater</u>			
Receiving Waters	<u>Laurel Run</u>	Stream Code	<u>45335</u>
NHD Com ID	<u>123716593</u>	RMI	<u>1.94</u>
Watershed No.	<u>18-E</u>	Chapter 93 Class.	<u>CWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u></u>	Exceptions to Criteria	<u></u>
Assessment Status	<u>Attaining Use(s)</u>		
Cause(s) of Impairment	<u></u>		
Source(s) of Impairment	<u></u>		
TMDL Status	<u>Final</u>	Name	<u>Kiskiminetas-Conemaugh River Watersheds TMDL</u>
Nearest Downstream Public Water Supply Intake	<u>Saltsburg Municipal Waterworks</u>		
PWS Waters	<u>Conemaugh River</u>	Flow at Intake (cfs)	<u>124</u>
PWS RMI	<u>0.66</u>	Distance from Outfall (mi)	<u>79.64</u>

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	<u>006</u>	Design Flow (MGD)	<u>0.0</u>
Latitude	<u>40° 07' 40"</u>	Longitude	<u>-78° 47' 31"</u>
Quad Name	<u>Windber</u>	Quad Code	<u>1715</u>
Wastewater Description: <u>Stormwater</u>			
Receiving Waters	<u>Laurel Run</u>	Stream Code	<u>45335</u>
NHD Com ID	<u>123716595</u>	RMI	<u>1.43</u>
Watershed No.	<u>18-E</u>	Chapter 93 Class.	<u>CWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u></u>	Exceptions to Criteria	<u></u>
Assessment Status	<u>Attaining Use(s)</u>		
Cause(s) of Impairment	<u></u>		
Source(s) of Impairment	<u></u>		
TMDL Status	<u>Final</u>	Name	<u>Kiskiminetas-Conemaugh River Watersheds TMDL</u>
Nearest Downstream Public Water Supply Intake	<u>Saltsburg Municipal Waterworks</u>		
PWS Waters	<u>Conemaugh River</u>	Flow at Intake (cfs)	<u>124</u>
PWS RMI	<u>0.66</u>	Distance from Outfall (mi)	<u>79.13</u>

Development of Effluent Limitations

Outfall No. 001 Design Flow (MGD) 0.04
Latitude 40° 07' 12" Longitude -78° 48' 37"
Wastewater Description: IW Process Effluent with ELG

Technology-Based Limitations

Regulatory Effluent Standards and Monitoring Requirements

Flow monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(1).

Oil and grease limitations from 25 Pa. Code § 95.2(2) are required.

Waste may not contain more than 7 milligrams per liter of dissolved iron per 25 Pa. Code § 95.2(4).

Effluent standards for pH are also imposed on industrial wastes per 25 Pa. Code § 95.2(1).

Pennsylvania regulations at 25 Pa. Code § 92a.48(b) require the imposition of technology-based TRC limits for facilities that use chlorination and that are not already subject to TRC limits based on applicable federal ELGs or a facility-specific BPJ evaluation

Table 1: Regulatory Effluent Standards and Monitoring Requirements for Outfall 001

Parameter	Monthly Average	Daily Maximum	Units
Flow	Monitor and Report		MGD
Iron, Dissolved	-	7.0	mg/L
Total Residual Chlorine (TRC)	0.5	1.6	mg/L
Oil & Grease	15	30	mg/L
pH	Not less than 6.0 nor greater than 9.0		S.U.

Federal Effluent Limitation Guidelines

The site is subject to Federal Effluent Limitation Guidelines (ELGs) pursuant to 40 CFR 445.21 (Landfills Point Source Category – Non-Hazardous Landfills) and must achieve the limits in Table 2 below.

Table 2. Federal ELGs

Regulated Parameter	Monthly Avg. (mg/L)	Maximum Daily (mg/L)
BOD	37	140
TSS	27	88
Ammonia (as N)	4.9	10
α-Terpineol	0.016	0.033
Benzoic acid	0.071	0.12
p-Cresol	0.014	0.025
Phenol	0.015	0.026
Zinc	0.11	0.20
pH	Between 6 – 9 S.U.	

Per- and Polyfluoroalkyl Substances (PFAS)

In February 2024, DEP implemented a new monitoring initiative for PFAS consistent with an EPA memorandum that provides guidance to states for addressing PFAS discharges. PFAS are a family of thousands of synthetic organic chemicals

that contain a chain of strong carbon-fluorine bonds. Many PFAS are highly stable, water- and oil-resistant, and exhibit other properties that make them useful in a variety of consumer products and industrial processes. PFAS are resistant to biodegradation, photooxidation, direct photolysis, and hydrolysis and do not readily degrade naturally; thus, many PFAS accumulate over time. According to the United States Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (ATSDR), the environmental persistence and mobility of some PFAS, combined with decades of widespread use, have resulted in their presence in surface water, groundwater, drinking water, rainwater, soil, sediment, ice caps, outdoor and indoor air, plants, animal tissue, and human blood serum across the globe. ATSDR also reported that exposure to certain PFAS can lead to adverse human health impacts. Due to their durability, toxicity, persistence, and pervasiveness, PFAS have emerged as potentially significant pollutants of concern.

In accordance with Section II.I of DEP's "Standard Operating Procedure (SOP) for Clean Water Program – Establishing Effluent Limitations for Individual Industrial Permits" [SOP No. BCW-PMT-032] and under the authority of 25 Pa. Code § 92a.61(b), DEP has determined that monitoring for a subset of common/well-studied PFAS including Perfluorooctanoic acid (PFOA), Perfluorooctanesulfonic acid (PFOS), Perfluorobutanesulfonic acid (PFBS), and Hexafluoropropylene oxide dimer acid (HFPO-DA) is necessary to help understand the extent of environmental contamination by PFAS in the Commonwealth and the extent to which point source dischargers are contributors. SOP BCW-PMT-032 directs permit writers to consider special monitoring requirements for PFOA, PFOS, PFBS, and HFPO-DA in the following instances:

- a. If sampling that is completed as part of the permit renewal application reveals a detection of PFOA, PFOS, HFPO-DA or PFBS (any of these compounds), the application manager will establish a quarterly monitoring requirement for PFOA, PFOS, HFPO-DA and PFBS (all of these compounds) in the permit.
- b. If sampling that is completed as part of the permit renewal application demonstrates non-detect values at or below the Target QLs for PFOA, PFOS, HFPO-DA and PFBS (all of these compounds in a minimum of 3 samples), the application manager will establish an annual monitoring requirement for PFOA, PFOS, HFPO-DA and PFBS in the permit.
- c. In all cases the application manager will include a condition in the permit that the permittee may cease monitoring for PFOA, PFOS, HFPO-DA and PFBS when the permittee reports non-detect values at or below the Target QL for four consecutive monitoring periods for each PFAS parameter that is analyzed. Use the following language: The permittee may discontinue monitoring for PFOA, PFOS, HFPO-DA, and PFBS if the results in 4 consecutive monitoring periods indicate non-detects at or below Quantitation Limits of 4.0 ng/L for PFOA, 3.7 ng/L for PFOS, 3.5 ng/L for PFBS and 6.4 ng/L for HFPO-DA. When monitoring is discontinued, permittees should enter a No Discharge Indicator (NODI) Code of "GG" on DMRs.

Shade's application was submitted before the NPDES permit application forms were updated to require sampling for PFOA, PFOS, PFBS, and HFPO-DA. Also, according to EPA's guidance, Shade operates in one of the industries EPA expects to be a source for PFAS. Therefore, quarterly reporting of PFOA, PFOS, PFBS, and HFPO-DA will be required consistent with Section II.I.b of SOP BCW-PMT-032.

As stated in Section II.I.c of the SOP, if non-detect values at or below DEP's Target QLs are reported for four consecutive monitoring periods then the monitoring may be discontinued.

Water Quality-Based Limitations

Toxics Management Spread Sheet

The Department of Environmental Protection (DEP) 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 Toxics Management Spreadsheet 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 Toxics Management Spread Sheet 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 Toxics Management Spread sheet 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 Toxics Management Spread Sheet. The maximum reported value of the parameters from the application form or from previous DMRs is used as the input concentration in the Toxics Management Spread Sheet. 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 is 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 Toxics Management Spread Sheet is run with the discharge and receiving stream characteristics shown in Table 3. For IW discharges, the design flow used in modeling is the average flow during production or operation taken from the permit application. 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. The information described above including the maximum reported discharge concentrations, the most stringent water quality criteria, the pollutant-of-concern (reasonable potential) determinations, the calculated WQBELs, and the WQBEL/monitoring recommendations are displayed in the Toxics Management Spread Sheet in Attachment B of this Fact Sheet. The water quality-based effluent limitations and monitoring requirements that are recommended by the Toxics Management Spread Sheet are displayed below in Table 4. Note that the TMS recommended limits for Acrylamide even though it was reported as non-detect. Using the Department's guidance on non-detect results for Acrylamide and based on how Shade believes that Acrylamide is not present in the discharge, the limitations or monitoring will not be imposed for Acrylamide.

Table 3: TMS Inputs for Outfall 001

Parameter	Value
River Mile Index	2.1
Discharge Flow (MGD)	0.031
Basin/Stream Characteristics	
Parameter	Value
Area in Square Miles	28.5
Q ₇₋₁₀ (cfs)	2.13
Low-flow yield (cfs/mi ²)	0.0747
Elevation (ft)	2145
Slope	0.003

Table 4: Water Quality Based Effluent Limitations at Outfall 001

Parameters	Average Monthly	Daily Maximum	Discharge Concentration	Department's QLs
Total Boron (µg/L)	Report	Report	13300	200
n-Nitrosodimethylamine (µg/L)	0.21	0.33	1.9	5.0
4,4-DDD (µg/L)	Report	Report	0.0114	0.05

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 chlorine demands for the receiving stream and the discharge, 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 imposed in the permit. The results of the modeling, included in Attachment C, indicate that no WQBELs limits are required for TRC.

Total Maximum Daily Loads

Wastewater discharges from Shade Landfill are located within the Kiskiminetas-Conemaugh Watershed for which the Department has developed a TMDL. The TMDL was finalized on January 29, 2010 and establishes waste load allocations for the discharge of aluminum, iron and manganese within the Kiskiminetas-Conemaugh Watershed. The site's NPDES permit (PA0097110) is listed in the Appendix G of the Kiskiminetas-Conemaugh Watershed TMDL, requiring load allocations and is displayed below in Table 5. 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 Watershed 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 5 Kiskiminetas-Conemaugh Watershed Wasteload Allocations for PA0097110

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	Comments
6	4165	PA0097110	1	Aluminum	183	0.75	183	0.75	0	
6	4165	PA0097110	1	Iron	634	2.60	634	2.60	0	
6	4165	PA0097110	1	Manganese	1,289	5.29	244	1.00	81	
6	4165	PA0097110	2	Aluminum	228	0.75	228	0.75	0	
6	4165	PA0097110	2	Iron	914	3.00	914	3.00	0	
6	4165	PA0097110	2	Manganese	314	1.03	305	1.00	3	
6	4165	PA0097110	3	Aluminum	57	0.75	57	0.75	0	
6	4165	PA0097110	3	Iron	114	1.50	114	1.50	0	
6	4165	PA0097110	3	Manganese	76	1.00	76	1.00	0	
6	4165	PA0097110	4	Aluminum	3	0.75	3	0.75	0	
6	4165	PA0097110	4	Iron	6	1.50	6	1.50	0	
6	4165	PA0097110	4	Manganese	4	1.00	4	1.00	0	
6	4165	PA0097110	5	Aluminum	3	0.75	3	0.75	0	
6	4165	PA0097110	5	Iron	6	1.50	6	1.50	0	
6	4165	PA0097110	5	Manganese	4	1.00	4	1.00	0	
6	4165	PA0097110	6	Aluminum	3	0.75	3	0.75	0	
6	4165	PA0097110	6	Iron	6	1.50	6	1.50	0	
6	4165	PA0097110	6	Manganese	4	1.00	4	1.00	0	
6	4165	PA0097110	7	Aluminum	3	0.75	3	0.75	0	
6	4165	PA0097110	7	Iron	6	1.50	6	1.50	0	
6	4165	PA0097110	7	Manganese	4	1.00	4	1.00	0	

The specific water quality criterion for aluminum is expressed as an acute or maximum daily in 25 Pa. Code Chapter 93. 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 water quality criterion for aluminum (0.75 mg/L) 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. The proposed aluminum limits are shown in Table 6.

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. Accordingly, TMDL iron limits are proposed for Outfall 001 based on the allocations provided in the TMDL. The proposed iron limits are shown in Table 6.

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 (PWS). 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 and IMAX may be made less stringent according to procedures established in Section III.C.2.h. of the Water Quality Toxics Management Strategy (AML multipliers of 2.0 and 2.5 for the MDL and IMAX respectively). Accordingly, TMDL manganese limits are proposed for Outfall 001. The proposed manganese limits are shown in Table 6.

Table 6 – TMDL Limits for Outfall 001

Parameter	TMDL Limits		Units
	Average Monthly	Maximum Daily	
Aluminum, total	0.75	0.75	mg/L
Iron, total	2.60	5.2	mg/L
Manganese, total	1.00	2.00	mg/L

In this case, aluminum, iron and manganese limits were imposed in order to ensure compliance with the TMDL.

Anti-Backsliding

Previous limits for Outfall 001 can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l). The limits from the current permit are displayed below in Table 7 below.

Table 7. Current Effluent limitations at Outfall 001

Parameter	Average Monthly (mg/L)	Maximum Daily (mg/L)	Instant. Maximum (mg/L)	Sample Type	Monitor Frequency
Flow	0.04	Monitor	--	Continuous	Daily
BOD	37.0	140		Grab	1/ Week
Suspended Solids	23.0	46.0	--	24-Hour Composite	1/ Week
Oil & Grease	15.0	--	30.0	Grab	1/ Week
Ammonia-nitrogen	4.9	10	--	24-Hour Composite	1/ Week
Total Residual Chlorine	0.5	--	1.0	Grab	1/ Week
Fecal Coliforms: May 1- Sept 30 Oct 1 – Apr 30	200/100 ml 2000/100 ml	--	1000/100 ml	Grab	1/ Week
Antimony	0.018	0.036	--	24-Hour Composite	1/ Week
Boron	13.7	27.4	--	24-Hour Composite	1/ Week
Iron	2.6	5.2	--	24-Hour Composite	1/ Week
Iron, dissolved	0.53	1.06	--	24-Hour Composite	1/ Week
Zinc	0.11	0.20	--	24-Hour Composite	1/ Week
Nickel	0.45	0.90	--	24-Hour Composite	1/ Week
a-Terpineol	0.016	0.033	--	24-Hour Composite	1/ Week
Benzioc acid	0.071	0.12	--	24-Hour Composite	1/ Week
p-Cresol	0.014	0.025	--	24-Hour Composite	1/ Week
Phenol	0.015	0.026	--	24-Hour Composite	1/ Week

Table 7. Current Effluent limitations at Outfall 001

Parameter	Average Monthly (mg/L)	Maximum Daily (mg/L)	Instant. Maximum (mg/L)	Sample Type	Monitor Frequency
Aluminum	0.75	0.75	--	24-Hour Composite	1/ Week
Manganese	1.00	2.00	--	24-Hour Composite	1/ Week
Total Dissolved Solids	Monitor	Monitor	--	24-Hour Composite	1/ Week
Chloride	Monitor	Monitor	--	24-Hour Composite	1/ Week
Bromide	Monitor	Monitor	--	24-Hour Composite	1/ Week
Sulfate	Monitor	Monitor	--	24-Hour Composite	1/ Week
pH	Not less than 6.0 nor greater than 9.0			Grab	1/ Week

Proposed Effluent Limits

The proposed effluent limitations for Outfall 001 are displayed in Table 8 below, they are the most stringent values from the above effluent limitation development. Based on the limitation development above, Outfall 001 will receive new WQBELs for n-Nitrosodimethylamine. Shade completed a pre-draft survey indicating that Shade was unaware of the pollutant and are not sure of the source of the pollutant. At this time Shade may not be able to achieve these new WQBELs upon permit issuance; therefore, in accordance with 25 Pa. Code § 92a.51(a) of DEP's regulations, the Department is granting a three-year compliance schedule for Shade to come into compliance with the new limits. Monitor and report requirements will be imposed for n-Nitrosodimethylamine during the interim period, and the final WQBELs will be imposed three years after the permit effective date. Please note that n-Nitrosodimethylamine is subject to water quality-based effluent limits (WQBELs) that are necessary to comply with state water quality standards, but may be less than quantitation limits (QLs), as defined in 25 Pa. Code § 252.1, that are generally achievable by conventional analytical technology. The permittee shall analyze the parameter(s) using methods that will achieve the Department Target QL(s). For the purpose of compliance, a statistical value reported on the DMR that is less than the QL(s) (i.e., "non-detect") will be considered to be in compliance.

