

Application Type Renewal Facility Type Industrial Major / Minor Minor

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

 Application No.
 PA0261581

 APS ID
 733900

 Authorization ID
 1372907

# **Applicant and Facility Information**

Applicant Name	Red Lion Borough Municipal Authority           Applicant Name         York County		Facility Name	Red Lion Cabin Creek Water System
Applicant Address	11 East	Broadway, PO Box 190	Facility Address	425 Gebhart Road
	Red Lio	n, PA 17356-0190		Windsor, PA 17356-0190
Applicant Contact	John Kr	antz	Facility Contact	John Krantz
Applicant Phone	(717) 244-3475		Facility Phone	(717) 244-3475
Client ID	69803		Site ID	740979
SIC Code	4941		Municipality	Windsor Township
SIC Description	Trans. 8	& Utilities - Water Supply	County	York
Date Application Receiv	ved	October 15, 2021	EPA Waived?	Yes
Date Application Accepted		December 14, 2021	If No, Reason	
Purpose of Application		NPDES permit renewal		

### Summary of Review

Red Lion Municipal Authority (RLMA) has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of the NPDES permit no. PA0261581. Under this permit, RLMA is authorized to discharge treated industrial wastewater generated from the water treatment plant known as Cabin Creek Water Treatment Plant. The current permit will expire on April 30, 2022. In case the permit expires prior to issuance of this renewal, the terms and conditions of the permit will be administratively extended.

The WQM Part II Nos.6711201 & 6711202 original were issued on 7/21/2011 & 3/06/2012.

Changes from the previous permit:

- Total Dissolved Solids, Total Iron, & Total Zinc limits and monitoring are removed from the proposed permit.
- Total Manganese monitoring and report concentration & mass of average monthly & daily maximum requirements will be replaced from the limits in the proposed permit.
- Total Aluminum limits of 0.854 mg/L (854 μg/L) average monthly, 1.333 mg/L (1,333 μg/L) daily maximum, & 2.136 mg/L (2,136 μg/L) IMAX; and mass average monthly of 2.49 lbs/day & daily maximum of 3.89 lbs/day are in the proposed permit.
- Total Copper limits of 0.119 mg/L (11.9 μg/L) average monthly, 0.186 mg/L (18.6 μg/L) daily maximum, & 0.298 mg/L (29.8 μg/L) IMAX; and mass average monthly of 0.035 lbs/day & daily maximum of 0.54 lbs/day, are in the proposed permit. The minimum measurement frequency monitoring requirements also changed from 2/month to 1/month.

Based on the review outlined in this fact sheet, it is recommended that the permit be drafted. A public notice of the draft permit will be published in the *Pennsylvania Bulletin* for public comments for 30 days.

Approve	Deny	Signatures	Date
х		<i>Hilaryle</i> Hilary H. Le / Environmental Engineering Specialist	January 31, 2023
х		/s/ Daniel W. Martin, P.E. / Environmental Engineer Manager	February 22, 2023

Discharge, Receiving Waters and Water Supply Informat	ion	Discharge, Receiving Waters and Water Supply Information						
Outfall No. 001 Latitude <u>39º 56' 34.09"</u> Quad Name <u>Red Lion</u> Wastewater Description: <u>IW Process Effluent without E</u>	Design Flow (MGD) Longitude Quad Code ELG	0.35 -76º 34' 50.04" 1933						
Receiving WatersCabin Creek (WWF)NHD Com ID57468335Drainage Area2.63 mi.²Q7-10 Flow (cfs)0.42Elevation (ft)593Watershed No.7-1Existing Use	Stream Code RMI Yield (cfs/mi <sup>2</sup> ) Q <sub>7-10</sub> Basis Slope (ft/ft) Chapter 93 Class. Existing Use Qualifier Exceptions to Criteria	07848 9.20 miles 0.16 USGS StreamStats WWF						
Cause(s) of Impairment	Name							
Nearest Downstream Public Water Supply IntakeYPWS WatersSusquehanna RiverPWS RMI23.0 miles	<u>York Water Company</u> Flow at Intake (cfs) Distance from Outfall (mi)	Approximate 4.4 miles						

Changes Since Last Permit Issuance: none

## Drainage Area

The discharge is to Cabin Creek at RMI 9.20, immediately below the spill way of the Cabin Creek reservoir. A drainage area upstream of the outfall is determined to be 2.63 mi.<sup>2</sup>, according to the USGS PA StreamStats.

### **Streamflow**

The Susquehanna River Basin Commission issued a water allocation permit on March 25, 1983 to RLMA. The permit allows up to 3.5 MGD of withdrawal from Cabin Creek, Beaver Creek and the Susquehanna River for potable water supply for a period of fifty years. The previous NPDES permit renewal fact sheet contains the following statement:

"...paragraph eight of the water allocation permit, WA-38B, states the following:

"A continuous flow of not less than 0.280 MGD and 0.680 MGD respectively shall be maintained at all times in Cabin Creek and Beaver Creek immediately below the dams. At such time as the Average Yearly Withdraw Rate for any calendar year exceeds 2.5 MGD, the conservation releases shall automatically increase such that continuous flows of not less than 0.320 and 0.780 MGD respectively shall be maintained at all times in Cabin Creek and Beaver Creek. Once increased, the conservation release requirement shall not decrease. Accurate measuring and recording devices shall be installed to measure this flow and records of the daily releases shall be submitted at the direction of the Department. The original field records shall be available at all times for inspection by representatives of the Department."

...for stream modeling, the conservation release is assumed to be equal to the  $Q_{7-10}$  since this is the required minimum flow over the spill way."

This is a reasonable approach to estimate the  $Q_{7-10}$  or lowest (most conservative) flow rate of the stream at the outfall, rather than using the  $Q_{7-10}$  derived from the USGS PA StreamStats since the USGS PA StreamStats does not consider this conservation release. Accordingly, the conservation release will be used as a  $Q_{7-10}$  again for this permit reissuance, resulting in a low-flow yield of 0.42 cfs / 2.63 mi.<sup>2</sup> = 0.16 cfs/mi.<sup>2</sup>.

# Receiving Water Characteristics

Under 25 Pa Code §93.90, Cabin Creek is designated as warm water and migratory fishes (WWF & MF). The discharge is located within a stream segment listed as attaining uses.

# Downstream Water Supply Intake

The nearest **downstream** water supply intake is York Water Company, located on the Susquehanna River, approximately 4.4 miles from the discharge point. Considering the distance and dilution, the discharge is not expected to significantly impact the water supply.

	1	Freatment Facility Summar	у	
Treatment Facility Na	ame: Red Lion Municipal	Authority WTP		
WQM Permit No.	Issuance Date			
6711201	07/21/2011			
6711202	03/06/2012			
	Degree of			Avg Annual
Waste Type	Treatment	Process Type	Disinfection	Flow (MGD)
Industrial	Primary	Settling	Chlorine	0.386

Changes Since Last Permit Issuance: none

# General Description

RLMA owns and operates the Cabin Creek Water Treatment Plant (WTP). The plant was first constructed in 1925 and then redesigned in 1988 for improvement. The previous WTP repeatedly had operation and maintenance issues, including wastewater handling. As a result, improvement was necessary and RLMA proposed to build a new WTP located east of the reservoir and convert the existing WTP into an industrial wastewater treatment plant (IWTP) in 2011. The Water Quality Management (WQM) permit no. 6711202 as well as NPDES permit amendment was issued on March 6, 2012 to reflect this project. The new WTP was online as of early April 2015 and the conversion of the IWTP was completely finalized in February 2016.