Table 8. Proposed Effluent limitations at Outfall 001

Parameter	Average Monthly (mg/L)	Maximum Daily (mg/L)	Instant. Maximum (mg/L)	Sample Type	Monitor Frequency
Flow	0.04	Monitor	--	Continuous	Daily
BOD	37.0	140		Grab	1/ Week
Suspended Solids	23.0	46.0	--	24-Hour Composite	1/ Week
Oil & Grease	15.0	--	30.0	Grab	1/ Week
Ammonia-nitrogen	4.9	10	--	24-Hour Composite	1/ Week
Total Residual Chlorine	0.5	--	1.0	Grab	1/ Week
Fecal Coliforms: May 1- Sept 30 Oct 1 – Apr 30	200/100 ml 2000/100 ml	--	1000/100 ml	Grab	1/ Week
Antimony	0.018	0.036	--	24-Hour Composite	1/ Week

Table 8. Proposed Effluent limitations at Outfall 001

Parameter	Average Monthly (mg/L)	Maximum Daily (mg/L)	Instant. Maximum (mg/L)	Sample Type	Monitor Frequency
Boron	13.7	27.4	--	24-Hour Composite	1/ Week
Iron	2.6	5.2	--	24-Hour Composite	1/ Week
Iron, dissolved	0.53	1.06	--	24-Hour Composite	1/ Week
Zinc	0.11	0.20	--	24-Hour Composite	1/ Week
Nickel	0.45	0.90	--	24-Hour Composite	1/ Week
a-Terpineol	0.016	0.033	--	24-Hour Composite	1/ Week
Benzioc acid	0.071	0.12	--	24-Hour Composite	1/ Week
p-Cresol	0.014	0.025	--	24-Hour Composite	1/ Week
Phenol	0.015	0.026	--	24-Hour Composite	1/ Week
Aluminum	0.75	0.75	--	24-Hour Composite	1/ Week
Manganese	1.00	2.00	--	24-Hour Composite	1/ Week
Total Dissolved Solids	Monitor	Monitor	--	24-Hour Composite	1/ Week
Chloride	Monitor	Monitor	--	24-Hour Composite	1/ Week
Bromide	Monitor	Monitor	--	24-Hour Composite	1/ Week
Sulfate	Monitor	Monitor	--	24-Hour Composite	1/ Week
n-Nitrosodimethylamine (µg/L)	0.21	0.33	--	24-Hour Composite	1/ Week
4,4-DDD (µg/L)	Report	Report	--	24-Hour Composite	1/ Week
PFOA (ng/L)	--	Report	--	Grab	1/ Quarter
PFOS (ng/L)	--	Report	--	Grab	1/ Quarter
PFBS (ng/L)	--	Report	--	Grab	1/ Quarter
HFPO-DA (ng/L)	--	Report	--	Grab	1/ Quarter
pH	Not less than 6.0 nor greater than 9.0			Grab	1/ Week

Development of Effluent Limitations

Outfall No.	002	Design Flow (MGD)	0.034
Latitude	40° 07' 25"	Longitude	-78° 47' 39"
Wastewater Description:	IW Process Effluent without ELG		

Technology-Based Limitations

Regulatory Effluent Standards and Monitoring Requirements

Flow monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(1).

Effluent standards for pH are also imposed on industrial wastes by 25 Pa. Code § 95.2(1) as indicated in Table 9.

Table 9: Regulatory Effluent Standards and Monitoring Requirements for Outfall 002

Parameter	Monthly Average	Daily Maximum	Units
Flow	Monitor and Report		MGD
pH	Not less than 6.0 nor greater than 9.0		S.U.

Federal Effluent Limitation Guidelines

Outfall 002 is not subject to the Federal Effluent Limitation Guidelines (ELGs) under 40CFR445.21 (Landfills Point Source Category – Non-Hazardous Landfills) because the ELG does not address underdrains at municipal waste landfills.

Per- and Polyfluoroalkyl Substances (PFAS)

In February 2024, DEP implemented a new monitoring initiative for PFAS consistent with an EPA memorandum that provides guidance to states for addressing PFAS discharges. PFAS are a family of thousands of synthetic organic chemicals that contain a chain of strong carbon-fluorine bonds. Many PFAS are highly stable, water- and oil-resistant, and exhibit other properties that make them useful in a variety of consumer products and industrial processes. PFAS are resistant to biodegradation, photooxidation, direct photolysis, and hydrolysis and do not readily degrade naturally; thus, many PFAS accumulate over time. According to the United States Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (ATSDR), the environmental persistence and mobility of some PFAS, combined with decades of widespread use, have resulted in their presence in surface water, groundwater, drinking water, rainwater, soil, sediment, ice caps, outdoor and indoor air, plants, animal tissue, and human blood serum across the globe. ATSDR also reported that exposure to certain PFAS can lead to adverse human health impacts. Due to their durability, toxicity, persistence, and pervasiveness, PFAS have emerged as potentially significant pollutants of concern.

In accordance with Section II.I of DEP's "Standard Operating Procedure (SOP) for Clean Water Program – Establishing Effluent Limitations for Individual Industrial Permits" [SOP No. BCW-PMT-032] and under the authority of 25 Pa. Code § 92a.61(b), DEP has determined that monitoring for a subset of common/well-studied PFAS including Perfluorooctanoic acid (PFOA), Perfluorooctanesulfonic acid (PFOS), Perfluorobutanesulfonic acid (PFBS), and Hexafluoropropylene oxide dimer acid (HFPO-DA) is necessary to help understand the extent of environmental contamination by PFAS in the Commonwealth and the extent to which point source dischargers are contributors. SOP BCW-PMT-032 directs permit writers to consider special monitoring requirements for PFOA, PFOS, PFBS, and HFPO-DA in the following instances:

- If sampling that is completed as part of the permit renewal application reveals a detection of PFOA, PFOS, HFPO-DA or PFBS (any of these compounds), the application manager will establish a quarterly monitoring requirement for PFOA, PFOS, HFPO-DA and PFBS (all of these compounds) in the permit.
- If sampling that is completed as part of the permit renewal application demonstrates non-detect values at or below the Target QLs for PFOA, PFOS, HFPO-DA and PFBS (all of these compounds in a minimum of 3 samples), the application manager will establish an annual monitoring requirement for PFOA, PFOS, HFPO-DA and PFBS in the permit.
- In all cases the application manager will include a condition in the permit that the permittee may cease monitoring for PFOA, PFOS, HFPO-DA and PFBS when the permittee reports non-detect values at or below the Target QL for four consecutive monitoring periods for each PFAS parameter that is analyzed. Use the

following language: The permittee may discontinue monitoring for PFOA, PFOS, HFPO-DA, and PFBS if the results in 4 consecutive monitoring periods indicate non-detects at or below Quantitation Limits of 4.0 ng/L for PFOA, 3.7 ng/L for PFOS, 3.5 ng/L for PFBS and 6.4 ng/L for HFPO-DA. When monitoring is discontinued, permittees should enter a No Discharge Indicator (NODI) Code of "GG" on DMRs.

Shade's application was submitted before the NPDES permit application forms were updated to require sampling for PFOA, PFOS, PFBS, and HFPO-DA. Also, according to EPA's guidance, Shade operates in one of the industries EPA expects to be a source for PFAS. Therefore, quarterly reporting of PFOA, PFOS, PFBS, and HFPO-DA will be required consistent with Section II.I.b of SOP BCW-PMT-032.

As stated in Section II.I.c of the SOP, if non-detect values at or below DEP's Target QLs are reported for four consecutive monitoring periods then the monitoring may be discontinued.

Water Quality-Based Limitations

Toxics Management Spread Sheet

The Department of Environmental Protection (DEP) 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 Toxics Management Spreadsheet 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 Toxics Management Spread Sheet 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 Toxics Management Spread sheet recommends average monthly and maximum daily WQBELs.

Reasonable Potential Analysis and WQBEL Development for Outfall 002

Discharges from Outfall 002 are evaluated based on concentrations reported on the application and on DMRs; data from those sources are entered into the Toxics Management Spread Sheet. The maximum reported value of the parameters from the application form or from previous DMRs is used as the input concentration in the Toxics Management Spread Sheet. 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 is 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 Toxics Management Spread Sheet is run with the discharge and receiving stream characteristics shown in Table 10. For IW discharges, the design flow used in modeling is the average flow during production or operation taken from the permit application. 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. The information described above including the maximum reported discharge concentrations, the most stringent water quality criteria, the pollutant-of-concern (reasonable potential) determinations, the calculated WQBELs, and the WQBEL/monitoring recommendations are displayed in the Toxics Management Spread Sheet in Attachment E of this Fact Sheet. The water quality-based effluent limitations and monitoring requirements that are recommended by the Toxics Management Spread Sheet are displayed below in Table 11. Note that the TMS recommended limits for Acrylamide even

though it was reported as non-detect. Using the Department's guidance on non-detect results for Acrylamide and based on how Shade believes that Acrylamide is not present in the discharge, the limitations or monitoring will not be imposed for Acrylamide

Table 10: TMS Inputs for Outfall 002

Parameter	Value
River Mile Index	1.3
Discharge Flow (MGD)	0.034
Basin/Stream Characteristics	
Parameter	Value
Area in Square Miles	2.05
Q ₇₋₁₀ (cfs)	0.134
Low-flow yield (cfs/mi ²)	0.0653
Elevation (ft)	2210
Slope	0.001

Table 11: Water Quality Based Effluent Limitations at Outfall 002

Parameters	Average Monthly	Daily Maximum	Discharge Concentration	Department's QLs
Total Aluminum (µg/L)	Report	Report	500	10
Total Cobalt (µg/L)	Report	Report	15.8	1.0
Total Copper (µg/L)	Report	Report	5.0	4.0
Total Iron (µg/L)	Report	Report	716	20.0
Total Lead (µg/L)	Report	Report	1.7	1.0
Total Manganese (µg/L)	Report	Report	920	2.0
Total Nickel (µg/L)	Report	Report	57.6	4.0
Total Thallium (µg/L)	Report	Report	0.3	2.0
4,4-DDD (µg/L)	0.003	0.004	0.002	0.05
Dieldrin (µg/L)	0.00003	0.00004	0.003	0.05
Heptachlor Epoxide (µg/L)	0.0008	0.001	0.003	0.05

Total Maximum Daily Loads

As described above in the Development of Effluent Limitations for Outfall 001, Shade Landfill is within the watershed area covered by the Kiskiminetas-Conemaugh Watershed TMDL, approved as final by EPA in 2010. This TMDL addresses certain impairments of water quality standards associated with elevated instream concentrations of iron, aluminum, and manganese. A pH impairment is addressed through a surrogate relationship with these metals. This TMDL establishes wasteload allocations for these metals for point sources, and load allocations for these metals for nonpoint sources in the watershed. DEP must assure that any effluent limitations assigned to point sources are consistent with the assumptions and requirements of any available wasteload allocation for the discharge pursuant to 40 CFR 130.7 (i.e., a final TMDL). Shade Landfill was designated a wasteload allocation in the TMDL and the effluent limits from the TMDL are displayed below in Table 12.

Table 12 – TMDL Limits for Outfall 002

Parameter	TMDL Limits		Units
	Average Monthly	Maximum Daily	
Aluminum, total	0.75	0.75	mg/L
Iron, total	3.0	6.0	mg/L
Manganese, total	1.0	2.0	mg/L

Anti-Backsliding

Previous limits at Outfall 002 can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l). The limits from the current permit are displayed below in Table 13 below.

Table 13: Existing Effluent Limitations at Outfall 002

Parameter	Average Monthly (mg/L)	Maximum Daily (mg/L)	Sample Type	Monitor Frequency
Flow	Monitor and Report	Monitor and Report	Continuous	Daily
Total Suspended Solids	35.0	70.0	24-hour composite	2/ Month
Aluminum	0.75	0.75	24-hour composite	2/ Month
Iron	3.0	6.0	24-hour composite	2/ Month
Manganese	1.03	2.06	24-hour composite	2/ Month
pH	Between 6.0 and 9.0		Grab	2/ Month

Proposed Effluent Limits

The proposed effluent limitations for Outfall 002 are displayed in Table 14 below, they are the most stringent values from the above effluent limitation development. Based on the limitation development above, Outfall 002 will receive new WQBELs for 4,4-DDD, Dieldrin, and Heptachlor Epoxide. Shade completed a pre-draft survey indicating that Shade was unaware of the pollutants and are not sure of the source of the pollutants. At this time Shade may not be able to achieve these new WQBELs upon permit issuance; therefore, in accordance with 25 Pa. Code § 92a.51(a) of DEP's regulations, the Department is granting a three-year compliance schedule for Shade to come into compliance with the new limits. Monitor and report requirements will be imposed for the new parameters during the interim period, and the final WQBELs will be imposed three years after the permit effective date. Please note that 4,4-DDD, Dieldrin, and Heptachlor Epoxide are subject to water quality-based effluent limits (WQBELs) that are necessary to comply with state water quality standards, but may be less than quantitation limits (QLs), as defined in 25 Pa. Code § 252.1, that are generally achievable by conventional analytical technology. The permittee shall analyze the parameter(s) using methods that will achieve the Department Target QL(s). For the purpose of compliance, a statistical value reported on the DMR that is less than the QL(s) (i.e., "non-detect") will be considered to be in compliance.

Table 14: Proposed Effluent Limitations at Outfall 002

Parameter	Average Monthly (mg/L)	Maximum Daily (mg/L)	Sample Type	Monitor Frequency
Flow	Monitor and Report	Monitor and Report	Continuous	Daily
Total Suspended Solids	35.0	70.0	24-hour composite	2/ Month
Aluminum	0.75	0.75	24-hour composite	2/ Month
Iron	3.0	6.0	24-hour composite	2/ Month
Manganese	1.0	2.0	24-hour composite	2/ Month
Total Cobalt	Report	Report	24-hour composite	2/ Month
Total Copper	Report	Report	24-hour composite	2/ Month
Total Lead	Report	Report	24-hour composite	2/ Month
Total Nickel	Report	Report	24-hour composite	2/ Month
Total Thallium	Report	Report	24-hour composite	2/ Month
4,4-DDD (µg/L)	0.003	0.004	24-hour composite	2/ Month
Dieldrin (µg/L)	0.00003	0.00004	24-hour composite	2/ Month
Heptachlor Epoxide (µg/L)	0.0008	0.001	24-hour composite	2/ Month

Table 14: Proposed Effluent Limitations at Outfall 002

Parameter	Average Monthly (mg/L)	Maximum Daily (mg/L)	Sample Type	Monitor Frequency
PFOA (ng/L)	--	Report	Grab	1/ Quarter
PFOS (ng/L)	--	Report	Grab	1/ Quarter
PFBS (ng/L)	--	Report	Grab	1/ Quarter
HFPO-DA (ng/L)	--	Report	Grab	1/ Quarter
pH	Between 6.0 and 9.0		Grab	2/ Month

Development of Effluent Limitations

Outfall No.	003	Design Flow (MGD)	0
Latitude	40° 07' 24.00"	Longitude	-78° 47' 40.00"
Outfall No.	004	Design Flow (MGD)	0
Latitude	40° 07' 27.00"	Longitude	-78° 47' 36.00"
Outfall No.	005	Design Flow (MGD)	0
Latitude	40° 07' 28.00"	Longitude	-78° 46' 58.00"
Outfall No.	006	Design Flow (MGD)	0
Latitude	40° 07' 40.00"	Longitude	-78° 47' 31.00"

Wastewater Description: Stormwater

Technology-Based Limitations

The stormwater outfalls will be subject to the monitoring requirements from the PAG-03 General Stormwater Permit as a minimum requirement because the outfalls receive stormwater. The SIC code for the site is 4953 (Landfills and Land Application Sites) and the corresponding appendix of the PAG-03 that would apply to the facility is Appendix C. The reporting requirements are in Table 15 below. The Draft Permit requires a Corrective Action Plan when there are two consecutive exceedances of the benchmark values at each outfall, which are also included in the Part C condition. The benchmark values are displayed below in Table 15. These values are not effluent limitations, an exceedance of the benchmark value is not a violation. As described above, if there are two consecutive exceedances of the benchmark value, a Corrective Action Plan must be developed and submitted to the Department to evaluate site stormwater controls and BMPs. Benchmark monitoring is a feedback tool, along with routine inspections and visual assessments, for assessing the effectiveness of stormwater controls and BMPs. An exceedance of the benchmark provides permittees with an indication that the facility's controls may not be sufficiently controlling pollutants in stormwater. Benchmark values for pH, TSS and COD are included in Part C of the draft permit.

Table 15: Stormwater Monitoring Requirements

Parameter	Monitor Requirement	Benchmark Values (mg/L)	Frequency
Total Nitrogen*	Monitor	XXX	1/6 Months
Total Phosphorus	Monitor	XXX	1/6 Months
pH	Monitor	9.0	1/6 Months
Total Suspended Solids	Monitor	100	1/6 Months
Chemical Oxygen Demand	Monitor	120	1/6 Months
Ammonia-Nitrogen	Monitor	XXX	1/6 Months
Total Iron	Monitor	XXX	1/6 Months

*Total Nitrogen is the sum of Total Kjeldahl-N (TKN) plus Nitrite-Nitrate as N (NO₂+NO₃-N), where TKN and NO₂+NO₃-N are measured in the same sample.

Water Quality-Based Limitations
Water quality analysis

Water quality analyses are typically performed under low-flow (Q&-10) conditions. Stormwater discharges occur at variable rates and frequencies but not however during Q7-10 conditions. Since the discharges from these outfalls are composed entirely of stormwater, a formal water quality analysis cannot be accurately conducted. Accordingly, water quality-based effluent limitations based on water quality analyses are not proposed.

Total Maximum Daily Loads

As described above in the Development of Effluent Limitations for Outfall 001, Shade Landfill is within the watershed area covered by the Kiskiminetas-Conemaugh Watershed TMDL, approved as final by EPA in 2010. This TMDL addresses certain impairments of water quality standards associated with elevated instream concentrations of iron, aluminum, and manganese. A pH impairment is addressed through a surrogate relationship with these metals. This TMDL establishes wasteload allocations for these metals for point sources, and load allocations for these metals for nonpoint sources in the watershed. DEP must assure that any effluent limitations assigned to point sources are consistent with the assumptions and requirements of any available wasteload allocation for the discharge pursuant to 40 CFR 130.7 (i.e., a final TMDL). Shade Landfill was designated a wasteload allocation in the TMDL and the effluent limits from the TMDL are displayed below in Table 16.

Table 16: TMDL Limits for Outfalls 003, 004, 005 and 006

Parameter	TMDL Limits		Units
	Average Monthly	Maximum Daily	
Aluminum, total	0.75	0.75	mg/L
Iron, total	1.5	3.0	mg/L
Manganese, total	1.0	2.0	mg/L

Anti-Backsliding

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l). The limits from the current permit are displayed below in Table 17 below.

Table 17: Current Effluent Limitations for Outfalls 003, 004, 005, and 006

Parameter	Maximum Daily	Sample Type	Monitor Frequency
Total Iron	3.0	Grab	1/6 Months
Aluminum	0.75	Grab	1/6 Months
Manganese	2.0	Grab	1/6 Months
CBOD5	Monitor and Report	Grab	1/6 Months
COD	Monitor and Report	Grab	1/6 Months
Total Suspended Solids	Monitor and Report	Grab	1/6 Months
Oil & Grease	Monitor and Report	Grab	1/6 Months
Ammonia-nitrogen	Monitor and Report	Grab	1/6 Months
Total Dissolved Solids	Monitor and Report	Grab	1/6 Months
Iron, dissolved	Monitor and Report	Grab	1/6 Months
Zinc	Monitor and Report	Grab	1/6 Months
pH	Monitor and Report	Grab	1/6 Months

Final Effluent Limitation for Outfalls 003-006

The final effluent limitations for Outfalls 003, 004, 005, and 006 are displayed in Table 18 below, they are the most stringent values from the above effluent limitation development.

Table 18: Proposed Effluent Limitations for Outfalls 003, 004, 005, and 006

Parameter	Maximum Daily	Sample Type	Monitor Frequency
Total Iron	3.0	Grab	1/6 Months
Aluminum	0.75	Grab	1/6 Months
Manganese	2.0	Grab	1/6 Months
CBOD5	Monitor and Report	Grab	1/6 Months
COD	Monitor and Report	Grab	1/6 Months
Total Suspended Solids	Monitor and Report	Grab	1/6 Months
Oil & Grease	Monitor and Report	Grab	1/6 Months
Ammonia-nitrogen	Monitor and Report	Grab	1/6 Months
Total Dissolved Solids	Monitor and Report	Grab	1/6 Months
Iron, dissolved	Monitor and Report	Grab	1/6 Months
Zinc	Monitor and Report	Grab	1/6 Months
Total Nitrogen	Monitor and Report	Grab	1/6 Months
Total Phosphorus	Monitor and Report	Grab	1/6 Months
pH	Monitor and Report	Grab	1/6 Months

Tools and References Used to Develop Permit	
<input type="checkbox"/>	WQM for Windows Model (see Attachment)
<input type="checkbox"/>	Toxics Management Spreadsheet (see Attachment)
<input type="checkbox"/>	TRC Model Spreadsheet (see Attachment)
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment)
<input type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
<input type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 386-2000-002, 9/08.
<input type="checkbox"/>	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
<input type="checkbox"/>	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
<input type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
<input type="checkbox"/>	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
<input type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
<input type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
<input type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
<input type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Design Stream Flows, 386-2000-003, 9/98.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
<input type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input type="checkbox"/>	SOP:
<input type="checkbox"/>	Other:

Attachments

Attachment A: USGS Stream Stats Data at Outfall 001

Attachment B: Toxics Management Spreadsheet for Outfall 001

Attachment C: TRC Model Spreadsheet for Outfall 001

Attachment D: USGS Stream Stats Data at Outfall 002

Attachment E: Toxics Management Spreadsheet for Outfall 002

Attachment F: Outfall 001 Flow Diagram

Attachment G: Outfall 002 Flow Diagram

Attachment H: Site Plan

Attachment A:

USGS Stream Stats Data at Outfall 001

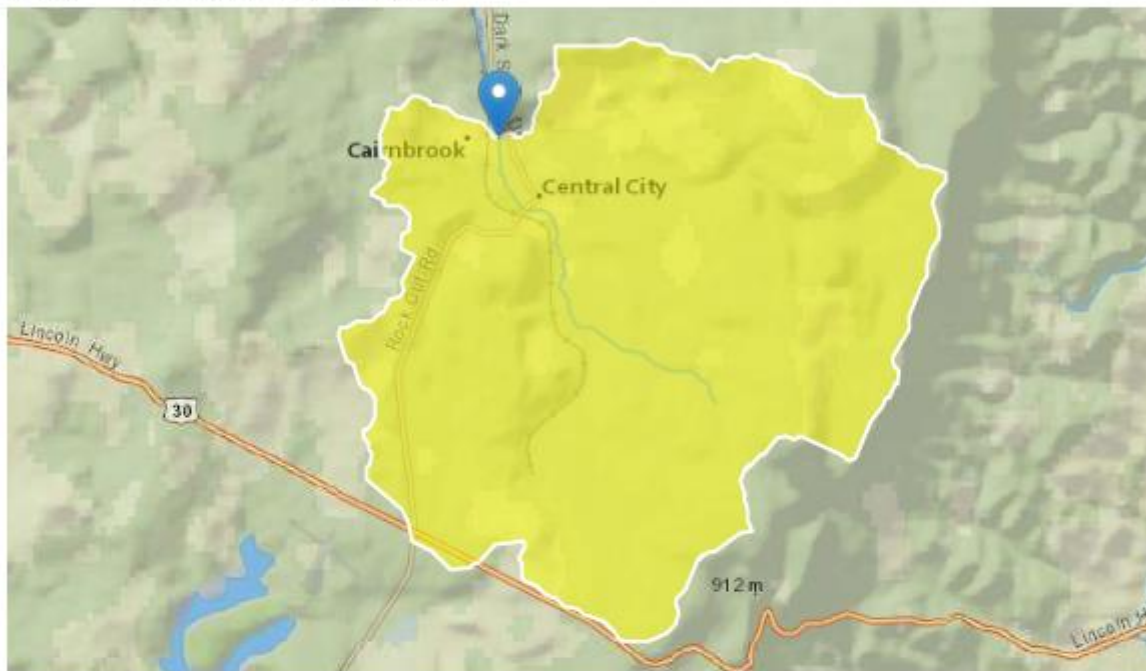
001 StreamStats Report

Region ID: PA

Workspace ID: PA20231005143121300000

Clicked Point (Latitude, Longitude): 40.12001, -78.81030

Time: 2023-10-05 10:31:53 -0400



[+ Collapse All](#)

> Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	28.5	square miles
ELEV	Mean Basin Elevation	2528	feet
PRECIP	Mean Annual Precipitation	43	inches

➤ Low-Flow Statistics

Low-Flow Statistics Parameters [100.0 Percent (28.5 square miles) Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	28.5	square miles	2.33	1720
ELEV	Mean Basin Elevation	2528	feet	898	2700
PRECIP	Mean Annual Precipitation	43	inches	38.7	47.9

Low-Flow Statistics Flow Report [100.0 Percent (28.5 square miles) Low Flow Region 3]

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

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	4.44	ft ³ /s	43	43
30 Day 2 Year Low Flow	5.98	ft ³ /s	38	38
7 Day 10 Year Low Flow	2.13	ft ³ /s	54	54
30 Day 10 Year Low Flow	2.68	ft ³ /s	49	49
90 Day 10 Year Low Flow	3.87	ft ³ /s	41	41

Low-Flow Statistics Citations

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

Attachment B

Toxics Management Spreadsheet for Outfall 001



Discharge Information

Instructions Discharge Stream

Facility: Shade Landfill NPDES Permit No.: PA0097110 Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Landfill Leachate

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
0.031	217	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		6500										
	Chloride (PWS)	mg/L		1600										
	Bromide	mg/L		16										
	Sulfate (PWS)	mg/L		276										
	Fluoride (PWS)	mg/L		0.5										
Group 2	Total Aluminum	µg/L		600										
	Total Antimony	µg/L		17										
	Total Arsenic	µg/L		10.4										
	Total Barium	µg/L		76.1										
	Total Beryllium	µg/L	<	0.5										
	Total Boron	µg/L		13300										
	Total Cadmium	µg/L	<	0.1										
	Total Chromium (III)	µg/L		40.7										
	Hexavalent Chromium	µg/L		0.5										
	Total Cobalt	µg/L		26.9										
	Total Copper	µg/L		10.1										
	Free Cyanide	µg/L												
	Total Cyanide	µg/L		47										
	Dissolved Iron	µg/L		360										
	Total Iron	µg/L		450										
	Total Lead	µg/L		0.2										
	Total Manganese	µg/L		220										
	Total Mercury	µg/L	<	0.1										
	Total Nickel	µg/L		200										
	Total Phenols (Phenolics) (PWS)	µg/L		59										
	Total Selenium	µg/L		0.7										
	Total Silver	µg/L		0.2										
	Total Thallium	µg/L		0.2										
	Total Zinc	µg/L		30										
	Total Molybdenum	µg/L		5.2										
	Acrolein	µg/L	<	2										
	Acrylamide	µg/L	<	11										
	Acrylonitrile	µg/L	<	0.5										
	Benzene	µg/L	<	0.2										
	Bromoform	µg/L	<	0.5										