# **Treatment Process**

Treatment processes for both WTP and IWTP are as follows:

Water Treatment Plant (DEP Safe Drinking Water Program PWS Permit Nos. 6703504/6796504/6711512)

Pre-Treatment Basin  $\rightarrow$  Rapid Mix Basins (2)  $\rightarrow$  Flocculation Basins (2)  $\rightarrow$  Clarifiers (2)  $\rightarrow$  Duel Media Filters (4)  $\rightarrow$  IWTP or  $\rightarrow$  Chlorine Contact Disinfection  $\rightarrow$  Clearwell  $\rightarrow$  PWS Distribution System

Industrial Wastewater Treatment Plant (DEP Clean Water Program WQM Permit no. 6711202)

Wastewater Settling Basins (2) → Outfall 001

The WTP has a permitted capacity of 3.5 MGD and the IWTP is designed to handle 0.35 MGD of industrial wastewaters. Wastewaters generated from the WTP are primarily filter backwash and rinse water (total of 0.181 MGD). Additional sources, according to the application, include sample sink drains, floor drains, and drainage of the process unit basins for periodic maintenance.

Filter backwash and rinse water from the WTP is directly sent to settling basins (2) and settled solids from these basins are pumped to the solid thickener. Solids blowdown from the WTP Clarifier basins is also sent to the solid thickener. Supernatant from the thickener is decanted back to the settling basins at a designed rate of 0.0178 MGD. Sludge generated from the thickener is periodically hauled off-site for disposal.

# <u>Flows</u>

Wastewater settling basins are utilized in a batch sequence. According to the application, the batch discharge occurs from the settling basins for 6 hours per day for 7 days per week. During this 6-hour daily discharge, two discharge cycles occur at a rate of 500 GPM (500 GPM \* 60 min \* 6 hours / 24 hours = 0.18 MGD). While the IWTP is designed to handle 0.35 MGD of water treatment wastewater, the average flow at Outfall 001 is expected to be 0.10 MGD with the maximum of 0.386 MGD during production.

# **Chemical Addition**

The following table summarizes a number of chemicals currently being added within the treatment processes of both WTP and IWTP:



With Chemical addition Points and Sample Points

Chemical Product	Injection Point	Purpose(s)	Chemical Additive?
	Prior to Pre-treatment Basin	Oxidation of iron and	
Potassium Permanganate	@ WTP	manganese	No (used for treatment)
Aluminum Sulfate	Prior to Rapid Mix Basins @ WTP	Coagulation	No (used for treatment)
Caustic Soda			
(Sodium Hydroxide)	Prior to Rapid Mix Basins @ WTP	pH adjustment	No (used for treatment)
Polymer	Prior to Rapid Mix Basins @ WTP	Coagulation	No (used for treatment)
Sodium Hypochlorite	Prior to Filters @ WTP	Disinfection	No (used for treatment)
Polymer	Prior to Filters @ WTP	Coagulation	No (used for treatment)
Sodium Hypochlorite	Prior to Clearwell @ WTP	Disinfection	No (used for treatment)
Caustic Soda	Prior to Distribution System		
(Sodium Hydroxide)	@ WTP	pH adjustment	No (used for treatment)
	Prior to Distribution System		
Aqua Ammonia	@ WTP	Disinfection	No (used for treatment)
	Prior to Distribution System		
Zinc Orthophosphate	@ WTP	Corrosion Inhibitor	Yes
Hydrofluorosilicic acid	Prior to Distribution System	Preventative measure	
(Fluoride)	@ WTP	(public health)	No (used for treatment)
Polymer	Prior to Solids Thickener @ IWTP	Coagulation	No (used for treatment)
Polymer	Prior to Settling Basins @ IWTP	Coagulation	No (used for treatment)
Sodium Bisulfate	Prior to Outfall 001 @ IWTP	Dechlorination	No (used for treatment)

None of above-mentioned chemicals, except for Zinc Orthophosphate is considered a chemical additive since chemicals are used for treatment purpose(s). Zinc Orthophosphate is a corrosion inhibitor for the PWS distribution system. It is not expected to be present in the IWTP process since it is added after filters and clear-well but before the distribution system. Water at the clear-well (before the chemical injection point) is used for backwashing filters.

# Outfall 002

Outfall 002 receives stormwater collected in a stormwater sewer located nearby the new WTP. Outfall 002 also infrequently receives overflows from both flocculation basins and the clear-well. An overflow from the clear-well is "finish water" that has been filtered but is not yet treated by chemicals used in the distribution system (i.e., corrosion inhibitor, ammonia, and fluoride). The current permit contains a monitoring requirement for Total Residual Chlorine (TRC) at Outfall 002 and will remain in the proposed permit.

	Compliance History						
Summary of DMRs:	A summary of past 12-month DMRs is presented on the page 6 & 7.						
Summary of Inspections:	<ul> <li>01/30/2020: Ashley Chong, DEP Water Quality Specialist, conducted a follow up on the incident inspection. The violation was noted during inspection such as release chlorinated water to Fishing Creek, a water of the Commonwealth. Recommendations were to ensure all valves are in the correct position, and update plans to include all lines and valves in water distribution system.</li> <li>4/1/2019: Austen Randecker, DEP Water Quality Specialist, conducted a routine inspection. There were no violations noted during the inspection.</li> </ul>						
Other Comments:	There are no open violations against the permittee or applicant.						

Other Comments:

# **Compliance History**

# DMR Data for Outfall 001 (from December 1, 2021 to November 30, 2022)

Parameter	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22	DEC-21
Flow (MGD)												
Average Monthly	0.114	0.114	0.118	0.119	0.149	0.158	0.156	0.161	0.15	0.154	0.138	0.135
Flow (MGD)												
Daily Maximum	0.16	0.164	0.169	0.166	0.172	0.168	0.171	0.268	0.164	0.214	0.160	0.150
pH (S.U.)												
Minimum	6.79	6.77	6.90	6.92	6.80	6.81	6.27	6.94	6.84	6.85	6.93	6.94
pH (S.U.)												
IMAX	7.15	7.07	7.24	7.13	7.17	7.09	7.14	7.16	7.20	7.15	7.25	7.19
TRC (mg/L)												
Average Monthly	0.02	0.02	0.04	0.03	0.04	0.03	0.02	0.02	0.02	0.03	0.03	0.03
TRC (mg/L)												
IIMAX	0.04	0.04	0.16	0.09	0.27	0.06	0.04	0.05	0.06	0.09	0.09	0.06
TSS (lbs/day)								_				
Average Monthly	3	3.0	3.0	4	3.00	4	3.0	3	5.0	2.0	3.0	1.00
TSS (lbs/day)						-		_				
Daily Maximum	8	6.0	4.0	11	5.00	9	5.0	5	10	3.0	7.0	1.00
ISS (mg/L)										4 = 0		4.00
Average Monthly	0.02	3.0	2.5	3.8	2.00	3.0	2.5	2.3	3.6	1.50	2.8	1.00
ISS (mg/L)												4.00
Daily Maximum	0.04	5.0	4.0	8.00	4.00	7.00	4.0	3.0	8.0	2.0	6.0	1.00
Total Dissolved Solids												
(Ibs/day)	457	70.0	000	100	101.0	405.00	474	100.0	450	050	400.00	4 4 9 9
Average Monthly	157	76.0	208	136	161.0	125.00	174	122.0	159	253	160.00	142.0
Total Dissolved Solids												
(IDS/day) Dally	200	02.0	245	177	161.0	142.00	102	160	205	406	205.00	120.0
Total Dissolved Solida	200	92.0	240	177	101.0	142.00	105	100	295	400	205.00	130.0
(mg/L) Average												
(ing/L) Average	1/0 0	83.0	103.00	132.67	122.0	173.00	125.00	02.0	123 33	103.0	136.00	120.0
Total Dissolved Solids	143.0	05.0	195.00	132.07	122.0	173.00	125.00	32.0	123.33	193.0	130.00	120.0
(mg/L) Daily Maximum	208.0	118.0	212.00	162.00	122.0	195.00	130.00	120.0	230.00	310.0	174.00	130.0
Total Aluminum	200.0	110.0	212.00	102.00	122.0	195.00	130.00	120.0	230.00	510.0	174.00	130.0
(lbs/day)												
Average Monthly	0.30	0.20	0.20	0.06	0.30	0.40	0.30	0.40	0.30	0.40	0.30	0.20
Total Aluminum	0.00	0.20	0.20	0.00	0.00	0.40	0.00	0.40	0.00	0.40	0.00	0.20
(lbs/dav) Daily												
Maximum	0.30	0.50	0.40	0.20	0.50	0.50	0.40	0.60	0.80	0.60	0.40	0.20
Total Aluminum	0.00	0.00	0.10	0.20	0.00	0.00	0.10	0.00	0.00	0.00	0.10	0.20
(mg/L) Average												
Monthly	0.27	0.25	0.18	< 0.10	0.30	0.27	0.21	0.25	0.25	0.29	0.23	0.18

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Total Aluminum												
(mg/L) Daily Maximum	0.41	0.38	0.27	0.07	0.38	0.39	0.26	0.36	0.61	0.43	0.33	0.18
Total Copper (lbs/day)												
Average Monthly	< 0.005	< 0.005	< 0.006	< 0.005	< 0.006	< 0.007	< 0.007	< 0.007	< 0.006	0.007	< 0.006	< 0.006
Total Copper (lbs/day)												
Daily Maximum	< 0.006	< 0.006	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	0.007	< 0.006	< 0.006
Total Copper (mg/L)												
Average Monthly	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005
Total Copper (mg/L)												
Daily Maximum	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005
I otal Iron (lbs/day)	0.05	0.05	0.00	0.00	0.07		0.000	0.00	0.07	0.00	0.07	0.00
Average Monthly	< 0.05	< 0.05	< 0.06	< 0.06	< 0.07	0.20	< 0.008	< 0.08	< 0.07	0.09	< 0.07	< 0.06
Total Iron (Ibs/day)	0.07	0.00	0.07	0.40	0.00	0.40	0.400	0.40	0.07	0.40	0.00	0.00
	< 0.07	0.08	< 0.07	0.10	0.09	0.40	0.100	0.10	< 0.07	0.10	< 0.09	< 0.06
Total Iron (mg/L)	. 0.1	0.40	0.40	0.40	0.10	0.40	.0.1	. 0.10	0.10	0.4	. 0. 07	.0.1
Average Monthly	< 0.1	< 0.10	< 0.10	< 0.10	< 0.10	0.10	< 0.1	< 0.10	< 0.10	0.1	< 0.07	< 0.1
Doily Maximum	10.05	0.06	0.05	0.07	0.07	0.25	0.07	0.06	10.05	0.09	10.00	- 0.05
	< 0.05	0.06	0.05	0.07	0.07	0.25	0.07	0.06	< 0.05	0.08	< 0.09	< 0.05
(IDS/Udy) Average Monthly	0.10	0.20	0.20	0.20	0.20	0.20	0.10	0.08	0.05	0.07	0.04	0.10
Total Manganese	0.10	0.20	0.20	0.20	0.20	0.20	0.10	0.00	0.05	0.07	0.04	0.10
(lbs/day) Daily												
Maximum	0.20	0.40	0.50	0.40	0.30	0 40	0.30	0.10	0.08	0 09	0.07	0.30
Total Manganese	0.20	0.40	0.00	0.40	0.00	0.40	0.00	0.10	0.00	0.00	0.07	0.00
(mg/L)												
Average Monthly	0.10	0.20	0.20	0.2	0.2	0.20	0.1	0.10	0.04	0.10	0.03	0.10
Total Manganese	0110	0.20	0.20	0.2	0.2	0.20	0.1.	0110	0.01	0110	0.00	0.1.0
(mg/L) Daily Maximum	0.16	0.39	0.54	0.28	0.36	0.27	0.19	0.079	0.06	0.069	0.051	0.29
Total Zinc (lbs/dav)												
Average Monthly	0.008	0.008	< 0.006	< 0.006	0.006	< 0.007	< 0.007	0.007	< 0.006	0.008	0.006	0.007
Total Zinc (lbs/day)												
Daily Maximum	0.01	0.008	< 0.008	0.008	0.007	< 0.007	< 0.007	< 0.007	< 0.007	0.008	0.007	0.007
Total Zinc (mg/L)												
Average Monthly	0.007	0.008	< 0.006	< 0.006	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	0.006	0.006	0.006
Total Zinc (mg/L)												
Daily Maximum	0.009	0.01	0.006	0.006	< 0.005	< 0.005	< 0.005	0.05	0.005	0.006	0.006	0.006

# DMR Data for Outfall 002 (from December 1, 2021 to November 30, 2022)

Parameter	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22	DEC-21
TRC (mg/L)												
Instantaneous												
Maximum	0.04	0.04	0.20	0.09	0.27	0.006	0.04	0.03	0.06	0.07	0.09	0.06

## Development of Effluent Limitations

Outfall No.	001	Design Flow (MGD)	.35
Latitude	39º 56' 34.00"	Longitude	-76º 34' 50.00"
Wastewater D	escription: IW Process Effluent without ELG		

# **Technology-Based Limitations**

The majority of industrial wastewater is filter backwash. DEP's technical guidance no. 362-2183-003 addresses technologybased control requirements along with the following recommended Best Practicable Control Technology Currently Available (BPT) effluent requirements for WTP sludge and filter backwash:

Parameter	Limit (mg/l)	SBC
Supported Solida	30	Average Monthly
Suspended Solids	60	Daily Maximum
Iron Total	2.0	Average Monthly
lion, iotai	4.0	Daily Maximum
	4.0	Average Monthly
Aluminum, Totai	8.0	Daily Maximum
Manganaga Tatal	1.0	Average Monthly
Manganese, Totai	2.0	Daily Maximum
Flow	Monitor	Average Monthly
	6.0	Minimum
рп	9.0	Maximum
Total Basidual Chlorina	0.5	Average Monthly
I Utal Residual Chionne	1.0	Daily Maximum

### Water Quality-Based Limitations

DEP's SOP No. BPNPSM-PMT-032 recommends the average monthly flow as a design flow in water quality modeling unless a different flow is determined to be more representative of conditions. According to the application, the design capacity of the IWTP is 0.35 MGD with the average flow of 0.10 MGD and maximum of 0.386 MGD during production.