Group 3	Carbon Tetrachloride	µg/L	<	0.2															
	Chlorobenzene	µg/L	<	0.2															
	Chlorodibromomethane	µg/L	<	0.4															
	Chloroethane	µg/L	<	0.2															
	2-Chloroethyl Vinyl Ether	µg/L	<	0.5															
	Chloroform	µg/L	<	0.2															
	Dichlorobromomethane	µg/L	<	0.2															
	1,1-Dichloroethane	µg/L	<	0.2															
	1,2-Dichloroethane	µg/L	<	0.2															
	1,1-Dichloroethylene	µg/L	<	0.2															
	1,2-Dichloropropane	µg/L	<	0.2															
	1,3-Dichloropropylene	µg/L	<	0.2															
	1,4-Dioxane	µg/L		15.6															
	Ethylbenzene	µg/L	<	0.2															
	Methyl Bromide	µg/L	<	0.5															
	Methyl Chloride	µg/L	<	0.2															
	Methylene Chloride	µg/L	<	0.4															
	1,1,2,2-Tetrachloroethane	µg/L	<	0.2															
	Tetrachloroethylene	µg/L	<	0.4															
Group 4	Toluene	µg/L	<	0.2															
	1,2-trans-Dichloroethylene	µg/L	<	0.5															
	1,1,1-Trichloroethane	µg/L	<	0.2															
	1,1,2-Trichloroethane	µg/L	<	0.5															
	Trichloroethylene	µg/L	<	0.2															
	Vinyl Chloride	µg/L	<	0.2															
	2-Chlorophenol	µg/L	<	1															
	2,4-Dichlorophenol	µg/L	<	1															
	2,4-Dimethylphenol	µg/L	<	1															
	4,6-Dinitro-o-Cresol	µg/L	<	5.1															
Group 5	2,4-Dinitrophenol	µg/L		8.1															
	2-Nitrophenol	µg/L	<	2.5															
	4-Nitrophenol	µg/L		3															
	p-Chloro-m-Cresol	µg/L	<	1															
	Pentachlorophenol	µg/L	<	2.5															
	Phenol	µg/L	<	12															
	2,4,6-Trichlorophenol	µg/L	<	1															
	Acenaphthene	µg/L	<	0.5															
	Acenaphthylene	µg/L	<	0.5															
	Anthracene	µg/L	<	0.5															
	Benzdine	µg/L	<	2.5															
	Benzo(a)Anthracene	µg/L	<	0.5															
	Benzo(a)Pyrene	µg/L	<	0.5															
	3,4-Benzofluoranthene	µg/L	<	0.5															
	Benzo(ghi)Perylene	µg/L	<	0.5															
	Benzo(k)Fluoranthene	µg/L	<	0.5															
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.5															
	Bis(2-Chloroethyl)Ether	µg/L	<	0.5															
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.5															
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5.1															
	4-Bromophenyl Phenyl Ether	µg/L	<	0.5															
	Butyl Benzyl Phthalate	µg/L	<	5															
	2-Chloronaphthalene	µg/L	<	0.5															
	4-Chlorophenyl Phenyl Ether	µg/L	<	0.5															
	Chrysene	µg/L	<	0.5															
	Dibenzo(a,h)Anthracene	µg/L	<	0.5															
	1,2-Dichlorobenzene	µg/L	<	0.5															
	1,3-Dichlorobenzene	µg/L	<	0.5															
	1,4-Dichlorobenzene	µg/L	<	0.5															
	3,3-Dichlorobenzidine	µg/L	<	2.5															
	Diethyl Phthalate	µg/L	<	5.1															
	Dimethyl Phthalate	µg/L	<	5.1															
	Di-n-Butyl Phthalate	µg/L	<	5.1															
	2,4-Dinitrotoluene	µg/L	<	1															

	2,6-Dinitrotoluene	µg/L	<	1															
	Di-n-Octyl Phthalate	µg/L	<	5.1															
	1,2-Diphenylhydrazine	µg/L	<	0.5															
	Fluoranthene	µg/L	<	0.5															
	Fluorene	µg/L	<	0.5															
	Hexachlorobenzene	µg/L	<	0.5															
	Hexachlorobutadiene	µg/L	<	0.5															
	Hexachlorocyclopentadiene	µg/L	<	2.5															
	Hexachloroethane	µg/L	<	0.5															
	Indeno(1,2,3-cd)Pyrene	µg/L	<	0.5															
	Isophorone	µg/L	<	1															
	Naphthalene	µg/L	<	0.5															
	Nitrobenzene	µg/L	<	0.5															
	n-Nitrosodimethylamine	µg/L		1.9															
	n-Nitrosodi-n-Propylamine	µg/L	<	0.5															
	n-Nitrosodiphenylamine	µg/L	<	0.5															
	Phenanthrene	µg/L	<	0.5															
	Pyrene	µg/L	<	0.5															
	1,2,4-Trichlorobenzene	µg/L	<	0.5															
Group 6	Aldrin	µg/L	<	0.00202															
	alpha-BHC	µg/L	<	0.00202															
	beta-BHC	µg/L	<	0.00202															
	gamma-BHC	µg/L	<	0.00202															
	delta BHC	µg/L	<	0.00202															
	Chlordane	µg/L	<	0.101															
	4,4-DDT	µg/L	<	0.00202															
	4,4-DDE	µg/L	<	0.00202															
	4,4-DDD	µg/L		0.0114															
	Dieldrin	µg/L	<	0.00202															
	alpha-Endosulfan	µg/L	<	0.00202															
	beta-Endosulfan	µg/L	<	0.00202															
	Endosulfan Sulfate	µg/L	<	0.00202															
	Endrin	µg/L	<	0.00202															
	Endrin Aldehyde	µg/L	<	0.00202															
	Heptachlor	µg/L	<	0.00202															
	Heptachlor Epoxide	µg/L	<	0.00202															
	PCB-1018	µg/L	<	0.02															
	PCB-1221	µg/L	<	0.02															
	PCB-1232	µg/L	<	0.04															
	PCB-1242	µg/L	<	0.02															
	PCB-1248	µg/L	<	0.04															
	PCB-1254	µg/L	<	0.02															
	PCB-1260	µg/L	<	0.02															
	PCBs, Total	µg/L	<																
	Toxaphene	µg/L	<	0.101															
	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																	



Stream / Surface Water Information

Shade Landfill, NPDES Permit No. PA0097110, Outfall 001

Instructions Discharge **Stream**

Receiving Surface Water Name: Dark Shade Creek

No. Reaches to Model: 1

- ☒ Statewide Criteria
☐ Great Lakes Criteria
☐ ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi ²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	045330	2.1	2145	28.5	0.003		Yes
End of Reach 1	045330	1.1	2121	29			Yes

Q₇₋₁₀

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	2.1	0.1	2.13									100	7		
End of Reach 1	1.1	0.1													

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	2.1														
End of Reach 1	1.1														



Model Results

Shade Landfill, NPDES Permit No. PA0097110, Outfall 001

Instructions

Results

RETURN TO INPUTS

SAVE AS PDF

PRINT

☒ All☐ Inputs☐ Results☐ Limits☐ Hydrodynamics☒ Wasteload Allocations☒ AFC

CCT (min): 15

PMF: 0.705

Analysis Hardness (mg/l): 103.62

Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	24,235	
Total Antimony	0	0		0	1,100	1,100	35,545	
Total Arsenic	0	0		0	340	340	10,987	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	678,587	
Total Boron	0	0		0	8,100	8,100	261,741	
Total Cadmium	0	0		0	2.085	2.21	71.5	Chem Translator of 0.943 applied
Total Chromium (III)	0	0		0	586.605	1,856	59,985	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	526	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	3,070	
Total Copper	0	0		0	13.897	14.5	468	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	67.130	85.4	2,760	Chem Translator of 0.786 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	53.2	Chem Translator of 0.85 applied
Total Nickel	0	0		0	482.539	484	15,624	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	3.420	4.02	130	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	2,100	
Total Zinc	0	0		0	120.766	123	3,990	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	96.9	

Acrylamide	0	0		0	N/A	N/A	N/A
Acrylonitrile	0	0		0	650	650	21,004
Benzene	0	0		0	640	640	20,681
Bromoform	0	0		0	1,800	1,800	58,165
Carbon Tetrachloride	0	0		0	2,800	2,800	90,478
Chlorobenzene	0	0		0	1,200	1,200	38,776
Chlorodibromomethane	0	0		0	N/A	N/A	N/A
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	581,646
Chloroform	0	0		0	1,900	1,900	61,396
Dichlorobromomethane	0	0		0	N/A	N/A	N/A
1,2-Dichloroethane	0	0		0	15,000	15,000	484,705
1,1-Dichloroethylene	0	0		0	7,500	7,500	242,353
1,2-Dichloropropane	0	0		0	11,000	11,000	355,450
1,3-Dichloropropylene	0	0		0	310	310	10,017
Ethylbenzene	0	0		0	2,900	2,900	93,710
Methyl Bromide	0	0		0	550	550	17,773
Methyl Chloride	0	0		0	28,000	28,000	904,783
Methylene Chloride	0	0		0	12,000	12,000	387,764
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	32,314
Tetrachloroethylene	0	0		0	700	700	22,620
Toluene	0	0		0	1,700	1,700	54,933
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	219,733
1,1,1-Trichloroethane	0	0		0	3,000	3,000	96,941
1,1,2-Trichloroethane	0	0		0	3,400	3,400	109,866
Trichloroethylene	0	0		0	2,300	2,300	74,321
Vinyl Chloride	0	0		0	N/A	N/A	N/A
2-Chlorophenol	0	0		0	560	560	18,096
2,4-Dichlorophenol	0	0		0	1,700	1,700	54,933
2,4-Dimethylphenol	0	0		0	660	660	21,327
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	2,585
2,4-Dinitrophenol	0	0		0	660	660	21,327
2-Nitrophenol	0	0		0	8,000	8,000	258,509
4-Nitrophenol	0	0		0	2,300	2,300	74,321
p-Chloro-m-Cresol	0	0		0	160	160	5,170
Pentachlorophenol	0	0		0	8.723	8.72	282
Phenol	0	0		0	N/A	N/A	N/A
2,4,6-Trichlorophenol	0	0		0	460	460	14,864
Acenaphthene	0	0		0	83	83.0	2,682
Anthracene	0	0		0	N/A	N/A	N/A
Benzidine	0	0		0	300	300	9,694
Benzo(a)Anthracene	0	0		0	0.5	0.5	16.2
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A
Bis(2-Chloroethyl)Ether	0	0		0	30,000	30,000	969,410
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	145,412
4-Bromophenyl Phenyl Ether	0	0		0	270	270	8,725

Butyl Benzyl Phthalate	0	0		0	140	140	4,524
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A
Chrysene	0	0		0	N/A	N/A	N/A
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A
1,2-Dichlorobenzene	0	0		0	820	820	26,497
1,3-Dichlorobenzene	0	0		0	350	350	11,310
1,4-Dichlorobenzene	0	0		0	730	730	23,589
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A
Diethyl Phthalate	0	0		0	4,000	4,000	129,255
Dimethyl Phthalate	0	0		0	2,500	2,500	80,784
Di-n-Butyl Phthalate	0	0		0	110	110	3,555
2,4-Dinitrotoluene	0	0		0	1,600	1,600	51,702
2,6-Dinitrotoluene	0	0		0	990	990	31,991
1,2-Diphenylhydrazine	0	0		0	15	15.0	485
Fluoranthene	0	0		0	200	200	6,463
Fluorene	0	0		0	N/A	N/A	N/A
Hexachlorobenzene	0	0		0	N/A	N/A	N/A
Hexachlorobutadiene	0	0		0	10	10.0	323
Hexachlorocyclopentadiene	0	0		0	5	5.0	162
Hexachloroethane	0	0		0	60	60.0	1,939
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A
Isophorone	0	0		0	10,000	10,000	323,137
Naphthalene	0	0		0	140	140	4,524
Nitrobenzene	0	0		0	4,000	4,000	129,255
n-Nitrosodimethylamine	0	0		0	17,000	17,000	549,332
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A
n-Nitrosodiphenylamine	0	0		0	300	300	9,894
Phenanthrene	0	0		0	5	5.0	162
Pyrene	0	0		0	N/A	N/A	N/A
1,2,4-Trichlorobenzene	0	0		0	130	130	4,201
Aldrin	0	0		0	3	3.0	96.9
alpha-BHC	0	0		0	N/A	N/A	N/A
beta-BHC	0	0		0	N/A	N/A	N/A
gamma-BHC	0	0		0	0.95	0.95	30.7
Chlordane	0	0		0	2.4	2.4	77.6
4,4-DDT	0	0		0	1.1	1.1	35.5
4,4-DDE	0	0		0	1.1	1.1	35.5
4,4-DDD	0	0		0	1.1	1.1	35.5
Dieldrin	0	0		0	0.24	0.24	7.76
alpha-Endosulfan	0	0		0	0.22	0.22	7.11
beta-Endosulfan	0	0		0	0.22	0.22	7.11
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A
Endrin	0	0		0	0.086	0.086	2.78
Endrin Aldehyde	0	0		0	N/A	N/A	N/A
Heptachlor	0	0		0	0.52	0.52	16.8
Heptachlor Epoxide	0	0		0	0.5	0.5	16.2
Toxaphene	0	0		0	0.73	0.73	23.6

NPDES Permit Fact Sheet
Shade Landfill

NPDES Permit No. PA0097110

☒ CFC

CCT (min): 30.177

PMF: 1

Analysis Hardness (mg/l): 102.58

Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	9,991	
Total Arsenic	0	0		0	150	150	6,812	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	186,201	
Total Boron	0	0		0	1,600	1,600	72,664	
Total Cadmium	0	0		0	0.250	0.28	12.5	Chem Translator of 0.908 applied
Total Chromium (III)	0	0		0	75.675	88.0	3,996	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	472	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	863	
Total Copper	0	0		0	9.153	9.53	433	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	68,122	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.587	3.29	149	Chem Translator of 0.787 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	41.1	Chem Translator of 0.85 applied
Total Nickel	0	0		0	53.138	53.3	2,421	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	227	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	590	
Total Zinc	0	0		0	120.713	122	5,560	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	136	
Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	130	130	5,904	
Benzene	0	0		0	130	130	5,904	
Bromoform	0	0		0	370	370	16,803	
Carbon Tetrachloride	0	0		0	560	560	25,432	
Chlorobenzene	0	0		0	240	240	10,900	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	158,952	
Chloroform	0	0		0	390	390	17,712	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	140,786	
1,1-Dichloroethylene	0	0		0	1,500	1,500	68,122	
1,2-Dichloropropane	0	0		0	2,200	2,200	99,913	
1,3-Dichloropropylene	0	0		0	61	61.0	2,770	
Ethylbenzene	0	0		0	580	580	26,341	

Methyl Bromide	0	0		0	110	110	4,996	
Methyl Chloride	0	0		0	5,500	5,500	249,781	
Methylene Chloride	0	0		0	2,400	2,400	108,995	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	9,537	
Tetrachloroethylene	0	0		0	140	140	6,358	
Toluene	0	0		0	330	330	14,987	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	63,581	
1,1,1-Trichloroethane	0	0		0	610	610	27,703	
1,1,2-Trichloroethane	0	0		0	680	680	30,882	
Trichloroethylene	0	0		0	450	450	20,437	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	4,996	
2,4-Dichlorophenol	0	0		0	340	340	15,441	
2,4-Dimethylphenol	0	0		0	130	130	5,904	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	727	
2,4-Dinitrophenol	0	0		0	130	130	5,904	
2-Nitrophenol	0	0		0	1,600	1,600	72,664	
4-Nitrophenol	0	0		0	470	470	21,345	
p-Chloro-m-Cresol	0	0		0	500	500	22,707	
Pentachlorophenol	0	0		0	6.693	6.69	304	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	4,133	
Acenaphthene	0	0		0	17	17.0	772	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	2,679	
Benzo(a)Anthracene	0	0		0	0.1	0.1	4.54	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	6,000	6,000	272,489	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	41,327	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	2,452	
Butyl Benzyl Phthalate	0	0		0	35	35.0	1,590	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	160	160	7,266	
1,3-Dichlorobenzene	0	0		0	69	69.0	3,134	
1,4-Dichlorobenzene	0	0		0	150	150	6,812	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	36,332	
Dimethyl Phthalate	0	0		0	500	500	22,707	
Di-n-Butyl Phthalate	0	0		0	21	21.0	954	
2,4-Dinitrotoluene	0	0		0	320	320	14,533	

2,6-Dinitrotoluene	0	0		0	200	200	9,083	
1,2-Diphenylhydrazine	0	0		0	3	3.0	136	
Fluoranthene	0	0		0	40	40.0	1,817	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	2	2.0	90.8	
Hexachlorocyclopentadiene	0	0		0	1	1.0	45.4	
Hexachloroethane	0	0		0	12	12.0	545	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	95,371	
Naphthalene	0	0		0	43	43.0	1,953	
Nitrobenzene	0	0		0	810	810	36,786	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	154,410	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	2,679	
Phenanthrene	0	0		0	1	1.0	45.4	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	1,181	
Aldrin	0	0		0	0.1	0.1	4.54	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0043	0.004	0.2	
4,4-DDT	0	0		0	0.001	0.001	0.045	
4,4-DDE	0	0		0	0.001	0.001	0.045	
4,4-DDD	0	0		0	0.001	0.001	0.045	
Dieldrin	0	0		0	0.056	0.056	2.54	
alpha-Endosulfan	0	0		0	0.056	0.056	2.54	
beta-Endosulfan	0	0		0	0.056	0.056	2.54	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	0.036	0.036	1.63	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.0038	0.004	0.17	
Heptachlor Epoxide	0	0		0	0.0038	0.004	0.17	
Toxaphene	0	0		0	0.0002	0.0002	0.009	

☒ THH

CCT (min): 30.177

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	254
Total Arsenic	0	0		0	10	10.0	454
Total Barium	0	0		0	2,400	2,400	108,995
Total Boron	0	0		0	3,100	3,100	140,786
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	13,624
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	45,415
Total Mercury	0	0		0	0.050	0.05	2.27
Total Nickel	0	0		0	610	610	27,703
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	10.9
Total Zinc	0	0		0	N/A	N/A	N/A
Acrolein	0	0		0	3	3.0	136
Acrylamide	0	0		0	N/A	N/A	N/A
Acrylonitrile	0	0		0	N/A	N/A	N/A
Benzene	0	0		0	N/A	N/A	N/A
Bromoform	0	0		0	N/A	N/A	N/A
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A
Chlorobenzene	0	0		0	100	100.0	4,541
Chlorodibromomethane	0	0		0	N/A	N/A	N/A
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A
Chloroform	0	0		0	5.7	5.7	259
Dichlorobromomethane	0	0		0	N/A	N/A	N/A
1,2-Dichloroethane	0	0		0	N/A	N/A	N/A
1,1-Dichloroethylene	0	0		0	33	33.0	1,499
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A
1,3-Dichloropropylene	0	0		0	N/A	N/A	N/A
Ethylbenzene	0	0		0	68	68.0	3,088
Methyl Bromide	0	0		0	100	100.0	4,541
Methyl Chloride	0	0		0	N/A	N/A	N/A
Methylene Chloride	0	0		0	N/A	N/A	N/A
1,1,2,2-Tetrachloroethane	0	0		0	N/A	N/A	N/A
Tetrachloroethylene	0	0		0	N/A	N/A	N/A
Toluene	0	0		0	57	57.0	2,589
1,2-trans-Dichloroethylene	0	0		0	100	100.0	4,541
1,1,1-Trichloroethane	0	0		0	10,000	10,000	454,148
1,1,2-Trichloroethane	0	0		0	N/A	N/A	N/A

Trichloroethylene	0	0		0	N/A	N/A	N/A
Vinyl Chloride	0	0		0	N/A	N/A	N/A
2-Chlorophenol	0	0		0	30	30.0	1,362
2,4-Dichlorophenol	0	0		0	10	10.0	454
2,4-Dimethylphenol	0	0		0	100	100.0	4,541
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	90.8
2,4-Dinitrophenol	0	0		0	10	10.0	454
2-Nitrophenol	0	0		0	N/A	N/A	N/A
4-Nitrophenol	0	0		0	N/A	N/A	N/A
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A
Pentachlorophenol	0	0		0	N/A	N/A	N/A
Phenol	0	0		0	4,000	4,000	181,659
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A
Acenaphthene	0	0		0	70	70.0	3,179
Anthracene	0	0		0	300	300	13,624
Benzidine	0	0		0	N/A	N/A	N/A
Benzo(a)Anthracene	0	0		0	N/A	N/A	N/A
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A
Bis(2-Chloroethyl)Ether	0	0		0	N/A	N/A	N/A
Bis(2-Chloroisopropyl)Ether	0	0		0	200	200	9,083
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A
Butyl Benzyl Phthalate	0	0		0	0.1	0.1	4.54
2-Chloronaphthalene	0	0		0	800	800	36,332
Chrysene	0	0		0	N/A	N/A	N/A
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A
1,2-Dichlorobenzene	0	0		0	1,000	1,000	45,415
1,3-Dichlorobenzene	0	0		0	7	7.0	318
1,4-Dichlorobenzene	0	0		0	300	300	13,624
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A
Diethyl Phthalate	0	0		0	600	600	27,249
Dimethyl Phthalate	0	0		0	2,000	2,000	90,830
Di-n-Butyl Phthalate	0	0		0	20	20.0	908
2,4-Dinitrotoluene	0	0		0	N/A	N/A	N/A
2,6-Dinitrotoluene	0	0		0	N/A	N/A	N/A
1,2-Diphenylhydrazine	0	0		0	N/A	N/A	N/A
Fluoranthene	0	0		0	20	20.0	908
Fluorene	0	0		0	50	50.0	2,271
Hexachlorobenzene	0	0		0	N/A	N/A	N/A
Hexachlorobutadiene	0	0		0	N/A	N/A	N/A
Hexachlorocyclopentadiene	0	0		0	4	4.0	182
Hexachloroethane	0	0		0	N/A	N/A	N/A
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A

Isophorone	0	0		0	34	34.0	1,544
Naphthalene	0	0		0	N/A	N/A	N/A
Nitrobenzene	0	0		0	10	10.0	454
n-Nitrosodimethylamine	0	0		0	N/A	N/A	N/A
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A
n-Nitrosodiphenylamine	0	0		0	N/A	N/A	N/A
Phenanthrene	0	0		0	N/A	N/A	N/A
Pyrene	0	0		0	20	20.0	908
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	3.18
Aldrin	0	0		0	N/A	N/A	N/A
alpha-BHC	0	0		0	N/A	N/A	N/A
beta-BHC	0	0		0	N/A	N/A	N/A
gamma-BHC	0	0		0	4.2	4.2	191
Chlordane	0	0		0	N/A	N/A	N/A
4,4-DDT	0	0		0	N/A	N/A	N/A
4,4-DDE	0	0		0	N/A	N/A	N/A
4,4-DDD	0	0		0	N/A	N/A	N/A
Dieldrin	0	0		0	N/A	N/A	N/A
alpha-Endosulfan	0	0		0	20	20.0	908
beta-Endosulfan	0	0		0	20	20.0	908
Endosulfan Sulfate	0	0		0	20	20.0	908
Endrin	0	0		0	0.03	0.03	1.36
Endrin Aldehyde	0	0		0	1	1.0	45.4
Heptachlor	0	0		0	N/A	N/A	N/A
Heptachlor Epoxide	0	0		0	N/A	N/A	N/A
Toxaphene	0	0		0	N/A	N/A	N/A

☒ CRL

CCT (min): 8.995

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
Acrolein	0	0		0	N/A	N/A	N/A
Acrylamide	0	0		0	0.07	0.07	21.1
Acrylonitrile	0	0		0	0.06	0.06	18.1
Benzene	0	0		0	0.58	0.58	175
Bromoform	0	0		0	7	7.0	2,107
Carbon Tetrachloride	0	0		0	0.4	0.4	120
Chlorobenzene	0	0		0	N/A	N/A	N/A
Chlorodibromomethane	0	0		0	0.8	0.8	241
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A
Chloroform	0	0		0	N/A	N/A	N/A
Dichlorobromomethane	0	0		0	0.95	0.95	286
1,2-Dichloroethane	0	0		0	9.9	9.9	2,980
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A
1,2-Dichloropropane	0	0		0	0.9	0.9	271
1,3-Dichloropropylene	0	0		0	0.27	0.27	81.3
Ethylbenzene	0	0		0	N/A	N/A	N/A
Methyl Bromide	0	0		0	N/A	N/A	N/A
Methyl Chloride	0	0		0	N/A	N/A	N/A
Methylene Chloride	0	0		0	20	20.0	6,020
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	60.2
Tetrachloroethylene	0	0		0	10	10.0	3,010
Toluene	0	0		0	N/A	N/A	N/A
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A
1,1,2-Trichloroethane	0	0		0	0.55	0.55	166
Trichloroethylene	0	0		0	0.6	0.6	181
Vinyl Chloride	0	0		0	0.02	0.02	6.02
2-Chlorophenol	0	0		0	N/A	N/A	N/A
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A
2-Nitrophenol	0	0		0	N/A	N/A	N/A
4-Nitrophenol	0	0		0	N/A	N/A	N/A

p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A
Pentachlorophenol	0	0		0	0.030	0.03	9.03
Phenol	0	0		0	N/A	N/A	N/A
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	452
Acenaphthene	0	0		0	N/A	N/A	N/A
Anthracene	0	0		0	N/A	N/A	N/A
Benzidine	0	0		0	0.0001	0.0001	0.03
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.3
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.03
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.3
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	3.01
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	9.03
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	96.3
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A
Chrysene	0	0		0	0.12	0.12	36.1
Dibenzo(a,h)Anthracene	0	0		0	0.0001	0.0001	0.03
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A
3,3-Dichlorobenzidine	0	0		0	0.05	0.05	15.1
Diethyl Phthalate	0	0		0	N/A	N/A	N/A
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A
2,4-Dinitrotoluene	0	0		0	0.05	0.05	15.1
2,6-Dinitrotoluene	0	0		0	0.05	0.05	15.1
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	9.03
Fluoranthene	0	0		0	N/A	N/A	N/A
Fluorene	0	0		0	N/A	N/A	N/A
Hexachlorobenzene	0	0		0	0.00008	0.00008	0.024
Hexachlorobutadiene	0	0		0	0.01	0.01	3.01
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A
Hexachloroethane	0	0		0	0.1	0.1	30.1
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.3
Isophorone	0	0		0	N/A	N/A	N/A
Naphthalene	0	0		0	N/A	N/A	N/A
Nitrobenzene	0	0		0	N/A	N/A	N/A
n-Nitrosodimethylamine	0	0		0	0.0007	0.0007	0.21
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	1.51
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	993
Phenanthrene	0	0		0	N/A	N/A	N/A
Pyrene	0	0		0	N/A	N/A	N/A
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A

Aldrin	0	0		0	0.0000008	8.00E-07	0.0002	
alpha-BHC	0	0		0	0.0004	0.0004	0.12	
beta-BHC	0	0		0	0.008	0.008	2.41	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0003	0.0003	0.09	
4,4-DDT	0	0		0	0.00003	0.00003	0.009	
4,4-DDE	0	0		0	0.00002	0.00002	0.006	
4,4-DDD	0	0		0	0.0001	0.0001	0.03	
Dieldrin	0	0		0	0.000001	0.000001	0.0003	
alpha-Endosulfan	0	0		0	N/A	N/A	N/A	
beta-Endosulfan	0	0		0	N/A	N/A	N/A	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	N/A	N/A	N/A	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.000008	0.000008	0.002	
Heptachlor Epoxide	0	0		0	0.00003	0.00003	0.009	
Toxaphene	0	0		0	0.0007	0.0007	0.21	

☒ **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			
Total Boron	Report	Report	Report	Report	Report	µg/L	72,664	CFC	Discharge Conc > 10% WQBEL (no RP)
Acrylamide	0.005	0.008	21.1	32.9	52.7	µg/L	21.1	CRL	Discharge Conc ≥ 50% WQBEL (RP)
n-Nitrosodimethylamine	0.00005	0.00008	0.21	0.33	0.53	µg/L	0.21	CRL	Discharge Conc ≥ 50% WQBEL (RP)
4,4-DDD	Report	Report	Report	Report	Report	µg/L	0.03	CRL	Discharge Conc > 25% WQBEL (no RP)

☒ **Other Pollutants without Limits or Monitoring**

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	15,534	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	254	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	454	µg/L	Discharge Conc ≤ 10% WQBEL

Total Barium	108,995	µg/L	Discharge Conc ≤ 10% QBEL
Total Beryllium	N/A	N/A	No WQS
Total Cadmium	12.5	µg/L	Discharge Conc < TQL
Total Chromium (III)	3,998	µg/L	Discharge Conc ≤ 10% QBEL
Hexavalent Chromium	337	µg/L	Discharge Conc ≤ 10% QBEL
Total Cobalt	863	µg/L	Discharge Conc ≤ 10% QBEL
Total Copper	300	µg/L	Discharge Conc ≤ 10% QBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	13,624	µg/L	Discharge Conc ≤ 10% QBEL
Total Iron	68,122	µg/L	Discharge Conc ≤ 10% QBEL
Total Lead	149	µg/L	Discharge Conc ≤ 10% QBEL
Total Manganese	45,415	µg/L	Discharge Conc ≤ 10% QBEL
Total Mercury	2.27	µg/L	Discharge Conc < TQL
Total Nickel	2,421	µg/L	Discharge Conc ≤ 10% QBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	227	µg/L	Discharge Conc ≤ 10% QBEL
Total Silver	83.3	µg/L	Discharge Conc ≤ 10% QBEL
Total Thallium	10.9	µg/L	Discharge Conc ≤ 10% QBEL
Total Zinc	2,558	µg/L	Discharge Conc ≤ 10% QBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	62.1	µg/L	Discharge Conc < TQL
Acrylonitrile	18.1	µg/L	Discharge Conc < TQL
Benzene	175	µg/L	Discharge Conc < TQL
Bromoform	2,107	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	120	µg/L	Discharge Conc < TQL
Chlorobenzene	4,541	µg/L	Discharge Conc < TQL
Chlorodibromomethane	241	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	158,952	µg/L	Discharge Conc < TQL
Chloroform	259	µg/L	Discharge Conc < TQL
Dichlorobromomethane	286	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	2,980	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	1,499	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	271	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	81.3	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	3,088	µg/L	Discharge Conc < TQL
Methyl Bromide	4,541	µg/L	Discharge Conc < TQL
Methyl Chloride	249,781	µg/L	Discharge Conc < TQL
Methylene Chloride	6,020	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	60.2	µg/L	Discharge Conc < TQL
Tetrachloroethylene	3,010	µg/L	Discharge Conc < TQL
Toluene	2,589	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	4,541	µg/L	Discharge Conc < TQL