## WQM 7.0

CBOD5 and NH3-N are not pollutants of concern for the water treatment waste as the discharge of these pollutants is not resulting from the water treatment process. Therefore, WQM 7.0 modeling is not necessary and permit requirements for these pollutants are not recommended.

## Total Residual Chlorine

Sodium hypochlorite is used before and after filters. Total Residual Chlorine (TRC) effluent concentrations must be monitored and regulated. DEP's TRC\_CALC worksheet was utilized to determine if existing limits are still appropriate under the flow of 0.350 MGD. The worksheet showed that a most stringent average monthly effluent limit of 0.12 mg/L and 0.4 mg/L IMAX are needed to protect the stream. These limits will remain in the proposed permit.

## Toxics

The following input data were used for Toxic Management Spreadsheet (TMS) Analysis:

•	Discharge pH	= 7.42 (Renewal Application)
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- Stream pH = 7.0 (Default)
- Discharge Hardness = 53.0 mg/L (Renewal Application)
- Stream Hardness = 100 mg/L (Default)

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

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

DEP's Toxics Management spreadsheet was utilized to perform a reasonable potential analysis and develop water quality effluent limits for toxic pollutants. The analysis shows that all existing limits for toxic pollutants that are included in the permit are still protective of water quality as follows.

- Total Iron, and Total Zinc maximum concentrations were less than 10% of their respective WQBEL, per DEP's SOP No. BPNPSM-PMT-033 therefore, the monitoring and reporting requirements of these pollutants are not necessary and will be removed from the proposed permit.
- Total Aluminum limit of 0.854 mg/L (854 µg/L) average monthly, 1.333 mg/L (1,333 µg/L) daily maximum, & 2.136 mg/L (2,136 µg/L) IMAX; and mass average monthly of 2.49 lbs/day & daily maximum of 3.89 lbs/day are recommended which are slightly more stringent and will be replaced in the proposed permit.
- Total Copper limit of 0.119 mg/L (11.9 ug/L) average monthly, 0.186 mg/L (18.6 ug/L) daily maximum, and 0.298 mg/L (29.8 ug/L) IMAX are recommended which is slightly more stringent and will be in the proposed permit. Mass average monthly of 0.035 lbs/day and daily maximum of 0.054 lbs/day are also in the proposed permit. The minimum measurement frequency monitoring requirements changed from 2/month to 1/month in the proposed permit.
- Total Manganese monitoring and report concentration & mass of average monthly & daily maximum requirements will be replaced from the limits in the proposed permit which based on the fact that DEP protects for all water uses, not just the critical uses stated in 25 Pa. Code § 93.7. During the next permit renewal cycle, the need for Manganese monitoring in the permit will be re-evaluated.

# Additional Considerations

1. Total Dissolved Solids (TDS)

DEP's technical guidance no. 362-2183-003 considers TDS a pollutant of concern when the water treatment plant utilizes ion-exchange softening units mainly because brine is used to chemically remove solids in backwash. Therefore, RLMA's IWTP is not expected to have high TDS levels in both influent and effluent. Past DMRs as well as the application confirmed this information. Particularly, past DMR data 5 years showed average monthly concentrations of 154.81 mg/L (average) and 297 mg/L (maximum) with daily maximum concentrations of 156.32 mg/L (average) and 414 mg/L (maximum). The existing permit contains effluent concentration limits of 500 mg/L (average monthly) and 1000 mg/L (daily maximum).

Additionally, Total Dissolved Solids and its major constituents including Bromide, Chloride, and Sulfate have become statewide pollutants of concern and threats to DEP's mission to prevent violations of water quality standards. The requirement to monitor these pollutants is necessary under the following DEP Central Office directive:

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

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

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

However, the maximum daily TDS discharge reported in the application is 196.0 mg/L, Chloride reported is 21.0 mg/L, Bromide reported is < 0.2 mg/L, and Sulfate reported is 20.0 mg/L. The monitoring for TDS, Chloride, Bromide, and Sulfate are not required per Toxic Management Spreadsheet Analysis Table. Therefore, no monitoring requirements are necessary. Then the TDS monitoring and limit requirements will be removed from the proposed permit.

# 2. Chesapeake Bay TMDL

Since this is a non-significant industrial wastewater facility, it is not necessary to provide total phosphorus (TP) and total nitrogen (TN) cap loads. The DEP's Supplement to Phase II Watershed Implementation Plan (WIP) indicates that monitoring and reporting of TN and TP are necessary for non-significant IW facilities throughout the permit term anytime the facility has the potential to introduce a net TN or TP increase to the load contained within the intake water used in processing. The facility does not use any chemical products prior to filtration that contain nitrogen or phosphorus and no nutrients are expected to be generated from the water treatment process. Accordingly, no TP and TN monitoring is necessary.

# 3. Total Suspended Solids (TSS)

The existing permit TSS limits of 30.0 mg/L average Monthly, 60.0 mg/L daily maximum, & 75.0 mg/L IMAX and report mass average monthly & daily maximum will remain in the proposed permit.

4. Flow Monitoring

Flow monitoring will remain in the permit and is required by 40 CFR § 122.44(i)(1)(ii).

# 5. Anti-Degradation requirements

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

# 6. Outfall 002

Outfall 002 (latitude: 39°56'31.21, long: -76°34'50.74") receives stormwater collected in a stormwater sewer located nearby the new WTP. Outfall 002 also infrequently receives overflows from both flocculation basins and the clear-well. An overflow from the clear-well is "finish water" that has been filtered but is not yet treated by chemicals used in the distribution system (i.e., corrosion inhibitor, ammonia, and fluoride). Since chlorine is expected to be present in the overflow discharge, monitoring for TRC is recommended.

# Toxic Data:

The following input data were used for Toxic Management Spreadsheet (TMS) Analysis:

<ul> <li>Discharge pH</li> </ul>	= 7.42 (Application)
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\* Stream pH = 7.0 (Default)

* Discharge Hardness	= 53.0 mg/l (Application)
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\* Stream Hardness = 100 mg/l (Default)

Node 1:	Outfall 001 on Cabin C	Creek (07848)
	Elevation:	593.00 ft (USGS National Map Viewer)
	Drainage Area:	2.63 mi. <sup>2</sup> (USGS PA StreamStats)
	River Mile Index:	9.20 (PA DEP eMapPA)
	Low Flow Yield:	0.16 cfs/mi. <sup>2</sup>
	Discharge Flow:	0.35 MGD
Node 2:	Cabin Creek (07848)	

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# NPDES Permit No. PA0261581