1,1,1-Trichloroethane	27,703	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	188	µg/L	Discharge Conc < TQL
Trichloroethylene	181	µg/L	Discharge Conc < TQL
Vinyl Chloride	8.02	µg/L	Discharge Conc < TQL
2-Chlorophenol	1,362	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	454	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	4,541	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	90.8	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	454	µg/L	Discharge Conc ≤ 25% WQBEL
2-Nitrophenol	72,864	µg/L	Discharge Conc < TQL
4-Nitrophenol	21,345	µg/L	Discharge Conc ≤ 25% WQBEL
p-Chloro-m-Cresol	3,314	µg/L	Discharge Conc < TQL
Pentachlorophenol	9.03	µg/L	Discharge Conc < TQL
Phenol	181,659	µg/L	Discharge Conc ≤ 25% WQBEL
2,4,6-Trichlorophenol	452	µg/L	Discharge Conc < TQL
Acenaphthene	772	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	13,824	µg/L	Discharge Conc < TQL
Benzidine	0.03	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.3	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.03	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.3	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	3.01	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	9.03	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	9,083	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	96.3	µg/L	Discharge Conc ≤ 25% WQBEL
4-Bromophenyl Phenyl Ether	2,452	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	4.54	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	36,332	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	36.1	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthracene	0.03	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	7,266	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	318	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	6,812	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	15.1	µg/L	Discharge Conc < TQL
Diethyl Phthalate	27,249	µg/L	Discharge Conc ≤ 25% WQBEL
Dimethyl Phthalate	22,707	µg/L	Discharge Conc ≤ 25% WQBEL
Di-n-Butyl Phthalate	908	µg/L	Discharge Conc ≤ 25% WQBEL
2,4-Dinitrotoluene	15.1	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	15.1	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	9.03	µg/L	Discharge Conc < TQL

Fluoranthene	908	µg/L	Discharge Conc < TQL
Fluorene	2,271	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.024	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	3.01	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	45.4	µg/L	Discharge Conc < TQL
Hexachloroethane	30.1	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.3	µg/L	Discharge Conc < TQL
Isophorone	1,544	µg/L	Discharge Conc < TQL
Naphthalene	1,953	µg/L	Discharge Conc < TQL
Nitrobenzene	454	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	1.51	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	993	µg/L	Discharge Conc < TQL
Phenanthrene	45.4	µg/L	Discharge Conc < TQL
Pyrene	908	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	3.18	µg/L	Discharge Conc < TQL
Aldrin	0.0002	µg/L	Discharge Conc < TQL
alpha-BHC	0.12	µg/L	Discharge Conc < TQL
beta-BHC	2.41	µg/L	Discharge Conc < TQL
gamma-BHC	19.7	µg/L	Discharge Conc < TQL
delta BHC	N/A	N/A	No WQS
Chlordane	0.09	µg/L	Discharge Conc < TQL
4,4-DDT	0.009	µg/L	Discharge Conc < TQL
4,4-DDE	0.006	µg/L	Discharge Conc < TQL
Dieldrin	0.0003	µg/L	Discharge Conc < TQL
alpha-Endosulfan	2.54	µg/L	Discharge Conc < TQL
beta-Endosulfan	2.54	µg/L	Discharge Conc < TQL
Endosulfan Sulfate	908	µg/L	Discharge Conc < TQL
Endrin	1.36	µg/L	Discharge Conc < TQL
Endrin Aldehyde	45.4	µg/L	Discharge Conc < TQL
Heptachlor	0.002	µg/L	Discharge Conc < TQL
Heptachlor Epoxide	0.009	µg/L	Discharge Conc < TQL
PCB-1016	N/A	N/A	No WQS
PCB-1221	N/A	N/A	No WQS
PCB-1232	N/A	N/A	No WQS
PCB-1242	N/A	N/A	No WQS
PCB-1248	N/A	N/A	No WQS
PCB-1254	N/A	N/A	No WQS
PCB-1260	N/A	N/A	No WQS
Toxaphene	0.009	µg/L	Discharge Conc < TQL

Attachment C:

TRC Model Spreadsheet for Outfall 001

TRC EVALUATION

2.13	= Q stream (cfs)	0.5	= CV Daily	
0.031	= Q discharge (MGD)	0.5	= CV Hourly	
4	= no. samples	0.705	= 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 = 10.008	1.3.2.iii	WLA cfc = 13.824
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 3.729	5.1d	LTA_cfc = 8.037
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	(0.019/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	(0.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))... ...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)			
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)			
LTA_cfc	wla_cfc*LTAMULT_cfc			
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))			
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)			
INST MAX LIMIT	1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)			

Attachment D:

USGS Stream Stats Data at Outfall 002

002 StreamStats Report

Region ID: PA
Workspace ID: PA20231005143453963000
Clicked Point (Latitude, Longitude): 40.12344, -78.79362
Time: 2023-10-05 10:35:19 -0400



Collapse All

➤ Basin Characteristics					
Parameter Code	Parameter Description	Value	Unit		
DRNAREA	Area that drains to a point on a stream	2.05	square miles		
ELEV	Mean Basin Elevation	2465	feet		
PRECIP	Mean Annual Precipitation	44	inches		

➤ Low-Flow Statistics					
Low-Flow Statistics Parameters [Low Flow Region 3]					
Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	2.05	square miles	2.83	4720
PRECIP	Precipitation				

Low-Flow Statistics Parameters [Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
Code	Parameter Name	Value	Units	Limit	Limit
PRECIP	Precipitation	40.5	inches	28.3	47.2
DRNAREA	Drainage Area	4.05	square miles	2.83	4.72

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	0.313	ft ³ /s
30 Day 2 Year Low Flow	0.445	ft ³ /s
7 Day 10 Year Low Flow	0.134	ft ³ /s
30 Day 10 Year Low Flow	0.178	ft ³ /s
90 Day 10 Year Low Flow	0.264	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 E:

Toxics Management Spreadsheet for Outfall 002



Discharge Information

Instructions Discharge Stream

Facility: Shade Landfill NPDES Permit No.: PA0097110 Outfall No.: 002

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Landfill Leachate

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	210	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	353										
	Chloride (PWS)	mg/L	13										
	Bromide	mg/L	< 0.1										
	Sulfate (PWS)	mg/L	206										
	Fluoride (PWS)	mg/L	0.1										
Group 2	Total Aluminum	µg/L	500										
	Total Antimony	µg/L	0.7										
	Total Arsenic	µg/L	1.1										
	Total Barium	µg/L	19.3										
	Total Beryllium	µg/L	< 0.5										
	Total Boron	µg/L	99										
	Total Cadmium	µg/L	< 0.1										
	Total Chromium (III)	µg/L	1										
	Hexavalent Chromium	µg/L	1.4										
	Total Cobalt	µg/L	15.8										
	Total Copper	µg/L	5										
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	< 10										
	Dissolved Iron	µg/L	< 20										
	Total Iron	µg/L	716										
	Total Lead	µg/L	1.7										
	Total Manganese	µg/L	920										
	Total Mercury	µg/L	< 0.1										
	Total Nickel	µg/L	57.6										
	Total Phenols (Phenolics) (PWS)	µg/L	5										
	Total Selenium	µg/L	1.1										
	Total Silver	µg/L	0.3										
	Total Thallium	µg/L	0.3										
	Total Zinc	µg/L	21.8										
	Total Molybdenum	µg/L	< 0.5										
		Acrolein	µg/L	< 2									
		Acrylamide	µg/L	< 11									
		Acrylonitrile	µg/L	< 0.5									
		Benzene	µg/L	< 0.2									
		Bromoform	µg/L	< 0.5									

Group 3	Carbon Tetrachloride	µg/L	<	0.2															
	Chlorobenzene	µg/L	<	0.2															
	Chlorodibromomethane	µg/L	<	0.4															
	Chloroethane	µg/L	<	0.2															
	2-Chloroethyl Vinyl Ether	µg/L	<	0.5															
	Chloroform	µg/L	<	0.2															
	Dichlorobromomethane	µg/L	<	0.2															
	1,1-Dichloroethane	µg/L	<	0.2															
	1,2-Dichloroethane	µg/L	<	0.2															
	1,1-Dichloroethylene	µg/L	<	0.2															
	1,2-Dichloropropane	µg/L	<	0.2															
	1,3-Dichloropropylene	µg/L	<	0.2															
	1,4-Dioxane	µg/L		0.9															
	Ethylbenzene	µg/L	<	0.2															
	Methyl Bromide	µg/L	<	0.5															
	Methyl Chloride	µg/L	<	0.2															
	Methylene Chloride	µg/L	<	0.4															
	1,1,2,2-Tetrachloroethane	µg/L	<	0.2															
	Tetrachloroethylene	µg/L	<	0.4															
Group 4	Toluene	µg/L	<	0.2															
	1,2-trans-Dichloroethylene	µg/L	<	0.5															
	1,1,1-Trichloroethane	µg/L	<	0.2															
	1,1,2-Trichloroethane	µg/L	<	0.5															
	Trichloroethylene	µg/L	<	0.2															
	Vinyl Chloride	µg/L	<	0.2															
	2-Chlorophenol	µg/L	<	0.2															
	2,4-Dichlorophenol	µg/L	<	0.2															
	2,4-Dimethylphenol	µg/L	<	0.2															
	4,6-Dinitro-o-Cresol	µg/L	<	1															
	2,4-Dinitrophenol	µg/L	<	1															
	2-Nitrophenol	µg/L	<	0.5															
Group 5	4-Nitrophenol	µg/L	<	0.5															
	p-Chloro-m-Cresol	µg/L	<	0.2															
	Pentachlorophenol	µg/L	<	0.5															
	Phenol	µg/L	<	0.2															
	2,4,6-Trichlorophenol	µg/L	<	0.2															
	Acenaphthene	µg/L	<	0.1															
	Acenaphthylene	µg/L	<	0.1															
	Anthracene	µg/L	<	0.1															
	Benzidine	µg/L	<	0.5															
	Benzo(a)Anthracene	µg/L	<	0.1															
	Benzo(a)Pyrene	µg/L	<	0.1															
	3,4-Benzofluoranthene	µg/L	<	0.1															
	Benzo(ghi)Perylene	µg/L	<	0.1															
	Benzo(k)Fluoranthene	µg/L	<	0.1															
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.1															
	Bis(2-Chloroethyl)Ether	µg/L	<	0.1															
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.1															
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	1															
	4-Bromophenyl Phenyl Ether	µg/L	<	0.1															
	Butyl Benzyl Phthalate	µg/L	<	1															
	2-Chloronaphthalene	µg/L	<	0.1															
	4-Chlorophenyl Phenyl Ether	µg/L	<	0.1															
	Chrysene	µg/L	<	0.1															
	Dibenzo(a,h)Anthracene	µg/L	<	0.1															
	1,2-Dichlorobenzene	µg/L	<	0.1															
	1,3-Dichlorobenzene	µg/L	<	0.1															
	1,4-Dichlorobenzene	µg/L	<	0.1															
	3,3-Dichlorobenzidine	µg/L	<	0.5															
	Diethyl Phthalate	µg/L	<	1															
	Dimethyl Phthalate	µg/L	<	1															
	Di-n-Butyl Phthalate	µg/L	<	1															
	2,4-Dinitrotoluene	µg/L	<	0.2															

Page 3



Stream / Surface Water Information

Shade Landfill, NPDES Permit No. PA0097110, Outfall 002

Instructions Discharge **Stream**

Receiving Surface Water Name: Laurel Run

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	045335	1.3	2210	2.05	0.018		Yes
End of Reach 1	045335	0.93	2176	2.52			Yes

Q₇₋₁₀

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	1.3	0.0653	0.134									100	7		
End of Reach 1	0.93	0.0653	0.166												

Q_n

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	1.3														
End of Reach 1	0.93														



Model Results

Shade Landfill, NPDES Permit No. PA0097110, Outfall 002

Instructions

Results

RETURN TO INPUTS

SAVE AS PDF

PRINT

☒ All☐ Inputs☐ Results☐ Limits☐ Hydrodynamics☒ Wasteload Allocations☒ AFC

CCT (min): 0.828

PMF: 1

Analysis Hardness (mg/l): 131.01

Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	2,861	
Total Antimony	0	0		0	1,100	1,100	3,902	
Total Arsenic	0	0		0	340	340	1,206	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	74,500	
Total Boron	0	0		0	8,100	8,100	28,736	
Total Cadmium	0	0		0	2.618	2.81	9.96	Chem Translator of 0.933 applied
Total Chromium (III)	0	0		0	710.817	2,249	7,980	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	57.8	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	337	
Total Copper	0	0		0	17.333	18.1	64.1	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	86.548	115	408	Chem Translator of 0.752 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	5.84	Chem Translator of 0.85 applied
Total Nickel	0	0		0	588.430	590	2,092	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	5.119	6.02	21.4	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	231	
Total Zinc	0	0		0	147.312	151	534	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	10.6	

Acrylamide	0	0		0	N/A	N/A	N/A
Acrylonitrile	0	0		0	650	650	2,306
Benzene	0	0		0	640	640	2,270
Bromoform	0	0		0	1,800	1,800	6,386
Carbon Tetrachloride	0	0		0	2,800	2,800	9,933
Chlorobenzene	0	0		0	1,200	1,200	4,257
Chlorodibromomethane	0	0		0	N/A	N/A	N/A
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	63,857
Chloroform	0	0		0	1,900	1,900	6,740
Dichlorobromomethane	0	0		0	N/A	N/A	N/A
1,2-Dichloroethane	0	0		0	15,000	15,000	53,214
1,1-Dichloroethylene	0	0		0	7,500	7,500	26,607
1,2-Dichloropropane	0	0		0	11,000	11,000	39,024
1,3-Dichloropropylene	0	0		0	310	310	1,100
Ethylbenzene	0	0		0	2,900	2,900	10,288
Methyl Bromide	0	0		0	550	550	1,951
Methyl Chloride	0	0		0	28,000	28,000	99,334
Methylene Chloride	0	0		0	12,000	12,000	42,572
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	3,548
Tetrachloroethylene	0	0		0	700	700	2,483
Toluene	0	0		0	1,700	1,700	6,031
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	24,124
1,1,1-Trichloroethane	0	0		0	3,000	3,000	10,643
1,1,2-Trichloroethane	0	0		0	3,400	3,400	12,062
Trichloroethylene	0	0		0	2,300	2,300	8,160
Vinyl Chloride	0	0		0	N/A	N/A	N/A
2-Chlorophenol	0	0		0	560	560	1,987
2,4-Dichlorophenol	0	0		0	1,700	1,700	6,031
2,4-Dimethylphenol	0	0		0	660	660	2,341
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	284
2,4-Dinitrophenol	0	0		0	660	660	2,341
2-Nitrophenol	0	0		0	8,000	8,000	28,381
4-Nitrophenol	0	0		0	2,300	2,300	8,160
p-Chloro-m-Cresol	0	0		0	160	160	568
Pentachlorophenol	0	0		0	8.723	8.72	30.9
Phenol	0	0		0	N/A	N/A	N/A
2,4,6-Trichlorophenol	0	0		0	460	460	1,632
Acenaphthene	0	0		0	83	83.0	294
Anthracene	0	0		0	N/A	N/A	N/A
Benzidine	0	0		0	300	300	1,064
Benzo(a)Anthracene	0	0		0	0.5	0.5	1.77
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A
Bis(2-Chloroethyl)Ether	0	0		0	30,000	30,000	106,429
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	15,964
4-Bromophenyl Phenyl Ether	0	0		0	270	270	958