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TRC EVAL	UATION				
Input appropri	ate values ir	n A3:A9 and D3:D9			
0.42	e Q stream	n (cfs)	0.5	= CV Daily	
0.35	i = Q discha	arge (MGD)	0.5	= CV Hourly	
30	) = no. samp	ples	1	= AFC_Partia	al Mix Factor
0.3	= Chlorine	Demand of Stream	1	= CFC_Partia	I Mix Factor
C	= Chlorine	Demand of Discharge	15	= AFC_Criter	ia Compliance Time (min)
0.5	= BAT/BPJ	J Value	720	= CFC_Criter	ia Compliance Time (min)
0	= % Facto	r of Safety (FOS)		=Decay Coef	ficient (K)
Source	Reference	AFC Calculations		Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc =	0.266	1.3.2.iii	WLA cfc = 0.252
PENTOXSD TRO	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRO	5.1b	LTA_afc=	0.099	5.1d	LTA_cfc = 0.147
Source		Effluer	nt Limit Calcu	lations	
PENTOXSD TRO	€ 5.1f		AML MULT =	1.231	
PENTOXSD TRO	∋ 5.1g	AVG MON L	.IMIT (mg/l) =	0.122	AFC
		INST MAX L	.IMIT (mg/l) =	0.400	
		AFO I N . MAFO V 40	+ 0.000 #		
WLA afc	(.019/e(-k*	AFC_tc)) + [(AFC_Yc*Q	s*.019/Qd*(	e(- <b>k*A</b> FC_tc))	
		AFC_TC"QS"XS/Q0)]"(1-			
	EXF((0.5 LN	MULT of a	2+1) 0.5)		
LTA_alc	wia_aic ETA				
WIA cfc	(.011/e(-k*	CFC tc) + [(CFC Yc*Qs	*.011/Qd*e	(-k*CFC_tc))	
	+ Xd + ((	CFC Yc*Qs*Xs/Qd)]*(1-	FOS/100)	( 0. 0_10, /	
LTAMULT cfc	EXP((0.5*LN	(cvd^2/no_samples+1))-2.3	326*LN(cvd^2	2/no_samples+1	)^0.5)
LTA cfc	wla cfc*LTA	AMULT cfc			,,
AML MULT	EXP(2.326*L	N((cvd^2/no_samples+1)^	0.5)-0.5*LN(c	vd^2/no_sampl	es+1))
AVG MON LIMIT	MIN(BAT_B	PJ,MIN(LTA_afc,LTA_cfc)*	AML_MULT)		
INST MAX LIMIT	1.5*((av_п	non_limit/AML_MULT)/L1	AMULT_af	c)	



Toxics Management Spreadsheet Version 1.2, February 2021

# **Discharge Information**

Instructions	Disch	arge	Stream				
Facility:	Red Lic	n Mun	icipal Author	rity	NPDES Permit No.:	PA0261581	Outfall No.: 001
Evaluation T	ype:	Major	Sewage / Inc	Justrial Waste	Wastewater Descrip	tion: Cabin Creek	

	Discharge Characteristics											
Design Flow		-11 (010)	P	artial Mix Fa	Complete Mix Times (min)							
(MGD)*	Hardness (mg/l)*	AFC	CFC	THH	CRL	Q <sub>7-10</sub>	Qh					
0.35	53	7.42										

					(	) If lef	t blank	0.5 lf le	eft blank	0	lf left blan	k	1 If lef	t blank
	Discharge Pollutant	Units	Ma	x Discharge Conc	Tr Co	ib nc	Stream Conc	Daily CV	Hourly CV	Strea m CV	Fate Coeff	FOS	Criteri a Mod	Chem Transl
	Total Dissolved Solids (PWS)	mg/L		196		$\square$	1							
5	Chloride (PWS)	mg/L		21										
10	Bromide	mg/L	<	0.2										
5	Sulfate (PWS)	mg/L		20		$\left  \cdot \right $								
	Fluoride (PWS)	mg/L	<	0.2		H								
	Total Aluminum	µg/L		3300			1							
	Total Antimony	µg/L	<	1										
	Total Arsenic	µg/L	<	1										
	Total Barium	µg/L		23										
	Total Beryllium	µg/L	٨	1		H								
	Total Boron	µg/L	<	50										
	Total Cadmium	µg/L	<	0.2										
	Total Chromium (III)	µg/L	<	0.4										
	Hexavalent Chromium	µg/L	<	0.25										
	Total Cobalt	µg/L	<	0.2		H								
	Total Copper	µg/L		9		T								
8	Free Cyanide	µg/L												
	Total Cyanide	µg/L	<	4										
5	Dissolved Iron	µg/L		40			-							
	Total Iron	µg/L		180		Ħ								
	Total Lead	µg/L	<	1										
	Total Manganese	µg/L		790										
	Total Mercury	µg/L	<	0.2										
	Total Nickel	µg/L	<	1										
	Total Phenols (Phenolics) (PWS)	µg/L	۸	2		Ħ								
	Total Selenium	µg/L	<	3										
	Total Silver	µg/L	<	0.2										
	Total Thallium	µg/L	<	1		$\square$								
	Total Zinc	µg/L		8										
	Total Molybdenum	µg/L				Ħ								
	Acrolein	µg/L	<											
	Acrylamide	µg/L	<											
	Acrylonitrile	µg/L	<											
	Benzene	µg/L	<											
	Bromoform	µg/L	<			Ħ								

**Discharge Information** 

1	Carbon Tetrachloride	ug/l	<		_	_							_
	Chlorabananaa	- pare	-	H	=	+						H	4
	Chlorobenzene	µg/L		H	+	+					╞╧═	⊢	4
	Chlorodibromomethane	µg/L	<	 H	_	+						$\vdash$	4
	Chloroethane	µg/L	<	H	4	+						╞	4
	2-Chloroethyl Vinyl Ether	µg/L	<			$\rightarrow$							
	Chloroform	µg/L	<	H		+							
	Dichlorobromomethane	µg/L	<	F	7	-					i T		7
	1.1-Dichloroethane	ua/L	<		Ĩ						$\square$		
-	1.2-Dichloroethane	ua/L	<								$\square$		
ä	1 1-Dichloroethylene	ug/	<										
5	1.2 Disklassesses	Pg/C				+	-						-
5	1,2-Dichloropropane	µg/L	<u> </u>	⊢	=	+						⊢	4
	1,3-Dichloropropylene	µg/L	<	 Ц	4	4					4	Ц	4
	1,4-Dioxane	µg/L	<		_	_						Ц	_
	Ethylbenzene	µg/L	<									$\square$	
	Methyl Bromide	µg/L	<	Н		+						$\vdash$	-
	Methyl Chloride	µg/L	<	F		-	-						-
	Methylene Chloride	ua/L	<	Ħ	=	=					f =	Ħ	7
	1 1 2 2-Tetrachloroethane	ug/	<	H	-	Ť					t –		
	Tetrachloroethylene	ug/	2	Ħ	Ŧ	÷					Ħ	H	T
	Teluano	pg/c		Ħ	Ŧ	Ŧ					Ē	Ħ	F
	Toldene	pg/L			1	Ŧ	1						7
	1,2-trans-Dichloroethylene	µg/L	<										
	1,1,1-Trichloroethane	µg/L	<									$\square$	
	1,1,2-Trichloroethane	µg/L	<										
	Trichloroethylene	µg/L	<	Н	_	-						$\square$	_
	Vinyl Chloride	µg/L	<	F	_	-						$\square$	=
	2-Chlorophenol	ua/L	<	Ħ	=	=						Ħ	=
	2 4-Dichlorophenol	ug/	<	Ħ	=	+						Ħ	=
	2.4-Dimethylohanol	ug/	2	Н	+	+					┝	+	+
	4.8 Disite a Crossi	- pg/c		H	+	+					H	÷	=
-	4,0-Dinitro-o-Cresol	pg/L		Ħ	=	Ŧ					i i i	Ħ	7
l è	2,4-Dinitrophenol	µg/L	<		Ì	Ì	<u> </u>				μī		
12	2-Nitrophenol	µg/L	<		Ì	Ì	1						
σ	4-Nitrophenol	µg/L	<										
	p-Chloro-m-Cresol	µg/L	<		_	_						Ц.	_
	Pentachlorophenol	µg/L	<										
	Phenol	ua/L	<	E	_	-							
	2.4.6-Trichlorophenol	ua/L	<	Ħ	=	=						Ħ	=
$\vdash$	Acenaphthene	ug/	<	H	+	+					H	H	
	Acenanhthylene	ug/	<	H	÷	÷					t –	÷	
	Asthereses	Pg/C		Ħ	Ŧ	Ŧ					ĦĦ	Ħ	7
	Anthracene	µg/L	< .	F	Ť	Ť	1				Ē	Ħ	
	Benzidine	µg/L	<	F	Ì	Ť	1				Ē		
	Benzo(a)Anthracene	µg/L	<				1						
	Benzo(a)Pyrene	µg/L	<										
	3,4-Benzofluoranthene	µg/L	<		_	_							_
	Benzo(ghi)Perylene	µg/L	<		_	-							_
	Benzo(k)Fluoranthene	µg/L	<	H	-							-	-
	Bis(2-Chloroethoxy)Methane	µa/L	<	Ħ	=	=					r i i	Ħ	7
	Bis(2-Chloroethyl)Ether	ua/L	<	Ħ	-	Ť					r –	H	
	Bis(2-Chloroisopropul)Ether	unl	~	H	Ť	Ť					iΠ	h	
	Bis(2 Ethylhoxyd)Phthalata	pg/c		Ħ	Ŧ	Ŧ					Ē	Ħ	F
	A Bremenhand Bhand Ether	pg/L					<u> </u>						-
	4-bromophenyi Ener	µg/L	~		_	_	<u> </u>						4
	Butyl Benzyl Phthalate	µg/L	<	$\square$	_	_					$\square$	$\square$	_
	2-Chloronaphthalene	µg/L	<		4	4						$\square$	_
	4-Chlorophenyl Phenyl Ether	µg/L	<	$\square$									
1	Chrysene	µg/L	<	Н									
	Dibenzo(a,h)Anthrancene	µg/L	<	F	-								7
1	1,2-Dichlorobenzene	µg/L	<	F								Ħ	Ħ
1	1.3-Dichlorobenzene	µa/l	<	Π		Ì						$\rightarrow$	T
	1 4-Dichlorobenzene	ug/	e	F								Ħ	Ē
05	3.3-Dichlombanzidine	Have I	-	F	Ì						F	F	Ē
Inc	Disthet Dithetet	Pg/L		F								Ĥ	9
5	Diethyl Phthalate	µg/L	<								μŪ	ļ	
1	Dimethyl Phthalate	µg/L	<								$\square$	$\square$	
1	Di-n-Butyl Phthalate	µg/L	<										
1	2,4-Dinitrotoluene	µg/L	<			_	-						