Butyl Benzyl Phthalate	0	0		0	140	140	497
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A
Chrysene	0	0		0	N/A	N/A	N/A
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A
1,2-Dichlorobenzene	0	0		0	820	820	2,909
1,3-Dichlorobenzene	0	0		0	350	350	1,242
1,4-Dichlorobenzene	0	0		0	730	730	2,590
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A
Diethyl Phthalate	0	0		0	4,000	4,000	14,191
Dimethyl Phthalate	0	0		0	2,500	2,500	8,869
Di-n-Butyl Phthalate	0	0		0	110	110	390
2,4-Dinitrotoluene	0	0		0	1,600	1,600	5,676
2,6-Dinitrotoluene	0	0		0	990	990	3,512
1,2-Diphenylhydrazine	0	0		0	15	15.0	53.2
Fluoranthene	0	0		0	200	200	710
Fluorene	0	0		0	N/A	N/A	N/A
Hexachlorobenzene	0	0		0	N/A	N/A	N/A
Hexachlorobutadiene	0	0		0	10	10.0	35.5
Hexachlorocyclopentadiene	0	0		0	5	5.0	17.7
Hexachloroethane	0	0		0	60	60.0	213
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A
Isophorone	0	0		0	10,000	10,000	35,476
Naphthalene	0	0		0	140	140	497
Nitrobenzene	0	0		0	4,000	4,000	14,191
n-Nitrosodimethylamine	0	0		0	17,000	17,000	60,310
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A
n-Nitrosodiphenylamine	0	0		0	300	300	1,064
Phenanthrene	0	0		0	5	5.0	17.7
Pyrene	0	0		0	N/A	N/A	N/A
1,2,4-Trichlorobenzene	0	0		0	130	130	461
Aldrin	0	0		0	3	3.0	10.6
alpha-BHC	0	0		0	N/A	N/A	N/A
beta-BHC	0	0		0	N/A	N/A	N/A
gamma-BHC	0	0		0	0.95	0.95	3.37
Chlordane	0	0		0	2.4	2.4	8.51
4,4-DDT	0	0		0	1.1	1.1	3.9
4,4-DDE	0	0		0	1.1	1.1	3.9
4,4-DDD	0	0		0	1.1	1.1	3.9
Dieldrin	0	0		0	0.24	0.24	0.85
alpha-Endosulfan	0	0		0	0.22	0.22	0.78
beta-Endosulfan	0	0		0	0.22	0.22	0.78
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A
Endrin	0	0		0	0.086	0.086	0.31
Endrin Aldehyde	0	0		0	N/A	N/A	N/A
Heptachlor	0	0		0	0.52	0.52	1.84
Heptachlor Epoxide	0	0		0	0.5	0.5	1.77
Toxaphene	0	0		0	0.73	0.73	2.59

☒ CFC

CCT (min): 0.828

PMF: 1

Analysis Hardness (mg/l): 131.01

Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	780	
Total Arsenic	0	0		0	150	150	532	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	14,545	
Total Boron	0	0		0	1,800	1,800	5,676	
Total Cadmium	0	0		0	0.297	0.33	1.17	Chem Translator of 0.898 applied
Total Chromium (III)	0	0		0	92.463	108	381	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	38.9	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	67.4	
Total Copper	0	0		0	11.281	11.8	41.7	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	5,321	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	3.373	4.49	15.9	Chem Translator of 0.752 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	3.21	Chem Translator of 0.85 applied
Total Nickel	0	0		0	65.356	65.6	233	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	17.7	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	46.1	
Total Zinc	0	0		0	148.517	151	534	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	10.6	
Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	130	130	461	
Benzene	0	0		0	130	130	461	
Bromoform	0	0		0	370	370	1,313	
Carbon Tetrachloride	0	0		0	560	560	1,987	
Chlorobenzene	0	0		0	240	240	851	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	12,417	
Chloroform	0	0		0	390	390	1,384	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	10,998	
1,1-Dichloroethylene	0	0		0	1,500	1,500	5,321	
1,2-Dichloropropane	0	0		0	2,200	2,200	7,805	
1,3-Dichloropropylene	0	0		0	61	61.0	216	
Ethylbenzene	0	0		0	580	580	2,058	

Methyl Bromide	0	0		0	110	110	390
Methyl Chloride	0	0		0	5,500	5,500	19,512
Methylene Chloride	0	0		0	2,400	2,400	8,514
1,1,2,2-Tetrachloroethane	0	0		0	210	210	745
Tetrachloroethylene	0	0		0	140	140	497
Toluene	0	0		0	330	330	1,171
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	4,967
1,1,1-Trichloroethane	0	0		0	610	610	2,164
1,1,2-Trichloroethane	0	0		0	680	680	2,412
Trichloroethylene	0	0		0	450	450	1,596
Vinyl Chloride	0	0		0	N/A	N/A	N/A
2-Chlorophenol	0	0		0	110	110	390
2,4-Dichlorophenol	0	0		0	340	340	1,208
2,4-Dimethylphenol	0	0		0	130	130	461
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	56.8
2,4-Dinitrophenol	0	0		0	130	130	461
2-Nitrophenol	0	0		0	1,600	1,600	5,676
4-Nitrophenol	0	0		0	470	470	1,667
p-Chloro-m-Cresol	0	0		0	500	500	1,774
Pentachlorophenol	0	0		0	6.693	6.69	23.7
Phenol	0	0		0	N/A	N/A	N/A
2,4,6-Trichlorophenol	0	0		0	91	91.0	323
Acenaphthene	0	0		0	17	17.0	60.3
Anthracene	0	0		0	N/A	N/A	N/A
Benzidine	0	0		0	59	59.0	209
Benzo(a)Anthracene	0	0		0	0.1	0.1	0.35
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A
Bis(2-Chloroethyl)Ether	0	0		0	6,000	6,000	21,286
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	3,228
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	192
Butyl Benzyl Phthalate	0	0		0	35	35.0	124
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A
Chrysene	0	0		0	N/A	N/A	N/A
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A
1,2-Dichlorobenzene	0	0		0	160	160	568
1,3-Dichlorobenzene	0	0		0	69	69.0	245
1,4-Dichlorobenzene	0	0		0	150	150	532
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A
Diethyl Phthalate	0	0		0	800	800	2,838
Dimethyl Phthalate	0	0		0	500	500	1,774
Di-n-Butyl Phthalate	0	0		0	21	21.0	74.5
2,4-Dinitrotoluene	0	0		0	320	320	1,135

2,6-Dinitrotoluene	0	0		0	200	200	710	
1,2-Diphenylhydrazine	0	0		0	3	3.0	10.6	
Fluoranthene	0	0		0	40	40.0	142	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	2	2.0	7.1	
Hexachlorocyclopentadiene	0	0		0	1	1.0	3.55	
Hexachloroethane	0	0		0	12	12.0	42.6	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	7,450	
Naphthalene	0	0		0	43	43.0	153	
Nitrobenzene	0	0		0	810	810	2,874	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	12,062	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	209	
Phenanthrene	0	0		0	1	1.0	3.55	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	92.2	
Aldrin	0	0		0	0.1	0.1	0.35	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0043	0.004	0.015	
4,4-DDT	0	0		0	0.001	0.001	0.004	
4,4-DDE	0	0		0	0.001	0.001	0.004	
4,4-DDD	0	0		0	0.001	0.001	0.004	
Dieldrin	0	0		0	0.056	0.056	0.2	
alpha-Endosulfan	0	0		0	0.056	0.056	0.2	
beta-Endosulfan	0	0		0	0.056	0.056	0.2	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	0.036	0.036	0.13	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.0038	0.004	0.013	
Heptachlor Epoxide	0	0		0	0.0038	0.004	0.013	
Toxaphene	0	0		0	0.0002	0.0002	0.0007	

☒ THH

CCT (min): 0.828

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	19.9
Total Arsenic	0	0		0	10	10.0	35.5
Total Barium	0	0		0	2,400	2,400	8,514
Total Boron	0	0		0	3,100	3,100	10,998
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	1,064
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	3,548
Total Mercury	0	0		0	0.050	0.05	0.18
Total Nickel	0	0		0	610	610	2,164
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	0.85
Total Zinc	0	0		0	N/A	N/A	N/A
Acrolein	0	0		0	3	3.0	10.6
Acrylamide	0	0		0	N/A	N/A	N/A
Acrylonitrile	0	0		0	N/A	N/A	N/A
Benzene	0	0		0	N/A	N/A	N/A
Bromoform	0	0		0	N/A	N/A	N/A
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A
Chlorobenzene	0	0		0	100	100.0	355
Chlorodibromomethane	0	0		0	N/A	N/A	N/A
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A
Chloroform	0	0		0	5.7	5.7	20.2
Dichlorobromomethane	0	0		0	N/A	N/A	N/A
1,2-Dichloroethane	0	0		0	N/A	N/A	N/A
1,1-Dichloroethylene	0	0		0	33	33.0	117
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A
1,3-Dichloropropylene	0	0		0	N/A	N/A	N/A
Ethylbenzene	0	0		0	68	68.0	241
Methyl Bromide	0	0		0	100	100.0	355
Methyl Chloride	0	0		0	N/A	N/A	N/A
Methylene Chloride	0	0		0	N/A	N/A	N/A
1,1,2,2-Tetrachloroethane	0	0		0	N/A	N/A	N/A
Tetrachloroethylene	0	0		0	N/A	N/A	N/A
Toluene	0	0		0	57	57.0	202
1,2-trans-Dichloroethylene	0	0		0	100	100.0	355
1,1,1-Trichloroethane	0	0		0	10,000	10,000	35,476
1,1,2-Trichloroethane	0	0		0	N/A	N/A	N/A

Trichloroethylene	0	0		0	N/A	N/A	N/A
Vinyl Chloride	0	0		0	N/A	N/A	N/A
2-Chlorophenol	0	0		0	30	30.0	106
2,4-Dichlorophenol	0	0		0	10	10.0	35.5
2,4-Dimethylphenol	0	0		0	100	100.0	355
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	7.1
2,4-Dinitrophenol	0	0		0	10	10.0	35.5
2-Nitrophenol	0	0		0	N/A	N/A	N/A
4-Nitrophenol	0	0		0	N/A	N/A	N/A
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A
Pentachlorophenol	0	0		0	N/A	N/A	N/A
Phenol	0	0		0	4,000	4,000	14,191
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A
Acenaphthene	0	0		0	70	70.0	248
Anthracene	0	0		0	300	300	1,064
Benzidine	0	0		0	N/A	N/A	N/A
Benzo(a)Anthracene	0	0		0	N/A	N/A	N/A
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A
Bis(2-Chloroethyl)Ether	0	0		0	N/A	N/A	N/A
Bis(2-Chloroisopropyl)Ether	0	0		0	200	200	710
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A
Butyl Benzyl Phthalate	0	0		0	0.1	0.1	0.35
2-Chloronaphthalene	0	0		0	800	800	2,838
Chrysene	0	0		0	N/A	N/A	N/A
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A
1,2-Dichlorobenzene	0	0		0	1,000	1,000	3,548
1,3-Dichlorobenzene	0	0		0	7	7.0	24.8
1,4-Dichlorobenzene	0	0		0	300	300	1,064
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A
Diethyl Phthalate	0	0		0	600	600	2,129
Dimethyl Phthalate	0	0		0	2,000	2,000	7,095
Di-n-Butyl Phthalate	0	0		0	20	20.0	71.0
2,4-Dinitrotoluene	0	0		0	N/A	N/A	N/A
2,6-Dinitrotoluene	0	0		0	N/A	N/A	N/A
1,2-Diphenylhydrazine	0	0		0	N/A	N/A	N/A
Fluoranthene	0	0		0	20	20.0	71.0
Fluorene	0	0		0	50	50.0	177
Hexachlorobenzene	0	0		0	N/A	N/A	N/A
Hexachlorobutadiene	0	0		0	N/A	N/A	N/A
Hexachlorocyclopentadiene	0	0		0	4	4.0	14.2
Hexachloroethane	0	0		0	N/A	N/A	N/A
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A

Isophorone	0	0		0	34	34.0	121
Naphthalene	0	0		0	N/A	N/A	N/A
Nitrobenzene	0	0		0	10	10.0	35.5
n-Nitrosodimethylamine	0	0		0	N/A	N/A	N/A
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A
n-Nitrosodiphenylamine	0	0		0	N/A	N/A	N/A
Phenanthrene	0	0		0	N/A	N/A	N/A
Pyrene	0	0		0	20	20.0	71.0
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.25
Aldrin	0	0		0	N/A	N/A	N/A
alpha-BHC	0	0		0	N/A	N/A	N/A
beta-BHC	0	0		0	N/A	N/A	N/A
gamma-BHC	0	0		0	4.2	4.2	14.9
Chlordane	0	0		0	N/A	N/A	N/A
4,4-DDT	0	0		0	N/A	N/A	N/A
4,4-DDE	0	0		0	N/A	N/A	N/A
4,4-DDD	0	0		0	N/A	N/A	N/A
Dieldrin	0	0		0	N/A	N/A	N/A
alpha-Endosulfan	0	0		0	20	20.0	71.0
beta-Endosulfan	0	0		0	20	20.0	71.0
Endosulfan Sulfate	0	0		0	20	20.0	71.0
Endrin	0	0		0	0.03	0.03	0.11
Endrin Aldehyde	0	0		0	1	1.0	3.55
Heptachlor	0	0		0	N/A	N/A	N/A
Heptachlor Epoxide	0	0		0	N/A	N/A	N/A
Toxaphene	0	0		0	N/A	N/A	N/A

☒ CRL

CCT (min): 0.404

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
Acrolein	0	0		0	N/A	N/A	N/A
Acrylamide	0	0		0	0.07	0.07	1.78
Acrylonitrile	0	0		0	0.06	0.06	1.52
Benzene	0	0		0	0.58	0.58	14.7
Bromoform	0	0		0	7	7.0	178
Carbon Tetrachloride	0	0		0	0.4	0.4	10.2
Chlorobenzene	0	0		0	N/A	N/A	N/A
Chlorodibromomethane	0	0		0	0.8	0.8	20.3
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A
Chloroform	0	0		0	N/A	N/A	N/A
Dichlorobromomethane	0	0		0	0.95	0.95	24.1
1,2-Dichloroethane	0	0		0	9.9	9.9	251
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A
1,2-Dichloropropane	0	0		0	0.9	0.9	22.8
1,3-Dichloropropylene	0	0		0	0.27	0.27	6.85
Ethylbenzene	0	0		0	N/A	N/A	N/A
Methyl Bromide	0	0		0	N/A	N/A	N/A
Methyl Chloride	0	0		0	N/A	N/A	N/A
Methylene Chloride	0	0		0	20	20.0	508
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	5.08
Tetrachloroethylene	0	0		0	10	10.0	254
Toluene	0	0		0	N/A	N/A	N/A
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A
1,1,2-Trichloroethane	0	0		0	0.55	0.55	14.0
Trichloroethylene	0	0		0	0.6	0.6	15.2
Vinyl Chloride	0	0		0	0.02	0.02	0.51
2-Chlorophenol	0	0		0	N/A	N/A	N/A
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A
2-Nitrophenol	0	0		0	N/A	N/A	N/A
4-Nitrophenol	0	0		0	N/A	N/A	N/A

p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A
Pentachlorophenol	0	0		0	0.030	0.03	0.76
Phenol	0	0		0	N/A	N/A	N/A
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	38.1
Acenaphthene	0	0		0	N/A	N/A	N/A
Anthracene	0	0		0	N/A	N/A	N/A
Benzidine	0	0		0	0.0001	0.0001	0.003
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.025
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.003
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.025
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.25
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	0.76
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	8.12
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A
Chrysene	0	0		0	0.12	0.12	3.05
Dibenzo(a,h)Anthracene	0	0		0	0.0001	0.0001	0.003
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A
3,3-Dichlorobenzidine	0	0		0	0.05	0.05	1.27
Diethyl Phthalate	0	0		0	N/A	N/A	N/A
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A
2,4-Dinitrotoluene	0	0		0	0.05	0.05	1.27
2,6-Dinitrotoluene	0	0		0	0.05	0.05	1.27
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	0.76
Fluoranthene	0	0		0	N/A	N/A	N/A
Fluorene	0	0		0	N/A	N/A	N/A
Hexachlorobenzene	0	0		0	0.00008	0.00008	0.002
Hexachlorobutadiene	0	0		0	0.01	0.01	0.25
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A
Hexachloroethane	0	0		0	0.1	0.1	2.54
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.025
Isophorone	0	0		0	N/A	N/A	N/A
Naphthalene	0	0		0	N/A	N/A	N/A
Nitrobenzene	0	0		0	N/A	N/A	N/A
n-Nitrosodimethylamine	0	0		0	0.0007	0.0007	0.018
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.13
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	83.8
Phenanthrene	0	0		0	N/A	N/A	N/A
Pyrene	0	0		0	N/A	N/A	N/A
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A