**Discharge Information** 

1/30/2023

				 _	_	_	 	 	 	 		-
	2,6-Dinitrotoluene	µg/L	<		$\rightarrow$	+						i
	Di-n-Octyl Phthalate	µg/L	<	F	7	Ŧ				F		Î
	1.2-Diphenylhydrazine	µg/L	<	T	Ť	T				T		1
	Fluoranthene	ua/L	<	T	Ť	Ť				 $\square$		Î
	Eluoropo	ug/	-	 Ħ	Ť	Ŧ				 Ħ	FF-	Î
	Herebleebeeree	pg/c	-		_				 			ł
	Hexachiorobenzene	pg/L	~	 4	+	+						1
	Hexachlorobutadiene	pg/L	<	 Ц	4	4						ļ
	Hexachlorocyclopentadiene	µg/L	<		_	_						ļ
	Hexachloroethane	µg/L	<	$\rightarrow$	_	_						ļ
	Indeno(1,2,3-cd)Pyrene	µg/L	<	-	-	-						ł
	Isophorone	µg/L	<	-	-					P		ł
	Naphthalene	ua/L	<	Ħ	7	7				Ħ		1
	Nitrobenzene	ug/l	<	 H	÷	╈				 H		i
	n Nitros odimethylamine	100/	-	H	÷	÷				 H	<u></u>	Ť
	-Nitrosodi - Decedencia	Pgrt		 Ħ	Ŧ	Ŧ				 if	FF-	Î
	n-ivitrosodi-n-Propylamine	pg/L	<	 Ħ	Ť	Ť			 	 F	Ē	1
	n-Nitrosodiphenylamine	µg/L	<	 Ì	1	1				$\square$		Ĵ
	Phenanthrene	µg/L	<									1
	Pyrene	µg/L	<									Į
	1,2,4-Trichlorobenzene	µg/L	<									Į
	Aldrin	µg/L	<		-	+						Į
	alpha-BHC	ug/L	<	Ħ	+	+				Ħ		ł
	heta-BHC	ug/	<	 Ħ	+	÷				 H	==	ł
	Deta-billo	Pare		 +	+	+				 +		+
	gamma-BHC	pg/L	<	 H	+	╪				 H	++	ł
	delta BHC	µg/L	<		+	+				H	ÞÞ	4
	Chlordane	µg/L	<		1	+						ĺ
	4,4-DDT	µg/L	<	T	Ì	Ť				$\square$		Î
	4,4-DDE	µg/L	۷	Tì	Ť	Ť				F		Î
	4,4-DDD	µg/L	<							$\square$		1
	Dieldrin	ua/L	<		T					$\Box$		Ĵ
	alpha Endosulfan	ug/	~									t
	hota Endocultan	pg/c	-	 H	+	+				H	÷	1
	Sedeed Kee Octobe	pg/L		⊢	+	+				 ╞	_	4
₫.	Endosultan Sultate	µg/L	~	 $\vdash$	+	+				 $\vdash$		+
ē	Endrin	µg/L	<	╞╡	4	+					⊨⊨	ļ
σ	Endrin Aldehyde	µg/L	<		$\rightarrow$	+						ł
	Heptachlor	µg/L	<		$\rightarrow$	+						i
	Heptachlor Epoxide	µg/L	۷	H	7	7				P		Î
	PCB-1016	ug/L	<		Ť	Ť				$\square$		1
	PCB-1221	ua/L	<	H	Ť	Ť				 Ē		Î
	PCB-1222	ug/	~	 Ħ	Ť	Ť				F		Î
	DCB 1242	Pg/L	-	 7	+	+				 P	$\square$	1
	POB-1242	pg/L	-		-	+				 $\square$		1
	PCB-1248	pg/L	<	 4	_	+			 			ļ
	PCB-1254	µg/L	<									J
	PCB-1260	µg/L	<	_	_					_		J
	PCBs, Total		-								_	-
	-	µg/L	<	$\rightarrow$	-	+						ļ
	Toxaphene	µg/L µg/L	<	╡								
	Toxaphene 2.3.7.8-TCDD	µg/L µg/L na/L	< < <									
	Toxaphene 2,3,7,8-TCDD Gross Alpha	µg/L µg/L ng/L pCi/L	< < <									
	Toxaphene 2,3,7,8-TCDD Gross Alpha Total Beta	pg/L pg/L ng/L pCi/L	v v v v									
p 7	Toxaphene 2,3,7,8-TCDD Gross Alpha Total Beta Badium 228/228	pg/L pg/L pCi/L pCi/L	V V V V									
7 dnc	Toxaphene 2,3,7,8-TCDD Gross Alpha Total Beta Radium 226/228	pg/L pg/L pCi/L pCi/L pCi/L	v v v v v									
Sroup 7	Toxaphene 2,3,7,8-TCDD Gross Alpha Total Beta Radium 226/228 Total Strontium	μg/L μg/L ng/L pCi/L pCi/L pCi/L μg/L	v v v v v									
Group 7	Toxaphene 2,3,7,8-TCDD Gross Alpha Total Beta Radium 226/228 Total Strontium Total Uranium	μg/L μg/L ng/L pCi/L pCi/L pCi/L μg/L μg/L	v v v v v v									
Group 7	Toxaphene 2,3,7,8-TCDD Gross Alpha Total Beta Radium 226/228 Total Strontium Total Uranium Osmotic Pressure	μg/L μg/L ng/L pCi/L pCi/L pCi/L μg/L μg/L mOs/kg	v v v v v v									
Group 7	Toxaphene 2.3.7.8-TCDD Gross Alpha Total Beta Radium 228/228 Total Strontium Total Uranium Osmotic Pressure	μg/L μg/L ng/L pCi/L pCi/L μg/L μg/L mOs/kg	v v v v v									
Group 7	Toxaphene 2,3,7,8-TCDD Gross Alpha Total Beta Radium 228/228 Total Strontium Total Uranium Osmotic Pressure	μg/L μg/L ng/L pCi/L pCi/L μg/L μg/L mOs/kg										
Group 7	Toxaphene 2,3,7,8-TCDD Gross Alpha Total Beta Radium 228/228 Total Strontium Total Uranium Osmotic Pressure	μg/L μg/L ng/L pCi/L pCi/L pCi/L μg/L μg/L mOs/kg										
Group 7	Toxaphene 2,3,7,8-TCDD Gross Alpha Total Beta Radium 226/228 Total Strontium Total Uranium Osmotic Pressure	μg/L μg/L ng/L pCi/L pCi/L pCi/L μg/L μg/L mOs/kg										
Group 7	Toxaphene 2,3,7,8-TCDD Gross Alpha Total Beta Radium 226/228 Total Strontium Total Uranium Osmotic Pressure	μg/L μg/L pCi/L pCi/L pCi/L μg/L μg/L mOs/kg										
Group 7	Toxaphene 2,3,7,8-TCDD Gross Alpha Total Beta Radium 226/228 Total Strontium Total Uranium Osmotic Pressure	yg/L yg/L ng/L pCi/L pCi/L pCi/L yg/L yg/L mOs/kg										
Group 7	Toxaphene 2,3,7,8-TCDD Gross Alpha Total Beta Radium 226/228 Total Strontium Total Uranium Osmotic Pressure	yg/L yg/L pCi/L pCi/L pCi/L yg/L yg/L mOs/kg										
Group 7	Toxaphene 2.3.7,8-TCDD Gross Alpha Total Beta Radium 226/228 Total Strontium Total Uranium Osmotic Pressure	yg/L yg/L pCi/L pCi/L pCi/L yg/L yg/L mOs/kg										
Group 7	Toxaphene 2.3.7.8-TCDD Gross Alpha Total Beta Radium 228/228 Total Strontium Total Uranium Osmotic Pressure	μg/L μg/L pCi/L pCi/L μg/L μg/L mOs/kg										
Group 7	Toxaphene 2.3,7,8-TCDD Gross Alpha Total Beta Radium 220/228 Total Strontium Total Uranium Osmotic Pressure	μg/L μg/L pCi/L pCi/L pCi/L μg/L μg/L mOs/kg										
Group 7	Toxaphene 2,3,7,8-TCDD Gross Alpha Total Beta Radium 228/228 Total Strontium Total Uranium Osmotic Pressure	μg/L μg/L pCi/L pCi/L μg/L μg/L mOs/kg										

### **Discharge Information**

1/30/2023

Toxics Management Spreadsheet Version 1.2, February 2021



# Stream / Surface Water Information

### Red Lion Municipal Authority, NPDES Permit No. PA0261581, Outfall 001

# Instructions Discharge Stream

Receiving Surface V	Vater Name: Cat	oin Creek				No. Reaches to Mod	el: 1	
Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi <sup>2</sup> )*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*	
Point of Discharge	007848	9.2	593	2.63			Yes	
End of Reach 1	007848	8.12	485	3.33			Yes	

Statewide Criteria
 Great Lakes Criteria
 ORSANCO Criteria

### Q 7-10

Leasting	DMI	LFY	Flow	(cfs)	W/D	Width	Depth	Velocit	Time	Tributary		Stream		Analysis	
Location	PUNI	(cfs/mi <sup>2</sup> )*	Stream	Tributary	Ratio	(ft)	(ft)	y (fps)	(days)	Hardness	pН	Hardness*	pH*	Hardness	pН
Point of Discharge	9.2	0.16										100	7		
End of Reach 1	8.12	0.16			1										

### Qn

Location	DM	LFY	Flow	Flow (cfs) W/D		Width	Depth Velocit		Time	Tributary		Stream		Analysis	
Location	RIVII	(cfs/mi <sup>2</sup> )	Stream	Tributary	Ratio	(ft)	(ft)	y (fps)	(dows)	Hardness	pН	Hardness	pН	Hardness	pН
Point of Discharge	9.2														
End of Reach 1	8.12														

#### Stream / Surface Water Information

1/30/2023

DEPARTMENT OF ENVIRONMENTAL PROTECTION

# NPDES Permit No. PA0261581

Toxics Management Spreadsheet Version 1.2, February 2021

# Model Results

Red Lion Municipal Authority,	NPDES Permit No.	PA0261581, Outfall 001
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Instructions Results	RETURN	RETURN TO INPUTS SAVE AS PE				PRINT	r ) () A	ll ◯ Inputs ◯ Results ◯ Limits				
Hydrodynamics     Wasteload Allocations	Hydrodynamics     Wasteload Allocations											
AFC         CCT (min):         0.559         PMF:         1         Analysis Hardness (mg/l):         73.553         Analysis pH:         7.19												
Pollutants	Conc	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	1,333					
Total Antimony	0	0		0	1,100	1,100	1,955					
Total Arsenic	0	0		0	340	340	604	Chem Translator of 1 applied				
Total Barium	0	0		0	21,000	21,000	37,321					
Total Boron	0	0		0	8,100	8,100	14,395					
Total Cadmium	0	0		0	1.494	1.56	2.77	Chem Translator of 0.957 applied				
Total Chromium (III)	0	0		0	443.040	1,402	2,492	Chem Translator of 0.316 applied				
Hexavalent Chromium	0	0		0	16	16.3	29.0	Chem Translator of 0.982 applied				
Total Cobalt	0	0		0	95	95.0	169					
Total Copper	0	0		0	10.062	10.5	18.6	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	46.153	55.2	98.1	Chem Translator of 0.836 applied				
Total Manganese	0	0		0	N/A	N/A	N/A					
Total Mercury	0	0		0	1.400	1.65	2.93	Chem Translator of 0.85 applied				
Total Nickel	0	0		0	361.086	362	643	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	1.897	2.23	3.97	Chem Translator of 0.85 applied				
Total Thallium	0	0		0	65	65.0	116					
Total Zinc	0	0		0	90.329	92.4	164	Chem Translator of 0.978 applied				
	-											