Aldrin	0	0		0	0.0000008	8.00E-07	0.00002	
alpha-BHC	0	0		0	0.0004	0.0004	0.01	
beta-BHC	0	0		0	0.008	0.008	0.2	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0003	0.0003	0.008	
4,4-DDT	0	0		0	0.00003	0.00003	0.0008	
4,4-DDE	0	0		0	0.00002	0.00002	0.0005	
4,4-DDD	0	0		0	0.0001	0.0001	0.003	
Dieldrin	0	0		0	0.000001	0.000001	0.00003	
alpha-Endosulfan	0	0		0	N/A	N/A	N/A	
beta-Endosulfan	0	0		0	N/A	N/A	N/A	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	N/A	N/A	N/A	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.000008	0.000008	0.0002	
Heptachlor Epoxide	0	0		0	0.00003	0.00003	0.0008	
Toxaphene	0	0		0	0.0007	0.0007	0.018	

☒ 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			
Total Aluminum	Report	Report	Report	Report	Report	µg/L	1,705	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Cobalt	Report	Report	Report	Report	Report	µg/L	67.4	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Copper	Report	Report	Report	Report	Report	µg/L	41.1	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Iron	Report	Report	Report	Report	Report	µg/L	5,321	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Lead	Report	Report	Report	Report	Report	µg/L	15.9	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Manganese	Report	Report	Report	Report	Report	µg/L	3,548	THH	Discharge Conc > 10% WQBEL (no RP)
Total Nickel	Report	Report	Report	Report	Report	µg/L	233	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Thallium	Report	Report	Report	Report	Report	µg/L	0.85	THH	Discharge Conc > 10% WQBEL (no RP)
Acrylamide	0.0005	0.0008	1.78	2.77	4.44	µg/L	1.78	CRL	Discharge Conc ≥ 50% WQBEL (RP)
4,4-DDD	7.20E-07	0.000001	0.003	0.004	0.006	µg/L	0.003	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Dieldrin	7.20E-09	1.12E-08	0.00003	0.00004	0.00006	µg/L	0.00003	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Heptachlor Epoxide	2.16E-07	3.37E-07	0.0008	0.001	0.002	µg/L	0.0008	CRL	Discharge Conc ≥ 50% WQBEL (RP)

☒ Other Pollutants without Limits or Monitoring

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable

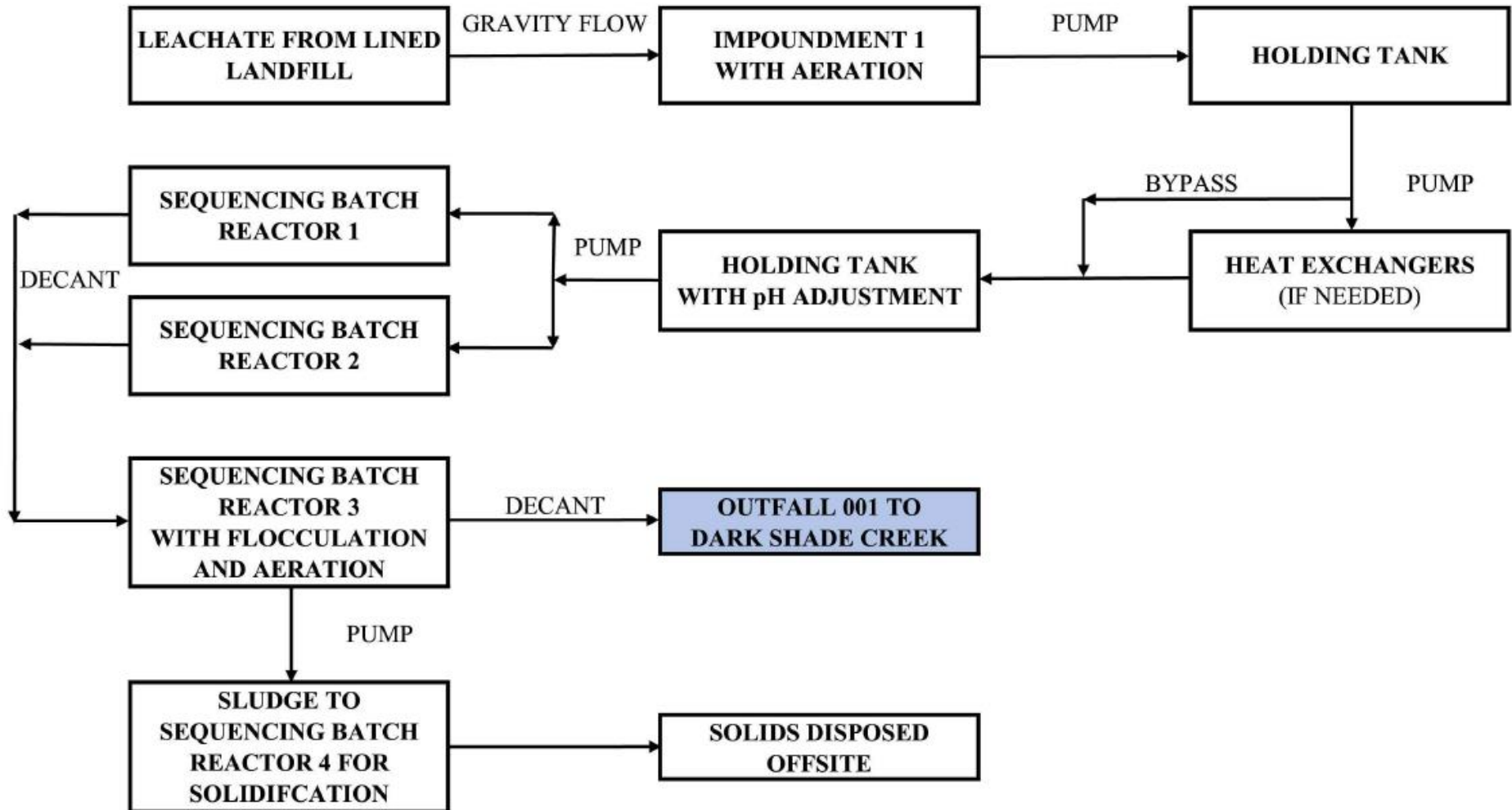
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Antimony	19.9	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	35.5	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	8,514	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	5,876	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	1.17	µg/L	Discharge Conc < TQL
Total Chromium (III)	381	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	36.9	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	1,064	µg/L	Discharge Conc < TQL
Total Mercury	0.18	µg/L	Discharge Conc < TQL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	17.7	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	13.7	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	343	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	6.82	µg/L	Discharge Conc < TQL
Acrylonitrile	1.52	µg/L	Discharge Conc < TQL
Benzene	14.7	µg/L	Discharge Conc < TQL
Bromoform	178	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	10.2	µg/L	Discharge Conc < TQL
Chlorobenzene	355	µg/L	Discharge Conc < TQL
Chlorodibromomethane	20.3	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	12,417	µg/L	Discharge Conc < TQL
Chloroform	20.2	µg/L	Discharge Conc < TQL
Dichlorobromomethane	24.1	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	251	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	117	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	22.8	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	6.85	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	241	µg/L	Discharge Conc < TQL
Methyl Bromide	355	µg/L	Discharge Conc < TQL
Methyl Chloride	19,512	µg/L	Discharge Conc < TQL
Methylene Chloride	508	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	5.08	µg/L	Discharge Conc < TQL
Tetrachloroethylene	254	µg/L	Discharge Conc < TQL
Toluene	202	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	355	µg/L	Discharge Conc < TQL

1,1,1-Trichloroethane	2,164	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	14.0	µg/L	Discharge Conc < TQL
Trichloroethylene	15.2	µg/L	Discharge Conc < TQL
Vinyl Chloride	0.51	µg/L	Discharge Conc < TQL
2-Chlorophenol	106	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	35.5	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	355	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	7.1	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	35.5	µg/L	Discharge Conc < TQL
2-Nitrophenol	5,676	µg/L	Discharge Conc < TQL
4-Nitrophenol	1,667	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	364	µg/L	Discharge Conc < TQL
Pentachlorophenol	0.76	µg/L	Discharge Conc < TQL
Phenol	14,191	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	38.1	µg/L	Discharge Conc < TQL
Acenaphthene	60.3	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	1,064	µg/L	Discharge Conc < TQL
Benzidine	0.003	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.025	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.003	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.025	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.25	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	0.76	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	710	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	8.12	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	192	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	0.35	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	2,838	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	3.05	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthracene	0.003	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	568	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	24.8	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	532	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	1.27	µg/L	Discharge Conc < TQL
Diethyl Phthalate	2,129	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	1,774	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	71.0	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	1.27	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	1.27	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	0.76	µg/L	Discharge Conc < TQL

Fluoranthene	71.0	µg/L	Discharge Conc < TQL
Fluorene	177	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.002	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.25	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	3.55	µg/L	Discharge Conc < TQL
Hexachloroethane	2.54	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.025	µg/L	Discharge Conc < TQL
Isophorone	121	µg/L	Discharge Conc < TQL
Naphthalene	153	µg/L	Discharge Conc < TQL
Nitrobenzene	35.5	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.018	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.13	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	83.8	µg/L	Discharge Conc < TQL
Phenanthrene	3.55	µg/L	Discharge Conc < TQL
Pyrene	71.0	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	0.25	µg/L	Discharge Conc < TQL
Aldrin	0.00002	µg/L	Discharge Conc < TQL
alpha-BHC	0.01	µg/L	Discharge Conc < TQL
beta-BHC	0.2	µg/L	Discharge Conc < TQL
gamma-BHC	2.16	µg/L	Discharge Conc ≤ 25% WQBEL
delta BHC	N/A	N/A	No WQS
Chlordane	0.008	µg/L	Discharge Conc < TQL
4,4-DDT	0.0008	µg/L	Discharge Conc < TQL
4,4-DDE	0.0005	µg/L	Discharge Conc < TQL
alpha-Endosulfan	0.2	µg/L	Discharge Conc ≤ 25% WQBEL
beta-Endosulfan	0.2	µg/L	Discharge Conc ≤ 25% WQBEL
Endosulfan Sulfate	71.0	µg/L	Discharge Conc ≤ 25% WQBEL
Endrin	0.11	µg/L	Discharge Conc ≤ 25% WQBEL
Endrin Aldehyde	3.55	µg/L	Discharge Conc ≤ 25% WQBEL
Heptachlor	0.0002	µg/L	Discharge Conc < TQL
PCB-1016	N/A	N/A	No WQS
PCB-1221	N/A	N/A	No WQS
PCB-1232	N/A	N/A	No WQS
PCB-1242	N/A	N/A	No WQS
PCB-1248	N/A	N/A	No WQS
PCB-1254	N/A	N/A	No WQS
PCB-1260	N/A	N/A	No WQS
Toxaphene	0.0007	µg/L	Discharge Conc < TQL

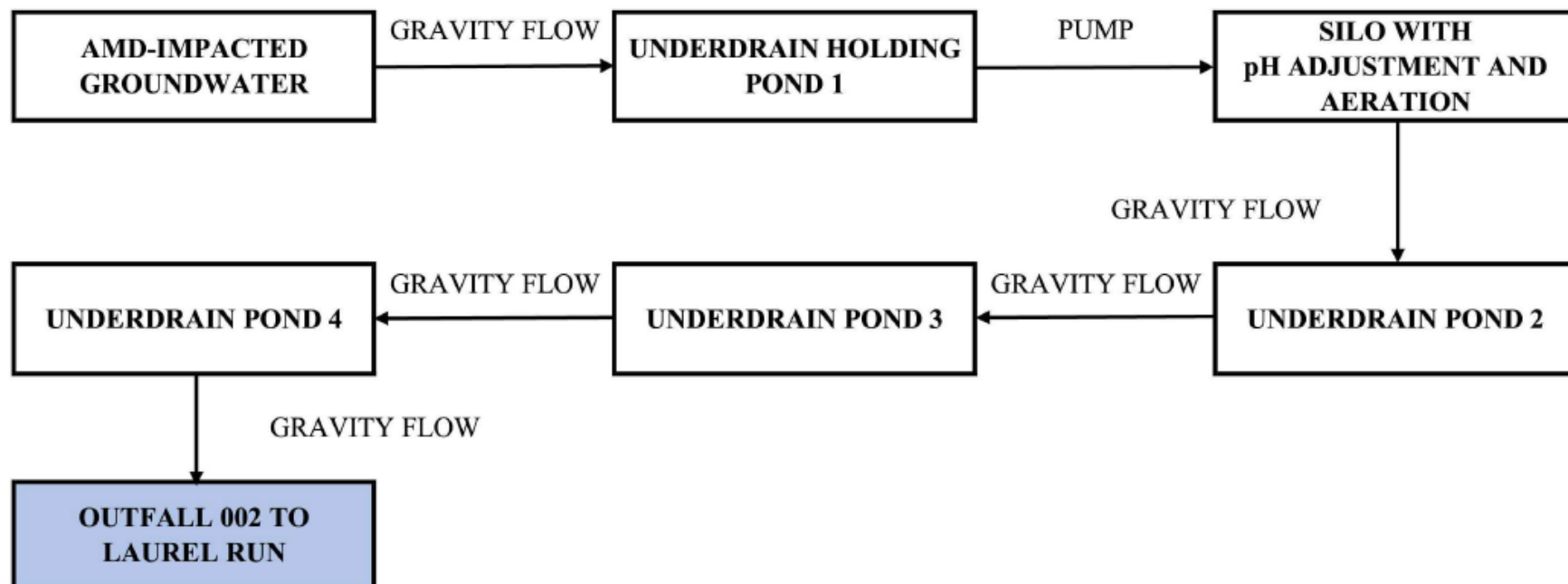
Attachment F:
Outfall 001 Flow Diagram

**OUTFALL 001
LINE DRAWING**



Attachment G:
Outfall 002 Flow Diagram

**OUTFALL 002
LINE DRAWING**



Attachment H:

Site Plan