Model Results

1/30/2023

# NPDES Permit No. PA0261581

☑ CFC cc <sup>2</sup>	T (min): 0.9	559	PMF:	1	Ana	alysis Hardne	ess (mg/l):	73.553 Analysis pH: 7.19
Pollutants	Conc	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	391	
Total Arsenic	0	0		0	150	150	267	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	7,286	
Total Boron	0	0		0	1,600	1,600	2,843	
Total Cadmium	0	0		0	0.199	0.22	0.38	Chem Translator of 0.922 applied
Total Chromium (III)	0	0		0	57.630	67.0	119	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	18.5	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	33.8	
Total Copper	0	0		0	6.888	7.18	12.8	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	2,666	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	1.799	2.15	3.82	Chem Translator of 0.836 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	1.61	Chem Translator of 0.85 applied
Total Nickel	0	0		0	40.106	40.2	71.5	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	8.87	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	23.1	
Total Zinc	0	0		0	91.068	92.4	164	Chem Translator of 0.986 applied
<i>⊡ тнн</i> сс	T (min): 0.4	559	PMF:	1	Ana	alysis Hardne	ess (mg/l):	N/A Analysis pH: N/A
Pollutants	Conc	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	9.95	
Total Arsenic	0	0		0	10	10.0	17.8	
Total Barium	0	0		0	2,400	2,400	4,265	
Total Boron	0	0		0	3,100	3,100	5,509	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	

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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	533	
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	1,777	
Total Mercury	0	0		0	0.050	0.05	0.089	
Total Nickel	0	0		0	610	610	1,084	
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	0.43	
Total Zinc	0	0		0	N/A	N/A	N/A	
CRL CC	T (min): 0.1	851	PMF:	1	[ Ana	alysis Hardne	ess (mg/l):	N/A Analysis pH: N/A
Pollutants	Conc (ug/L)	CV	(µg/L)	Fate Coef	(µg/L)	(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	

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# NPDES Permit Fact Sheet Red Lion Cabin Creek Water System

### ☑ Recommended WQBELs & Monitoring Requirements

No. Samples/Month: 4

	Mass	Limits	Concentration Limits			]			
Pollutants	AML MDL (lbs/day) (lbs/day)		AML	MDL IMAX		Units	Governing WQBEL	WQBEL Basis	Comments
Total Aluminum	2.49	3.89	854	1,333	2,136	µg/L	854	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Copper	0.035 0.054		11.9	18.6	18.6 29.8		11.9	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Manganese	Report Report Re		Report	Report	Report	µg/L	1,777	THH	Discharge Conc > 10% 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	Discharge Conc < TQL
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	4,265	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	2,843	µg/L	Discharge Conc < TQL
Total Cadmium	0.38	µg/L	Discharge Conc < TQL
Total Chromium (III)	119	µg/L	Discharge Conc < TQL
Hexavalent Chromium	18.5	µg/L	Discharge Conc < TQL
Total Cobalt	33.8	µg/L	Discharge Conc < TQL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	533	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	2,666	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	3.82	µg/L	Discharge Conc < TQL
Total Mercury	0.089	µg/L	Discharge Conc < TQL
Total Nickel	71.5	µg/L	Discharge Conc < TQL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	8.87	µg/L	Discharge Conc < TQL

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Total Silver	2.54	µg/L	Discharge Conc < TQL
Total Thallium	0.43	µg/L	Discharge Conc < TQL
Total Zinc	105	µg/L	Discharge Conc ≤ 10% WQBEL

# **Existing Effluent Limitations and Monitoring Requirements**

# Outfall 001

			Effluent L	imitations			Monitoring Requirements		
Baramotor	Mass Units	(lbs/day) <sup>(1)</sup>		Concentrat	ions (mg/L)		Minimum <sup>(2)</sup>	Required	
Falameter	Average	Daily		Average	Daily	Instant.	Measurement	Sample	
	Monthly	Maximum	Minimum	Monthly	Maximum	Maximum	Frequency	Туре	
Flow (MGD)	Report	Report	xxx	XXX	xxx	xxx	Continuous	Measured	
pH (S.U.)	XXX	xxx	6.0	XXX	xxx	9.0	1/day	Grab	
Total Residual Chlorine	XXX	XXX	XXX	0.28	xxx	0.75	1/day	Grab	
								24-Hr	
Total Suspended Solids	Report	Report	XXX	30	60	75	1/week	Composite	
	a <b>-</b> (		2007			- 1-		24-Hr	
Total Aluminum	2.51	3.91	XXX	0.86	1.34	2.15	1/week	Composite	
Total Iron	F 00	0.75	VVV	2.0	2.0	5.0	1/10001	24-Hr	
Total Iron	5.83	8.75	~~~	2.0	3.0	5.0	1/week	Composite	
Total Manganese	2.91	4.37	XXX	1.0	1.5	2.5	1/week	24-Hr Composite	
								24-Hr	
Total Copper	0.04	0.07	XXX	0.016	0.025	0.04	2/month	Composite	
								24-Hr	
Total Zinc	0.37	0.58	XXX	0.13	0.20	0.32	2/month	Composite	
								24-Hr	
Total Dissolved Solids	Report	Report	XXX	500	1,000	1250	2/month	Composite	

# Outfall 002

			Monitoring Requirements					
Baramatar	Mass Units	(lbs/day) <sup>(1)</sup>		Concentrat	Minimum <sup>(2)</sup>	Required		
Farameter	Average Daily			Average	Instant.	Measurement	Sample	
	Monthly	Maximum	Minimum	Monthly	Maximum	Maximum	Frequency	Туре
							When	
Total Residual Chlorine	XXX	XXX	XXX	XXX	XXX	Report	Discharging	Grab

# Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

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

			Monitoring Requirements					
Baramotor	Mass Units	(lbs/day) <sup>(1)</sup>		Concentrat	Minimum <sup>(2)</sup>	Required		
Farameter	Average Monthly	Average Daily Monthly Maximum		Average Monthly	Daily Maximum	Instant. Maximum	Measurement Frequency	Sample Type
Flow (MGD)	Report	Report	xxx	xxx	XXX	xxx	Continuous	Measured
рН (S.U.)	XXX	xxx	6.0	xxx	XXX	9.0	1/day	Grab
TRC	ххх	XXX	XXX	0.12	XXX	0.40	1/day	Grab
TSS	Report	Report	xxx	30.0	60.0	75.0	1/week	24-Hr Composite
Total Aluminum	2.49	3.89	XXX	0.85	1.33	2.14	1/week	24-Hr Composite
Total Copper	0.035	0.054	XXX	0.012	0.019	0.03	1/month	24-Hr Composite
								24-Hr
Total Manganese	Report	Report	XXX	Report	Report	XXX	1/week	Composite

Compliance Sampling Location:

Other Comments:

# Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (Ibs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup>	Required
	Average	Average		Average		Instant.	Measurement	Sample
	Monthly	Weekly	Minimum	Monthly	Maximum	Maximum	Frequency	Туре
							Daily when	
TRC	XXX	XXX	XXX	XXX	XXX	Report	Discharging	Grab

Compliance Sampling Location:

Other Comments:

# Tools and References Used to Develop Permit

	WQM for Windows Model (see Attachment )
$\boxtimes$	Toxics Management Spreadsheet (see Attachment
$\square$	TRC Model Spreadsheet (see Attachment)
	Temperature Model Spreadsheet (see Attachment
$\boxtimes$	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
	Pennsylvania CSO Policy, 385-2000-011, 9/08.
$\square$	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
	Design Stream Flows, 391-2000-023, 9/98.
	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
$\square$	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
$\square$	SOP No. BCW-PMT-032
	Other: