SUMMARY REPORT & FACT SHEET (SRFS)

Permit Application Numbers: **State:** 22-DP-0581 **NPDES:** MD0021555

Name of Facility: Back River Wastewater Treatment Plant

Mailing Address: 8201 Eastern Boulevard, Baltimore, Maryland 21224

Facility's Location: 8201 Eastern Boulevard, Baltimore, Maryland 21224

Facility Organization: City of Baltimore, Department of Public Works

Contact Person	***Applicant***	***Facility***
Name:	Khalil Zaied	Chris Aiken
Title:	Director of Public Works	Plant Manager
Phone:	410-396-3100	410-396-9814
Email Address:	khalil.zaied2@baltimorecity.gov	chris.aiken@baltimorecity.gov

Applicant engaged in: The Treatment of Municipal Wastewater

Number of outfalls: 001A: Effluent to Back River
002A: Effluent to Bear Creek thru High Head Reservoir at the TPA Property

SIC Code: 4952

MDE Engineer: Mahendra Chawla /uhi uhi

Completion Date: 04/18/2024 (Original)
03/25/2025 (Rev. 2) uhi 10/28/2024 (Rev. 1) uhi
rdc rdc 10/28/2024

Accepted by: _____ 4/18/2024
Yen-Der Cheng, Chief — Date
Municipal Surface Discharge Permits Division

Is EPA joint review required? Yes ☒, Date sent: 04/19/2024, 11/08/2024, 03/25/2025 , NO ☐

State/EPA comment/agreement received: Yes ☒ Date received: 05/19/2024 , N/A ☐

New or Updates to the Discharge Permit

Is the permit application for a new discharge permit? ☐ Yes, ☒ No

If No, are there any new or Update(s) to Discharge Permit Requirement(s) proposed in this permit Renewal? ☒ Yes, ☐ No ☐ N/A

No.	Effluent Limitation, Monitoring or Other Requirement	Description	References	
			SRFS	Permit
New Requirements				
1.	Definition	Added definition for "Performance-Based Benchmark Load"	N/A	Definitions I.P, Page 4
		Added definition for "Performance-Based Credit Load"	N/A	Definitions I.Q, Page 5
		Added definition for "Secondary Treatment"	N/A	Definitions I.V, Page 5
2.	Effluent Limitation	Addition of limits for the BOD_5 and TSS 85% percent removal	Section III, Pages 37 and 38, 45 and 46	Special Condition II.A.1, Page 7 Special Condition II.A.2, Page 9
3.	Monitoring/Reporting	Addition of a new monitoring point 102A to sample flow and effluent parameters	Section III, Pages 50 - 51	Special Condition II.A.3, Page 11 Special Condition II.B.1.c, Page 17
		Added monitoring requirements for 85% BOD_5 and TSS removal at a once per quarter frequency	Section III, Pages 37 and 38, 45 and 46	Special Condition II.B.1.a, Page 14 Special Condition II.B.1.b, Page 16

New or Updates to the Discharge Permit

No.	Effluent Limitation, Monitoring or Other Requirement	Description	References	
			SRFS	Permit
3.	Monitoring/Reporting (*cont'd*)	Added monitoring requirements for BOD_5 and TSS in raw influent wastewater (MP101A) at a once per quarter frequency	Section III, Page 51 and 52	Special Condition II.B.1.d, Page 18
		Added additional quarterly monitoring requirements for a minimum of four consecutive quarters for the first year of permit cycle for the following parameters: (i) Total Cyanide, (ii)1,2-Diphenylhydrazine, (iii) Benzidine, (iv) Hexachlorobenzene, (v) Benzo(a)Anthracene (1,2-Benzanthracene), (vi) Benzo(k)Fluoranthene (11,12-benzofluoranthene), (vii) 3,3' Dichlorobenzidine , (viii) 3,4-Benzofluoranthene, (ix) Chrysene, (x) Dibenzo(a,h)Anthracene (1,2,5,6-Dibenzanthracene), (xi) 4-4' DDD, (xii) 4-4' DDE, (xiii) 4-4' DDT, (xiv) Butylbenzyl Phthalate, (xv) Chlordane, (xvi) Indeno(1,2,3-cd)Pyrene (2,3-o-pheynylene pyrene), (xvii) Dieldrin, (xviii) Heptachlor, (xix) Heptachlor Epoxide, (xx) Toxaphene, (xxi) Aldrin, (xxii) Endrin, (xxiii) Copper, and (xxiv) Cyanide Free	Section III, Page 41 - 44	Special Condition II.B.1.a, Page 15
4.	Other	Added requirement and footnotes for Nutrient and Sediment Performance - based Credit Reporting Schedule at MP102A	Section III, Page 52	Special Condition II.B.1.e, Page 19

New or Updates to the Discharge Permit

No.	Effluent Limitation, Monitoring or Other Requirement	Description	References	
			SRFS	Permit
4.	Other (*cont'd*)	Added requirement for Whole Effluent Toxicity (WET) Limit	Section II, Page 26 and 27	Special Condition II.F, Pages 29 and 30
		Added requirement for Climate Change Resiliency	Section II, Page 32	Special Condition II.M, Page 33
		Added requirement for Maintenance of Laboratory Certification Records	Section II, Page 32	Special Condition II.N, Page 34
		Added requirement for Per- and Polyfluorinated Alkyl Substances (PFAS) Testing and Analysis	Section II, Page 34	Special Condition II.O, Pages 34 - 35
		Added requirements of Compliance Schedule for Effluent Limits of Total Ammonia as N	Section II, Page 32 and 33	Special Condition II.P, Page 36
		Added requirements for Polychlorinated Bi Phenyls (PCBs) Monitoring, Reporting and Minimization	Section II, Page 35	Special Condition II.Q, Pages 36 - 39
		Added requirements for Operations and Maintenance (O&M) Guidance Checklist submission	Section II, Page 35	Special Condition II.R, Page 39
		Added requirements for Wastewater Treatment Plant Operator Licensing and Certification	Section II, Page 35	Special Condition II.S, Page 39
		Added requirements for Effluent Bacterial Action Level	Section II, Page 36	Special Condition II.T, Pages 40 and 41
		Added requirement for "Use of Sufficiently Sensitive Test Methods"	N/A	General Condition III.A.4, Page 43

New or Updates to the Discharge Permit

No.	Effluent Limitation, Monitoring or Other Requirement	Description	References	
			SRFS	Permit
Updated Requirements				
1.	Effluent Limitation	Interim and Final effluent limits for Total Ammonia as N	Section III, Page 38 and 46	Special Condition II.A.1, Page 7 Special Condition II.A.2, Page 9
		Updated the Annual Max. Loading Rate for Total Nitrogen as N per the revised Baltimore Harbor TMDL	Section III, Page 47	Special Condition II.A.2, Page 10
		Updated the Seasonal Max. Loading Rate for Total Phosphorus as P per the revised Baltimore Harbor TMDL	Section III, Page 48	Special Condition II.A.2, Page 10
		Enterococci will replace E. coli as the new bacterial requirement 12 months after the permit effective date	Section III, Page 40 and 48	Special Condition II.A.1, Page 8 Special Condition II.A.2, Page 10
2.	Monitoring/Reporting	TCT monitoring frequency changed to three annual tests performed concurrently with the first quarter of Whole Effluent Toxicity (WET) testing.	Section II, Page 27 - 29	Special Condition II.G, Pages 30 and 31
3.	Other	Wastewater Capacity Management	Section II, Page 29 and 30	Special Condition II.C, Pages 24 and 25
		"Adverse Impact" and "Bypassing"	N/A	General Condition III.B.4 and III.B.5, Page 46 and 47
		Wastewater Collection System	N/A	General Condition III.C, Pages 51 - 53

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I. Description of Facility, Outfall and Receiving Stream

Description of Facility & Outfall(s)

Details for Facility		
☒ POTW	☒ EPA Major	☒ Chesapeake Bay Significant
☐ Privately Owned Facility	☐ EPA Minor	

Brief Service Area Description:

The facility serves a population of approximately 505,000 in the City of Baltimore and approximately 471,000 in Baltimore County for a service population of 976,000.

The proposed discharge flow of 180.00 Million Gallons per Day (MGD) is consistent with the capacity listed in the latest 2006 Baltimore City's Comprehensive/Master Water and Sewer Plan, approved by MDE's Water Resources Planning Program. It is also in conformance with the State's Smart Growth initiatives.

Current Design Capacity of the Facility: 180.00 MGD

Which of the following documents were used as the base of the design capacity? (Check boxes as appropriate.)

☐ Construction Permit (Issued by MDE), ☒ Most updated W/S Plan (2006)
☒ Permit Application ☐ Other (Specify)

Additional comments on the plant capacity: {Examples: future expansion, significant I/I affecting plant capacity, etc.}.

Type of Discharge:

☒ Surface Discharge, Discharge Period: 12 months (January – December)
☐ Groundwater Discharge, Discharge Period: Not Applicable

Additional comments on the discharge type: Continuous Discharge.

Wastewater Treatment Processes:

The Back River Wastewater Treatment Plant uses upgraded Headworks and new Enhanced Nutrient Removal system to treat the wastewater. The WWTP uses new six (6) fine screens, new eight (8) grit removal units with aerated grit channels, 11 primary settling tanks, three (3) activated sludge plant trains, new 52 denitrification filters, 28 final clarifiers, 48 sand filtration tanks and disinfection to treat the wastewater. Sludge is thickened by two (2) air floatation thickeners, five (5) gravity belt thickeners and six (6) gravity sludge thickeners and digested by two (2) Egg shaped digesters and six (6) high-rate digesters. Centrate from the centrifuge and heat drying facility is sent to the primary settling tanks. Sludge from the storage is sent to the composting facility and is also used for land application.

I. Description of Facility, Outfall and Receiving Stream

Details for Outfall 001A				
Outfall Type	***Non-submerged discharge***: ☐ Yes ☒ No ☐ Pipe ☐ Ditch ☐ N/A Outfall Distance from the last sampling point: _____			
	***Submerged Discharge*:** ☒ Yes ☐ No ☐ N/A Distance from the last sampling point: ~ 100 ft. Diameter of the Outfall Pipe: 16.66 ft. Distance from Shore: 1,158 ft. Depth: 0.71 ft. below surface No. of Diffuser(s): N/A			
Outfall Location	**GPS Readings**		**Maryland Coordinates (NAD27), feet**	
	Latitude 39° 17’ 58.8” (N)	Longitude 76° 29’ 39.9” (W)	North 534,413	East 943,081
Details for Outfall 002A				
Outfall Type	***Non-submerged discharge***: ☒ Yes ☐ No ☒ Pipe ☐ Ditch ☐ N/A Outfall Distance from the last sampling point: 49,810 ft. (9.4 miles)			
	***Submerged Discharge*:** ☐ Yes ☒ No ☐ N/A			
Outfall Location (*at Bear Creek)*	**GPS Readings**		**Maryland Coordinates (NAD27), feet**	
	Latitude 39° 12’ 00.0” (N)	Longitude 76° 30’ 00.0” (W)	North 508,134	East 944,163
Outfall Location (*Diversion Chamber at Back River WWTP*)	Latitude 39° 17’ 33.1” (N)	Longitude 76° 29’ 02.5” (W)	North 531,830	East 946,036
Details for Monitoring Point (MP) 102A				
New internal monitoring point at Back River WWTP located in the diversion chamber prior to splitting of flow between Outfall 001A and Outfall 002A for the monitoring of cumulative effluent flow at the plant.				
MP 102A Location *(Diversion Chamber, prior to flow split)*	**GPS Readings**		**Maryland Coordinates (NAD27), feet**	
	Latitude 39° 17’ 33.1” (N)	Longitude 76° 29’ 02.5” (W)	North 531,830	East 946,036

I. Description of Facility, Outfall and Receiving Stream

Details for Effluent Receiving Stream		
Name of Stream	Outfall 001A discharges to Back River and Outfall 002A discharges to Bear Creek. Both waterbodies flow into the Chesapeake Bay.	
Type of Stream	Perennial	
Stream Use Designation	Back River and Bear Creek are both designated as Use II (non-shellfish harvesting) waters which are protected for estuarine and marine aquatic life. Middle Chesapeake Bay is designated as Use II Waters.	
River Mile	6.3 Miles from the outfall 001A to the confluence of the Back River with the Chesapeake Bay	
Watershed	**Outfall 001A** • 8-Digit Sub-watershed Code: 02-13-09-01 (Back River Watershed) • CBPSEG Code: BACOH – Back River Oligohaline • Back River drains into Middle Chesapeake Bay Segment 02-13-99-97	**Outfall 002A** • 8-Digit Sub-watershed Code: 02-13-09-03 (Baltimore Harbor Estuary) • CBPSEG Code: PATMH – Patapsco River Mesohaline • Baltimore Harbor drains into Middle Chesapeake Bay Segment 02-13-99-97
Tier II Waters	Receiving stream(s) designated as Tier II water ☐ Yes ☒ No Tier II rules applicable to discharge ☐ Yes ☐ No ☒ N/A	
Does the facility discharge into impaired waters included on (303(d) list)?	☒ Yes ☐ No **Outfall 001A**: As per the Maryland's approved combined 2020-2022 Integrated Report of Surface Water Quality (formerly known as the 303(d) List and 305(b) Report), the streams in the Back River sub-watershed are listed as impaired water bodies due to PCBs in both, sediment (1998) and fish tissue (2008), sediments (1996), chlordane (1996), nitrogen and phosphorus (1996), chlorides (2012), and sulfates (2012). **Outfall 002A**: As per the Maryland's approved combined 2020-2022 Integrated Report of Surface Water Quality (formerly known as the 303(d) List and 305(b) Report), the streams in the Patapsco River sub-watershed are listed as impaired water bodies due to Trash (2008), PCBs in both, sediment and fish tissue (1998), sediments (1996), Enterococcus (1998), chlordane (1996), total nitrogen, total phosphorus and total suspended solids (1996), chlorides (2014), sulfates (2014) and impact to biological communities (2004).	

I. Description of Facility, Outfall and Receiving Stream

<table>
<tr><th colspan="5">Details for Effluent Receiving Stream</th></tr>
<tr><td rowspan="2">Approved Total Maximum Daily Load (TMDL) / Water Quality Analysis (WQA) for concerned parameter(s)</td><td colspan="4">Any approved TMDL(s) / WQA(s) for the 02-13-09-01 and 02-13-09-03 Watersheds? ☒ Yes ☐ No

EPA approved the following TMDLs for the 02-13-09-01 watershed:
1. Nutrients TMDLs for Back River: Approved on June 29, 2005
2. PCBs TMDL for Back River: Approved on October 1, 2012
3. Chlordane TMDL for Back River: Approved on December 17, 1999
4. Zinc WQA for Back River: Approved on December 23, 2004
5. E. coli TMDL for Herring Run: Approved on December 4, 2007

EPA approved the following TMDLs for the 02-13-09-03 watershed:
1. Nutrients TMDLs for Baltimore Harbor: Approved on December 17, 2007, with a latest revision date of December 22, 2022
2. PCBs TMDL for Baltimore Harbor: Approved on October 1, 2012
3. Chlordane TMDL for Baltimore Harbor: Approved on May 20, 2001</td></tr>
<tr><td colspan="4">Is the Back River a part of the Chesapeake Bay TMDL (as accepted by EPA on 12/29/2010)? ☒ Yes ☐ No

Chesapeake Bay TMDL for Total Nitrogen, Total Phosphorus and Total Suspended Solids was accepted by USEPA Region III on December 29, 2010.</td></tr>
<tr><td rowspan="5">Background Stream Flows (See PROJECT FILE for details):</td><td>Period</td><td>7Q10 Low-flow, cfs</td><td>30Q5 Low-flow, cfs</td><td>Average Flow, cfs</td></tr>
<tr><td>5/1 to 10/31</td><td>2.5</td><td>3.8</td><td>N/A</td></tr>
<tr><td>11/1 To 4/30</td><td>2.5</td><td>3.8</td><td>N/A</td></tr>
<tr><td>Annual</td><td>2.5</td><td>3.8</td><td>N/A</td></tr>
<tr><td colspan="4">Annual average flow applies to free-flowing streams.</td></tr>
</table>

I. Description of Facility, Outfall and Receiving Stream

Summary of Effluent Quality and Compliance History during Previous Discharge Permit (15-DP-0581) Cycle

- Duration of Plant Performance History Reviewed: 1/1/2019 - 12/31/2023
- Source(s) of Plant Performance History: USEPA ICIS Database and NetDMRs

Summary of Effluent Quality at Outfall 001A			
Parameter	**Statistical Basis**	**Concentration**	**Quantity**
BOD_5	mth. avg. wk. avg.	5.55 (0.00025 – 56) mg/L 10.73 (2.0 – 233) mg/L	5,521 (556-54,761) lbs./d. 11,377.8 (820 – 229,865) lbs./d.
Total Suspended Solids (TSS)	mth. avg. wk. avg. Total Annual	7.47 (1.0 – 43) mg/L 11.2 (1.0 – 89) mg/L N/A	6,221.9 (0.0 – 54,768) lbs./d. 11,546.9 (0.0 – 118,355) lbs./d. 1,547,099 (0.0 – 7,214,961) lbs./yr.
Total Ammonia Nitrogen as N (5/1 to 10/31) (11/1 to 4/30)	 mth. avg. d. max mth. avg d. max	 0.55 (0.1 – 3.8) mg/L 2.91 (0.5 – 11) mg/L 0.9 (0.1 - 4.5) mg/L 4.1 (0.3 – 30) mg/L	 510.5 (98 – 3,538) lbs./d. 2,932 (522 – 8,224) lbs./d. 932 (90 – 4,606) lbs./d. 5,082.7 (278 – 39,422) lbs./d
Organic Nitrogen as N	mth. avg.	1.59 (0.7 – 4.7) mg/L	1477.4 (512.6 – 5,699.4) lbs./d
(Nitrite + Nitrate) as N	mth. avg.	1.6 (0.3 – 3.9) mg/L	1,485.2 (219.7 – 4,729.3) lbs./d
Total Nitrogen as N	mth. avg. Total Annual	3.86 (1.5 – 10.6) mg/L N/A	N/A 805,030.6 (64,852 – 2,030,364) lbs./yr.
Total Phosphorus as P (All Year) (5/1 to 10/31)	mth. avg. wk. avg. Total Annual Total Annual	0.24 (0.09 – 1.45) mg/L 0.38 (0.09 – 2.97) mg/L N/A N/A	222.3 (0.0 – 1,293) lbs./d. 395.3 (0.0 – 2,705) lbs./d. 54,812 (214 – 159,884) lbs./yr. 6,648.4 (0.0 – 40,074) lbs./mth.
Orthophosphate as P	mth. avg.	0.05 (0.01 – 0.23) mg/L	N/A
E. coli	mth. geometric mean	20.6 (1.0 – 152) MPN/100ml	N/A
Total Residual Chlorine (TRC)	max.	0.1 (0.1 – 0.1) mg/L	N/A
pH	min. max.	6.9 (6.3 – 7.3) SU 7.8 (7.3 – 8.4) SU	N/A
Dissolved Oxygen (DO) (Year Round) (2/1 – 5/1)	 min. at any time min. at any time	 8.16 mg/L (5.2 – 10.0) 9.57 mg/L (8.5 – 10.8)	 N/A N/A
Flow	mth. avg d. max.	N/A N/A	111.2 (87.8 – 145.4) MGD 164.960 (96.3 – 253) MGD
Total Flow	mth. annual	N/A N/A	3,381.9 (2,642.8 – 4,508) MG/mth 40,587.72 (37,489 – 43,276.5) MG/yr.

I. Description of Facility, Outfall and Receiving Stream

Summary of Effluent Quality at Outfall 002A			
Parameter	**Statistical Basis**	**Concentration**	**Quantity**
BOD_5	mth. avg. wk. avg.	4.0 (2.0 – 20.0) mg/L 6.04 (2.0 – 34.0) mg/L	589.8 (19 – 3,104) lbs./d. 1,049.7 (63 – 5,358) lbs./d.
Total Suspended Solids (TSS)	mth. avg. wk. avg. Total Annual	7.18 (1.0 – 36) mg/L 10.0 (1.0 – 64) mg/L N/A	839.56 (0.0 – 5,792) lbs./d. 1,423.31 (0.0 – 10,378) lbs./d. 186,288.88 (0.0 – 976,138) lbs./yr.
Total Ammonia Nitrogen as N (5/1 to 10/31) (11/1 to 4/30)	 mth. avg. d. max mth. avg d. max	 0.57 (0.1 – 4.3) mg/L 2.52 (0.32 – 9.77) mg/L 0.86 (0.1 – 4.6) mg/L 2.97 (0.66 – 10.2) mg/L	 111.0 (17 – 821) lbs./d. 499.7 (90 – 1,872) lbs./d. 150.72 (18 – 695) lbs./d. 568.13 (106 – 1,657) lbs./d
Organic Nitrogen as N	mth. avg.	1.57 (0.7 – 5.5) mg/L	312.3 (33.7 – 846.4) lbs./d
(Nitrite + Nitrate) as N	mth. avg.	1.52 (0.4 – 4.2) mg/L	302.4 (55.3 – 732) lbs./d
Total Nitrogen as N	(Summer) mth. avg. Total Annual	3.32 (1.6 – 6.9) mg/L N/A	20,273.92 (7,134 – 39,218) lbs./mth. 157,647.74 (3,290 – 354,708) lbs./yr.
Total Phosphorus as P (All Year) (5/1 to 10/31)	mth. avg. wk. avg. Total Annual Total Annual	0.23 (0.07 – 1.57) mg/L 0.38 (0.09 – 2.56) mg/L N/A N/A	39.68 (0.0 – 242) lbs./d. 67.2 (0.0 – 373) lbs./d. 8,763 (0.0 – 27,824) lbs./yr. 3,554 (180 – 12,845) lbs./yr.
Orthophosphate as P	mth. avg.	0.07 (0.01 – 0.3) mg/L	11.56 (0.0 – 61) lbs./d.
E. coli	mth. geometric mean	24.13 (1.0 - 341) MPN/100ml	N/A
pH	min. max.	6.9 (6.4 – 7.7) SU 7.8 (7.4 – 8.5) SU	N/A
Dissolved Oxygen (DO) (Year Round) (2/1 – 5/1)	 min. at any time min. at any time	 8.19 mg/L (5.5 – 10.0) 9.68 mg/L (8.5 – 10.9)	 N/A N/A
Flow	mth. avg d. max.	N/A N/A	24.45 mg/L (12.8 – 37.3) MGD 26.43 mg/L (18.7 – 38.3) MGD
Total Flow	mth. annual	N/A N/A	720.9 (51.3 – 1,154.8) MG/mth. 8,170 (5,334.5 – 12,509.6) MG/yr.

Are there any Non Compliance (NC) violations on record? ☒ Yes ☐ No

Are those NC pertinent to the Numeric Effluent Limitations? ☒ Yes ☐ No

I. Description of Facility, Outfall and Receiving Stream

Numeric Effluent Limitations Violations at Outfall 001A:	
Parameter	**Violations Reported in Month/Year**
Flow, in conduit	09/2018, 11/2018, 12/2018, 02/2019, 03/2019, 11/2020, 12/2020, 02/2021, 03/2021
BOD_5	06/2019, 12/2019, 02/2021, 03/2021, 04/2021, 06/2021, 02/2022, 03/2022, 04/2022
Total Suspended Solids	12/2020, 01/2021, 02/2021, 03/2021, 04/2021, 05/2021, 06/2021, 07/2021, 12/2021, 01/2022, 02/2022, 03/2022
Ammonia-N	05/2021, 06/2021
Total Nitrogen	05/2018, 07/2018, 09/2018, 10/2019, 08/2020, 09/2020, 10/2020, 05/2021, 06/2021, 07/2021, 08/2021, 09/2021, 10/2021, 12/2021, 05/2022
Total Phosphorus	03/2019, 04/2019, 12/2020, 01/2021, 02/2021, 03/2021, 04/2021, 05/2021, 06/2021, 07/2021, 09/2021, 12/2021, 01/2022, 02/2022, 03/2022, 04/2022, 05/2022, 12/2022
E. coli	09/2018, 04/2021
pH	04/2022
Chronic Toxicity	03/2021

Numeric Effluent Limitations Violations at Outfall 002A:	
Parameter	**Violations Reported in Month/Year**
Total Suspended Solids	02/2021, 03/2021, 06/2021, 07/2021, 02/2022
Ammonia-N	05/2021, 06/2021
Total Phosphorus	07/2018, 04/2019, 07/2019, 08/2019, 12/2020, 01/2021 – 10/2021, 12/2021, 01/2022 – 05/2022, 04/2023
E. coli	03/2019, 04/2021, 10/2021

I. Description of Facility, Outfall and Receiving Stream

Are there any Non-Compliance (NC) Action or Order Pending? ☒ Yes ☐ No

If YES, include narrative of details provided by Compliance Program.

Consent Decree 24-C-22-000386

The Maryland Department of the Environment (MDE) and Blue Water Baltimore, Inc. filed a lawsuit in the Circuit Court for Baltimore City seeking injunctive relief and penalties against Mayor and City Council of Baltimore, alleging violations of the Clean Water Act (CWA), Federal Water Pollution Control Act 33 U.S.C. § 1251 et seq., the Environment Article of the Annotated Code of Maryland, and the existing permit for National Pollution Discharge Elimination System (NPDES) Permit No. MD0021555 (15-DP-0581A), at Back River Wastewater Treatment Plant (WWTP).

Back River WWTP experienced a decline in proper operations and maintenance actions at the facility, during its current permit cycle, leading to numerous violations of multiple General and Special Conditions of its discharge permit 15-DP-0581A. These violations include effluent limit exceedances, failure to submit sampling results and DMR non-compliance reports, failure to comply with sampling & testing protocols and equipment maintenance schedules, and failure to submit required reports.

The Consent Decree mandates the City to take corrective actions within applicable deadlines and publish quarterly progress reports.

MDE's Compliance Program, in a letter dated November 16, 2023, informed the City of Baltimore DPW to pay a stipulated penalty of $1,425,000 per the terms of the Consent Decree.

SSO Modified Consent Decree JFM-02-1524

The United States Environmental Protection Agency (USEPA), the Maryland Department of the Environment (MDE), and the City of Baltimore ("Baltimore City", "the City"), entered into a Consent Decree (CD) on September 30, 2002, that required the City to eliminate Sanitary Sewer Overflows (SSOs) and Dry Weather Overflows through repairs, improvements, and upgrades, from its collection system by January 1, 2016.

However, due to the identification of a hydraulic restriction within the City's collection system impacting flow to Back River WWTP and the scope of the work to be completed, the City entered into a Modified Consent Decree (MCD) on October 6, 2017, to supersede the 2002 CD.

Under the MCD, the City will complete corrective actions through a two-phase approach (Phase I and Phase II Plan), with final upgrades and maintenance scheduled to be completed by December 31, 2030. The MCD also requires the City to submit quarterly reports to the EPA and MDE, detailing progress towards the milestones within each Phase.

II. Special Requirements and Conditions

WWTP meeting at least 85% reduction of BOD_5 and TSS Yes ☒ No ☐ N/A ☐

Based on the plant performance records from 01/01/2019 through 12/31/2023, the average effluent concentrations for BOD_5 and TSS are 5.55 mg/L and 7.47 mg/L, respectively. Using a BOD_5 and TSS concentration of 200 mg/L for typical raw-sewage influent (as stated in the technical manuals), this facility removes approximately 97% of BOD_5 and 96 % of TSS on a monthly average basis. These removal rates satisfy the secondary wastewater treatment standard of a minimum 85% removal, as mandated by the Clean Water Act.

The minimum removal standard of 85% for BOD_5 and TSS is incorporated in this permit as effluent limit requirements. The percent removal calculated requires a monthly average monitoring in the influent and effluent for the respective parameters.

Refer to Section III (Proposed Effluent Limitations and Monitoring Requirements) for further details.

Rationale: *40CFR, PART 133, §133.102*

Enhanced Nutrient Removal (ENR) Requirements: ENR Limits ☒ ENR Goal ☐ N/A ☐

As per the Chesapeake Bay TMDL, Back River WWTP is assigned the annual maximum Waste Load Allocations (WLAs) of 2,192,800 pounds/year for Total nitrogen (TN) and 109,600 pounds/year for Total Phosphorus (TP), which are based on TN concentration of 4.0 mg/L, TP concentration of 0.3 mg/L and current design capacity of 180.00 MGD.

This is an ENR significant WWTP with a design capacity of greater than 0.5 MGD discharging into the Chesapeake Bay Water Quality Segment- BACOH_MD (Back River Oligohaline Maryland). As per the current Departmental Guidelines for the ENR requirements, the above stated WLAs for TN and TP are incorporated to establish the seasonal and annual maximum load limits for the proposed permit renewal.

Rationale: *Updated Watershed Implementation Plan of the Chesapeake Bay TMDL*

Is the facility eligible for additional Nutrient WLA and/or Credits? Yes ☐ No ☐ N/A ☒

This facility does not have any existing On-site Septic Disposal Systems (OSDSs) to generate the nutrient credits referenced above.

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Is the Facility eligible for "Nutrient and Sediment Performance-based Credit Loads"? Yes ☒ No ☐

Is the Monitoring and Reporting Schedule included? Yes ☒ No ☐ N/A ☐

Because ENR upgrades at the Back River WWTP were completed and are operational since 09/01/2017; this facility is eligible under COMAR 26.08.11 (Maryland Water Quality Trading Program) to generate the performance-based credit of sediment, TN and TP for trading to industrial and municipal stormwater permit holders.

In order to generate the performance-based credits for a calendar year, the permittee will be required to complete the form "Credit Verification and Registration Form for Wastewater Point Source" based on the plant performance results of the previous calendar year and submit the form to the Department's Water and Science Administration Trading Administrator by the end of January of the calendar year in question. This form can be obtained from MDE's website link listed below: https://mde.maryland.gov/programs/Water/WQT/Pages/WQT_Tools_Resources.aspx. Click on "Point Source/WW Credit Registration" to download the form.

Refer to Section III.C (Proposed Effluent Limits and Monitoring Requirements) on pages 52 and 53 for the monitoring and reporting details.

***Rationale**: COMAR 26.08.11 (Maryland Water Quality Trading Program Regulations)*

TMDL Implementation Requirements: Yes ☒ No ☐ N/A ☐

Nutrient TMDLs

A. The **Back River TMDL** approved by EPA on July 15, 2004, allocated the following nutrient loads to the Back River WWTP for a flow of 130.00 MGD at Outfall 001A discharging to Back River:

   1. Total Nitrogen: 99,782 lbs/month (5/1 – 10/31) and 1,582,055 lbs/year (Annual Average).

   2. Total Phosphorus: 6,652 lbs/month (5/1-10/31) and 79,277 lbs/year (Annual Average).

B. The **Baltimore Harbor TMDL** approved by EPA on 12/22/2022 (latest revision), allocated the following nutrient loads to the Back River WWTP for a flow of 50.00 MGD at Outfall 002A discharging to Baltimore Harbor through Bear Creek.

   1. Total Nitrogen: 340,590 lbs/period (5/1 – 10/31) and 609,185 lbs/year (Annual Average).

   2. Total Phosphorus: 15,230 lbs/period (5/1-10/31) and 30,459 lbs/year (Annual Average).

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Chesapeake Bay TMDL

As per the Chesapeake Bay TMDL, the facility shall meet the following annual load limits allocated per the Maryland Phase II Watershed Implementation Plan (WIP) Appendix F (Final Target Loads for Significant Facilities) for a combined 180.00 mgd from Outfall 001A and Outfall 002A:

1. Total Nitrogen: 2,192,800 lbs/yr
2. Total Phosphorus: 109,600 lbs/yr
3. Total Suspended Solids: 8,548,254 lbs/yr

PCB TMDLs

A. The **Back River TMDL** for PCBs approved by the EPA on 10/1/2012, allocated an annual waste load (WLA) of 48.5 grams/year (0.107 pounds/year) for tPCBs at Outfall 001A (based on a design flow of 130.00 mgd and the water column TMDL endpoint tPCBs concentration of 0.27 nanograms per liter (ng/L).

B. The **Baltimore Harbor TMDL** for PCBs approved by the EPA on 10/1/2012, allocated an annual waste load of 18.66 g/year (0.0411 pound/year) for tPCBs at the Back River WWTP Outfall 002A (based on a design flow of 50.00 mgd and the water column TMDL endpoint tPCBs concentration of 0.27 nanograms per liter (ng/L).

The table below shows the facility's Total Annual Loads (grams/year) between 2019 and 2023 for Outfall 001A and Outfall 002A. The monitoring results show the facility exceeded its assigned WLA at both outfalls for all consecutive years during the permit cycle.

Year	**Total Annual Load*** (*grams/year*)	
	Outfall 001A	**Outfall 002A**
2019	195.17	46.24
2020	162.93	29.54
2021	117.11	27.01
2022	111.50	18.11
2023	302.40	30.87

** The Department calculated the annual loads on a non-rolling calendar (Jan-Dec) basis.*

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PCB Minimization Plan

The City submitted a PCB Minimization Plan to MDE's Compliance Program on February 17, 2023, identifying and outlining efforts to source track and eliminate PCBs from their sewershed, as summarized below:

The introduction of PCBs in the Back River WWTP (BRWWTP) service area can be attributed to various sources such as identified superfund sites, direct discharge through industrial sources, and infiltration through groundwater contamination, among others.

BRWWTP plans to identify dischargers with the highest PCB inputs into the sewershed as part of its source trackback strategy. The implementation of this plan includes collaboration with the United States Geological Survey (USGS) and University of Maryland, Baltimore County (UMBC) to sample and track concentration of PCBs throughout BRWWTP and at major confluence points across the service area. The data collected will be analyzed alongside previously available datasets that include: (1) quarterly PCB sampling conducted due to permit requirements, (2) a list of PCB sources across the watershed published by USGS, and (3) a list of SIC codes commonly associated with facilities generating or discharging PCBs. Once identified, the PCB sources will be prioritized for BMP implementation based on their mass loadings entering the system and the potential for PCB reduction in their discharge.

The proposed PCB minimization measures include (1) working closely with industrial sources identified as a source of PCB discharge within the sewershed, (2) isolating and prioritizing cleanup of sources with legacy PCB contamination, (3) analyzing treatment processes within BRWWTP for PCB minimization, including separating solids and FOG for improved mitigation, and (4) ensuring optimal ENR conditions during treatment processes for decreased PCB mass in the plant effluent.

Rationale: *40 CFR §130.7, The approved TMDL(s) of TN, TP, TSS and tPCB for Back River Watershed.*

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Was WET testing required in the previous discharge permit (15-DP-0581A)? Yes ☒ No ☐ N/A ☐

The previous permit (15-DP-0581A) required the permittee to perform definitive quarterly chronic testing using *Americamysis bahia* and *Cyprinodon variegatus* as test organisms. The test results submitted between the period 9/2018 – 12/2023 were reviewed. The test results are summarized below:

Quarters	Test Period	Test Species	Test Endpoint	48-hour LC_{50} (Acute)	TU_a < 1.00	IC_{25} (Chronic)	TU_c < 1.02
3rd Q 2018	9/30/2018	*Cyprinodon variegatus*	Survival	>100	< 1	>100	<1
			Biomass/Growth	NA	NA	>100	<1
	10/2/2018	*Americamysis bahia*	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	<6.25	16
4th Q 2018	10/30/2018 *(1st Repeat for 10/2/2018)*	*Americamysis bahia*	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	Females in control did not produce eggs	N/A
	11/13/2018 *(2nd Repeat for 10/2/2018)*	*Americamysis bahia*	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1

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Quarters	Test Period	Test Species	Test Endpoint	48-hour LC_{50} (Acute)	TU_a < 1.00	IC_{25} (Chronic)	TU_c < 1.02
4th Q 2018	12/11/2018	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	<1
		Americamysis bahia	Survival	>100	<1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1
1st Q 2019	2/26/2019	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	< 1
		Americamysis bahia	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	70.3	1.4
	3/26/2019 (*Repeat for 2/26/2019*)	*Americamysis bahia*	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1
2nd Q 2019	6/11/2019	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	< 1
		Americamysis bahia	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1

II. Special Requirements and Conditions

Quarters	Test Period	Test Species	Test Endpoint	48-hour LC_{50} (Acute)	TU_a < 1.00	IC_{25} (Chronic)	TU_c < 1.02
3rd Q 2019	9/17/2019	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	< 1
		Americamysis bahia	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1
4th Q 2019	12/27/2019	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	< 1
		Americamysis bahia	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1
1st Q 2020	2/25/2020	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	< 1
		Americamysis bahia	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1
2nd Q 2020	6/2/2020	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	< 1
		Americamysis bahia	Survival	73.8	1.4	>100	< 1
			Growth	NA	NA	52.9	2
			Fecundity	NA	NA	>100	< 1

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Quarters	Test Period	Test Species	Test Endpoint	48-hour LC_{50} (Acute)	TU_a < 1.00	IC_{25} (Chronic)	TU_c < 1.02
2nd Q 2020	6/23/2020 (*Repeat for 6/2/2020*)	*Americamysis bahia*	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1
3rd Q 2020	9/1/2020	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	< 1
		Americamysis bahia	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1
4th Q 2020	12/1/2020	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	< 1
		Americamysis bahia	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1
1st Q 2021	2/23/2021	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	< 1
		Americamysis bahia	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	80.5	1.2
2nd Q 2021	5/25/2021	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	< 1
		Americamysis bahia	Survival	>100	< 1	85	1.2
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1

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Quarters	Test Period	Test Species	Test Endpoint	48-hour LC_{50} (Acute)	TU_a < 1.00	IC_{25} (Chronic)	TU_c < 1.02
3rd Q 2021	7/6/2021 (*Repeat for 2/23/2021 & 5/25/2021*)	*Americamysis bahia*	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1
	8/24/2021	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	< 1
		Americamysis bahia	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1
4th Q 2021	12/7/2021	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	< 1
		Americamysis bahia	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1
1st Q 2022	2/15/2022	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	< 1
		Americamysis bahia	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	38% (Control)	NA

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Quarters	Test Period	Test Species	Test Endpoint	48-hour LC_{50} (Acute)	TU_a < 1.00	IC_{25} (Chronic)	TU_c < 1.02
2nd Q 2022	5/24/2022	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	< 1
		Americamysis bahia	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1
3rd Q 2022	8/30/2022	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	< 1
		Americamysis bahia	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1
4th Q 2022	12/6/2022	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	< 1
		Americamysis bahia	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1
1st Q 2023	2/14/2023	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	< 1
		Americamysis bahia	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1

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Quarters	Test Period	Test Species	Test Endpoint	48-hour LC_{50} (Acute)	TU_a < 1.00	IC_{25} (Chronic)	TU_c < 1.02
2nd Q 2023	6/27/2023	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	< 1
		Americamysis bahia	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1
3rd Q 2023	7/25/2023	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	< 1
		Americamysis bahia	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1
4th Q 2023	10/17/2023	*Cyprinodon variegatus*	Survival	>100	< 1	>100	< 1
			Biomass/Growth	NA	NA	>100	< 1
		Americamysis bahia	Survival	>100	< 1	>100	< 1
			Growth	NA	NA	>100	< 1
			Fecundity	NA	NA	>100	< 1

Is WET testing proposed for the permit? Yes ☒ No ☐ N/A ☐

Biological testing for the whole effluent toxicity determination is required for POTWs with (a) flows equal to or greater than 1.0 MGD or an approved pretreatment program, (b) a discharger that has demonstrated actual or potential toxicity, or (c) a discharger whose discharge the Department believes may cause toxicity as determined by an evaluation of manufacturing processes, indirect discharges, treatment processes, effluent or receiving water data, or other relevant information.

In addition to being recognized as an EPA major, Back River WWTP accepts waste from industrial users and has failed WET tests during its previous permit cycle. As seen in the previous section, the

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facility failed its chronic tests conducted in October 2018, February 2019, June 2020, February 2021, May 2021, and an acute test conducted in June 2020. Even though the results of all WET tests conducted between May 26, 2021, through December 31, 2023, were >100, the Department proposes continuation of chronic WET testing on a quarterly basis along with the current WET limits of $TU_a < 1.00$ and $TU_c < 1.02$ for the duration of the permit cycle.

For further details on WET testing, refer to Special Condition II.D of the discharge permit.

Estimation of Instream Waste Concentration (IWC) for WET:

For Discharge to Tidal (Estuarine) waters (Submerged Outfall):

$$IWC(\%) = \left[\frac{130.0 \times 1.5472}{(130.0 \times 1.5472) + 3.8}\right] \times 100 = \mathbf{98.2\%}$$

$$Q_{RWE} = \left[\frac{(1 - 0.982)}{0.982}\right] \times 130.0 \times 1.5472 = \mathbf{3.8 cfs}$$

Where, Q_D = Plant permitted flow = 130.00 MGD
Q_{RWE} = Calculated equivalent annual 30Q5 low flow = 3.8 cfs
F = Chronic Toxicity Dilution factor = 0.982

Are WET limits proposed for the permit? Yes ☒ No ☐ N/A ☐

The Back River WWTP has a history of intermittent whole effluent toxicity (WET). The test results summarized above show the effluent demonstrated chronic toxicity on five (5) occasions in October 2018, February 2019, June 2020, February 2021, and May 2021. The results also showed acute effluent toxicity on one (1) occasion in June 2020. While the City cleared all repeat tests, it must be noted that the source and /or causative agent(s) of toxicity remain unidentified.

When a WET test result demonstrates toxicity, the City must initiate a preliminary Toxicity Identification Evaluation (TIE) and Toxicity Reduction Evaluation (TRE) to identify, and control or eliminate any causative agent(s) contributing to the unacceptable effluent toxicity. Upon completion of the investigation, the facility must conduct accelerated testing through six consecutive follow-up quarterly tests to demonstrate no reasonable potential for effluent toxicity. The Department will evaluate these results and decide whether to remove or adjust the WET limit and the associated requirements.

Meanwhile, WET limits will continue in the renewal discharge permit along with the quarterly WET testing as proposed.

Calculations for the WET limits resulted in an Acute Limit of TU_a of less than 1.00 toxic unit and a

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Chronic Limit of TU_c of less than 1.02 toxic unit for a permitted flow of 130.00 MGD.

For further details on WET Limits, refer to Special Condition II.F of the discharge permit.

Rationale: *COMAR 26.08.03.07D(1), COMAR 26.08.03.07E, and Department's "Effluent Biotoxicity Testing Protocol for Industrial and Municipal Effluents, as amended" which can be downloaded from Department's website link: https://mdewwp.page.link/Biomonitoring (this link is case-sensitive).*

Was Toxic Chemical Testing required in the previous discharge permit (15-DP-0581A)? **Yes** ☒ **No** ☐ **N/A** ☐

Back River WWTP performed four effluent toxic chemical tests in 02/2019, 02/2020, 02/2021 and 02/2022 per the Department's "Toxic Pollutant Monitoring Protocol and Reporting Requirements for Toxic Chemical Testing Analytical Data" (05/18/2011), as required in the previous discharge permit (15-DP-0581A).

All data reported for toxic pollutants in the annual TCT reports were reviewed and analyzed using MDE's updated TCT protocol (12/5/2023), with more stringent Limits of Quantitation (LOQ). The results of the analysis indicated that numerous toxic pollutants reported by the laboratory as "Non-Detect" (ND) had Reporting Limits (RLs) higher than the minimum LOQ specified in the TCT protocol. Results of the priority pollutant scans performed using average concentrations of the toxic pollutants flagged 24 (twenty-four) chemicals for levels exceeding the toxicity criteria set for chronic aquatic life or human health (shown in the table below).

Therefore, to confirm if these toxic pollutants exist in the effluent in toxic amounts, additional monitoring is required for four consecutive quarters during the first year of the permit cycle (using the updated LOQs from the latest test protocol). Based on the results of these tests, MDE may discontinue the monitoring requirements for these pollutants.

No.	Toxic Pollutant Parameter	Average Concentration (*2019 – 2022*) *(µg/L)*	Limit of Quantitation (*per MDE's 2023 TCT protocol*) *(µg/L)*	In-Stream Toxicity Criteria *(µg/L)*		
				Acute	Chronic	Human
1.	Total Cyanide	5.78	5	1.1	1.1	NL
2.	1,2-Diphenylhydrazine	2.95	0.3	NA	NA	2.1
3.	Benzidine	4.0	0.0014	NA	NA	0.2
4.	Hexachlorobenzene	3.0	0.00079	NA	NA	0.000804931

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No.	Toxic Pollutant Parameter	Average Concentration (*2019 – 2022*) *(µg/L)*	Limit of Quantitation (*per MDE's 2023 TCT protocol*) *(µg/L)*	In-Stream Toxicity Criteria *(µg/L)*		
				Acute	Chronic	Human
5.	Benzo(a)Anthracene (1,2-benzanthracene)	1.48	0.012	NA	NA	0.0132
6.	3,3' Dichlorobenzidine	3.0	0.49	NA	NA	1.6
7.	3,4-Benzofluoranthene (Benzo(b) fluoranthene)	1.48	0.012	NA	NA	0.0132
8.	Chrysene	1.48	0.038	NA	NA	0.2
9.	Benzo(k)Fluoranthene (11,12-benzofluoranthene)	1.48	0.05	NA	NA	0.2
10.	Dibenzo(a,h)Anthracene (1,2,5,6-Dibenzanthracene)	1.48	0.0012	NA	NA	0.0013
11.	Indeno(1,2,3-cd)Pyrene (2,3-o-pheynylene pyrene)	1.48	0.012	NA	NA	0.0132
12.	Butylbenzyl Phthalate	3.0	0.9	NA	NA	1.1
13.	4,4'-DDD	0.01	0.0012	NA	NA	0.0012
14.	4,4'-DDE	0.01	0.0013	NA	NA	0.0018
15.	4,4' DDT	0.01	0.0003	NL	0.001	0.00030567
16.	Aldrin	0.01	0.0000077	NL	NA	7.84553E-06
17.	Chlordane (technical mixture and metabolites)	0.099	0.0031	0.1	0.004	0.0033
18.	Dieldrin	0.01	0.000012	NL	0.0019	1.22268E-05
19.	Endrin	0.0099	0.0023	NL	0.0023	NL
20.	Heptachlor	1.0096	0.000059	0.1	0.0036	6.01151E-05
21.	Heptachlor Epoxide (BHC-hexachlorocyclohexane)	0.01	0.00032	NL	0.0036	0.000326048
22.	Toxaphene	0.39	0.002	0.3	0.002	0.0072
23.	Copper	9.5	0.064	4.9	3.2	NA
24.	Cyanide Free	8.9	2	1.1	1.1	NL

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Is Toxic Chemical Testing (TCT) proposed for the permit renewal (22-DP-0581)? Yes ☒ No ☐ N/A ☐

TCT is required for POTWs with (a) flows equal to or greater than 1.0 mgd or an approved pretreatment program, (b) a discharger that has demonstrated actual or potential toxicity, or (c) a discharger whose discharge the Department believes may cause toxicity as determined by an evaluation of manufacturing processes, indirect discharges, treatment processes, effluent or receiving water data, or other relevant information.

For this permit renewal, the facility shall perform three (3) TCTs in the first quarter of each calendar year concurrent with the WET testing for the first three (3) years of the permit cycle. The permittee will also test for the additional 24 (twenty-four) toxic parameters listed in the previous section for four (4) consecutive quarters during the first year of the permit cycle. Upon completion of the fourth test, the Department will review the submitted results and determine the need to discontinue monitoring for the additional parameters.

Rationale: *COMAR 26.08.03.07D(1) and MDE's Department's latest updated "Toxic Pollutant Monitoring Protocol and Reporting Requirements for Toxic Chemical Testing Analytical Data, as amended" which can be downloaded from Department's website link: https://mdewwp.page.link/TCT (this link is case-sensitive)."*

Wastewater Capacity Management

Does the proposed permit include condition pertaining to the wastewater flow capacity management? Yes ☒ No ☐

If Yes, does the proposed permit require submittal of Wastewater Capacity Management Plan (WCMP)? Yes ☐ No ☒

The Department considers two criteria when determining the requirement for submission of a Wastewater Capacity Management Plan (WCMP):

(1) If the annual average flows for the most recent three calendar years exceed the 80% design capacity per MDE's "Guidance Document Wastewater Capacity Management Plans, 2006" and

(2) If the Annual Monthly Flow Peaking Factor (PF) is greater than the facility Design Flow PF as stated in the Department's "Design Guidance for Wastewater Treatment Facilities, 2021" document.

Based on the DMR data analyzed for the most recent three years (2021 – 2023), and as shown in the table below, the combined annual average discharge flow from Outfalls 001A and 002A was 70% of the existing rated capacity of 180.00 MGD. Therefore, a WCMP is not required to be submitted at this time.

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Year	Annual Avg. Flow *(MGD)*			Design Capacity (*MGD*)
	Outfall 001A	*Outfall 002A*	*Combined*	
2021	112.742	20.242	132.983	180
2022	107.383	18.475	125.858	180
2023	102.792	17.792	120.583	180
		Average Flow	***126.475***	

To determine the second criteria, the Department calculated the PF for the facility using influent data for the same three calendar years (2021 – 2023). The Annual Monthly Flow PF for 2021 was calculated as 1.26 – exceeding the design flow PF of 1.2.

Year	Annual Daily Average Flow (*MGD*)	Max. Monthly Average Flow (*MGD*)	Annual Monthly Flow PF	Design Flow PF
2021	120.379	151.701	1.26	1.2
2022	112.958	124.700	1.10	1.2
2023	108.217	121.500	1.12	1.2

In light of the numerous significant effluent numeric limit violations and SSO events during the previous permit cycle, and an exceedance of the PF for 2021, the Department requires submission of a Climate Change Resiliency Report (Special Condition II.M of the discharge permit). This will enable the facility to identify risks and measures needed to overcome future non-compliances that may arise from hydraulic overload as well as inflow surges during extreme weather events.

Rationale: *MDE's Guidance Document "Wastewater Capacity Management Plans, 2006" and "Design Guidance for Wastewater Treatment Facilities, 2021"*

Pretreatment Program/Influent Restriction

WWTP with approved pretreatment program ☒ Non-pretreatment program WWTP ☐

Rationale: *COMAR 26.08.08 and Department Guidelines*

II. Special Requirements and Conditions

Reapplication Due Date for Next Permit Renewal

Per the Departmental guidelines for the watershed permitting, the next renewal of a discharge permit for Back River WWTP is scheduled for 1st quarter, 3rd year in cycle with the projected renewal application date of 01/01/2026 and reissuance date of 04/01/2027.

The issuance date of this proposed permit will be established after fulfilling all the formalities of the public participation process. It is anticipated that a period between the proposed permit issuance date and the above stated reapplication date for the next permit cycle year would likely be less than three years.

As per the USEPA's guidelines for NPDES discharge permit, it is suggested that the facility's performance results for at least three years period should be considered for the next permit renewal processing; and therefore, the reapplication due date for the proposed discharge permit will be set as "No later than 18 months" before the expiration date of the proposed permit.

Rationale: *COMAR 26.08.04.01 and Departmental Guidelines.*

Are temperature requirements included? Yes ☐ No ☒

The Department recognizes that WWTP effluent may involve a thermal component. For this discharge, there is no reasonable potential for the temperature to exceed 90° F or the ambient temperature of the surface waters criteria in COMAR 26.08.02.03-3; therefore, temperature limitations and monitoring are not required.

Rationale: *COMAR 26.08.02.03-3C(3) & COMAR 26.08.02.03-3A(3)*

Does the WWTP use lagoon(s) for wastewater treatment? Yes ☐ No ☒

Rationale: *Department Policy.*

Is the emergency holding pond required? Yes ☐ No ☒

Rationale: *COMAR 26.08.04.04C(2)(c)*

II. Special Requirements and Conditions

Climate Change Resiliency Requirements

The effects of climate change are projected to be more pronounced in the coming decades. As a result, the intensity and frequency of extreme weather events may quickly overload the wastewater facility hydraulically, disrupt the operation in the treatment works, and cause the potential endangerment of aquatic life and public health.

Refer to Special Condition II.M of the discharge permit for requirements.

Rationale: *MDE's Water and Science Administration (WSA) Climate Integration Policy and Guidance, and 07/22/2020, EPA's Climate Resilient Water Utility (CRWU) Initiative (https://www.epa.gov/crwu)*

Maintenance of Laboratory Procedure Certification Records

During a review of analytical data for the previous permit cycle, the Department observed multiple occurrences of improper sample collection, preservation, holding times, and/or laboratory analysis of one or more parameters, at times caused by mishandling on the part of the contract laboratory.

Therefore, the Department requires the facility to maintain on-site certification records of all analytical laboratories used for monitoring effluent parameters and be available for review upon request.

Refer to Special Condition II.N of the permit for further details.

Rationale: *40 CFR 136, Consent Decree, Case No. 24-C-22-000386*

Special Condition "Compliance Schedule for Meeting Total Ammonia Nitrogen as N Effluent Limits"

For this permit renewal, the Department has established the final sets of effluent limitations for Total Ammonia Nitrogen as N (See Section III, Pages 38 and 46) based on the toxic substance criteria for ammonia for the protection of marine and estuarine life listed in the Code of Maryland Regulations (COMARs) 26.08.02.03-2J and 26.08-02-03-2K.

Back River is a tidally influenced waterbody, with an average salinity of approximately 1.04 parts per thousand (ppt). According to COMAR 26.08.01.01.B 54-1, a waterbody with a salinity range between 0.5 - <5.0 ppt is referred to as an Oligohaline segment. The average salinity was determined by the Department using MDE's AWQMS database and analyzing water quality data between 6-12-2000 through 6-12-2024 for monitoring stations located upstream of Outfall 001A, during summer (*May – October*) and winter (*November - April*) months.

II. Special Requirements and Conditions

Discharge Period	Salinity *(ppt)*	
	Average	90th Percentile
Summer (*5/1 – 10/31*)	0.92	3.13
Winter (*11/1 – 4/30*)	1.44	3.79
All Year (*1/1 – 12/31*)	1.04	3.27

Therefore, based on the observed salinity measurements and the unlikelihood of freshwater mussels in the vicinity of the outfall, as confirmed by the Department of Natural Resources (DNR), MDE has applied the marine and estuarine water criteria for the calculation of final ammonia effluent limits.

However, to maintain consistency with the freshwater ammonia criteria from the previous discharge permit (15-DP-0581A), the Department has calculated the interim effluent limits based on the prior toxic substance criteria for ammonia, ensuring the protection of freshwater aquatic life as specified in COMAR 26.08.02.03-2H and 26.08-02-03-2I.

Given that the new ammonia criteria are far more stringent than the previous ones, the Department has decided that adequate time should be given to the permittees to make the necessary adjustments and/or upgrades of the wastewater treatment process(es) to meet the new criteria requirements, and hence, the interim and final effluent limitations have been established with an interim limit period of 12 (twelve) months beginning the effective date of the discharge permit.

As per requirements of the Code of Federal Regulation (CFR), 40 CFR § 122.47 "Schedules of Compliance", the special condition has been established in the discharge permit providing a timeline to meet the final limits as soon as possible, but no later than 12 (twelve) months from the effective date of the discharge permit. The permittee is required to submit a report no later than six (6) months from the effective date of the discharge permit to the Department, providing progress status to meet the final limits.

Refer to Special Condition II.P of the discharge permit.

Rationale: *COMARs 26.08.02.03-2H & 26.08-02-03-2I, 26.08.02.03-2J & 26.08-02-03-2K, 40 CFR § 122.47(a)(1), (a)(3) & (a)(4), MDE'S AWQMS database, Email conversation between MDE & DNR dated 7/8/2024 and 7/16/2024.*

II. Special Requirements and Conditions

Per- and Polyfluorinated Alkyl Substances (PFAS) Study Plan and Monitoring Requirement

Does the proposed permit require report submittal requirement for (PFAS) Study Plan and monitoring? Yes ☒ No ☐

Back River WWTP accepts wastewater from several Significant Industrial Users (SIUs) with a potential to elevate levels of Per- and Polyfluorinated Alkyl Substances (PFAS) in the treatment works. Additionally, owing to the size of the treatment works, the facility generates a substantial amount of effluent and biosolids that are contaminated with PFAS compounds.

Due to the increasing awareness of risks posed by PFAS compounds, the Department initiated a survey to investigate the levels of PFAS at publicly owned treatment works (POTWs) across the State.

MDE conducted three rounds of sampling at the Back River WWTP on 11/9/2022, 12/14/2022 and 06/13/2023 respectively.

A total of twelve (12) samples collected from the influent, effluent, recycled flow and sludge (biosolids) were analyzed using EPA Method 537M, EPA Method 533 and EPA Method 1633 (draft) by PACE Analytical Services and the Maryland Department of Health-Laboratories Administration. The results consistently showed various PFAS compounds present at elevated levels than their detection limit.

However, with the facility operating at less-than-optimal conditions during the recent few years, and per the EPA memorandum addressing PFAS discharges in the NPDES permits, the Department requires additional testing and analysis of PFAS compounds within the Back River WWTP during this permit renewal.

The PFAS monitoring schedule shall include definitive four quarterly sampling events within the twelve (12) month period after approval of the PFAS Monitoring Plan which shall be submitted no later than 90 (ninety) days from the effective date of the discharge permit. Each testing event of PFAS compounds shall include samples from influent, effluent, and sludge (biosolids) to be taken on the same day, and samples shall be analyzed using the EPA Method 1633 (EPA 821-R-24-001).

Refer to the Discharge Permit Special Condition II.O for details of the requirements.

Rationale: *Department's strategy to address risk posed by exposure to PFAS, an emerging and evolving national concern and EPA Method 1633 (EPA 821-R-24-001)*

II. Special Requirements and Conditions

PCB Monitoring, Reporting and Minimization

Does the proposed permit require submittal of a PCB Minimization Plan? Yes ☒ No ☐

Back River WWTP is assigned an annual tPCB WLA of 48.5 grams per year for Outfall 001A and 18.66 grams per year for Outfall 002A.

As a result of the continual tPCBs exceedances against the assigned WLAs during the previous permit cycle, 15-DP-0581A (see page 17 for exceedance table), the Department is continuing the previous permit requirements for quarterly tPCB monitoring and reporting, in conjunction with mandating the submission of an updated PCB Minimization Plan in Special Condition II.Q of the discharge permit.

The Plan shall identify sources of PCB discharges within the facility, outline specific BMPs to be implemented, establish a plan to monitor the effectiveness of BMPs, and provide a timeline for its completion.

For further details, refer to Special Condition II.Q.2 of the discharge permit.

***Rationale**: Back River and Baltimore Harbor TMDLs, Consent Decree, Case No. 24-C-22-000386*

Operations and Maintenance (O&M) Guidance Checklist

To optimize processes and operations across all POTWs equipped with ENR treatment technologies, and support compliance, the Department has developed an O&M Guidance checklist for ENR facilities to submit as part of the permit renewal process. The permittee is required to submit the O&M checklist for review and approval no later than twelve months after the effective date of the permit.

For further details, refer to Special Condition II.R of the discharge permit.

***Rationale**: Department Policy for Operation and Maintenance Requirements of ENR Facilities*

Wastewater Treatment Plant Operator Licensing and Certification

Multiple site visits conducted by MDE's Compliance Program in recent years have cited Back River WWTP for lacking both adequate and qualified wastewater treatment plant operators. The reports also identified the facility in violation of General Condition III(B)(3)(b) of the permit. Inadequate and unqualified staffing at the facility have also contributed to the non-compliance experienced by the plant.

Therefore, to ensure optimal operations and maintenance at the facility, a new Special Condition II.S, requiring wastewater operators supervising the operations and maintenance activities to have at minimum a certified Class 5A license is added to this permit renewal.

***Rationale**: MDE Compliance Inspection Reports, Consent Decree, Case No. 24-C-22-000386*

II. Special Requirements and Conditions

Effluent Bacterial Action Level – Protection of Recreational Activity in receiving waters

This permit requires the permittee to monitor and report both the Statistical Threshold Value (STV) and the Geometric Mean (GM) criteria for E. coli and Enterococci. The "action level" established for the STV criterion in the permit ensures public safety during warmer-season (April 1st through October 31st) water recreation activities. This requirement aligns with EPA's 2012 Recreational Water Quality Criteria, which protect the designated use of primary contact recreation for receiving waters and reduce the risk of human illnesses from pathogens.

Results of individual sampling conducted by MDE as well as the plant performance analysis (2019-2023) have indicated high counts of bacteria levels in the Back River within the vicinity of the treatment plant and in the facility's treated effluent, respectively.

The STV criterion is incorporated as an indicator of aquatic microbial quality and is calculated as a 90th percentile. It considers the variability of sample results in a calendar month to determine the probability of a facility exceeding its bacterial threshold level.

To ensure public awareness, the permittee shall notify MDE and the local health department within 24 hours of the STV exceedance. The notification shall be followed by a five (5) day report detailing the effectiveness of the implemented action(s) taken to address the exceedance.

Implementation of these measures will not only ensure the safeguarding of public health but will also allow for protection of the designated primary contact recreational use for the individual receiving waters.

For more details, refer to Special Condition II.T of the discharge permit.

Rationale: *EPA 2012 Recreational Water Quality Criteria, COMAR 26.08.02.03-3, COMAR 26.08.09.08*

III. Proposed Effluent Limits and Monitoring Requirements

The effluent limits and monitoring requirements, as listed below, are proposed to process the application for the discharge permit renewal.

(a) For Effluent Discharged at Outfalls 001A:

The quality of effluent discharged by the facility at the discharge location, Outfall 001A[(1) (2) (3) (4)] shall be limited and/or monitored as shown below. The effluent characteristics shall be monitored at Monitoring Point 102A with coordinates: Longitude: **76° 29' 02.5" W** and Latitude: **39° 17' 33.1" N** (located after the Sand Filter Distribution Box and before the Diversion chambers), unless specified otherwise. The permittee shall ensure that the effluent samples taken at Monitoring Point 102A are representative of the effluent quality discharged at Outfall 001A.

Sampling for Total Residual Chlorine, Enterococci, E. coli, and Flow shall be conducted separately at a sampling point with coordinates: Longitude: **76° 28' 58.0" W** and Latitude: **39° 17' 36.0" N** (situated after the Diversion chambers), ensuring representative effluent quality at Outfall 001A.

Except for the above noted parameters, the concentrations of all other effluent parameters listed below will be monitored at Monitoring Point 102A and reported as the concentration (*mg/L*) for Outfall 001A.

A table summarizing the monitoring location for each effluent parameter is provided on Page 67.

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
BOD_5	**Limits**	All Year	11,000 lbs./d. (max. mth. avg.) 16,000 lbs./d. (max. wk. avg.)	10 mg/L (max. mth. avg.) 15 mg/L (max. wk. avg.)	N/A
	Minimum Monitoring		**Frequency** One per day	**Sample Type** 24-hour composite **	(15) (32)(33)
BOD_5, Percent Removal	**Limits**	All Year	N/A	85 % (min. mth. avg.)	(13)
	Minimum Monitoring		**Frequency** One per quarter	**Sample Type** Calculated	(15)(32) (33)

III. Proposed Effluent Limits and Monitoring Requirements

(a) For Effluent Discharged at Outfalls 001A *(continued)*:

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
Total Suspended Solids (TSS)	**Limits**	All Year	11,000 lbs./d. (max. mth. avg.) 16,000 lbs./d. (max. wk. avg.) REPORT lbs./mth. (max. mth. load) 3,959,228 lbs./yr. (annual max.)	10 mg/L (max. mth. avg.) 15 mg/L (max. wk. avg.)	N/A
	Minimum Monitoring		**Frequency** One per day	**Sample Type** 24-hour composite **	(15)(18) (32)(33)
TSS, Percent Removal	**Limits**	All Year	N/A	85 % (min. mth. avg.)	(13)
	Minimum Monitoring		**Frequency** One per quarter	**Sample Type** Calculated	(15)(32) (33)
Total Kjeldahl Nitrogen (TKN) *(Monitoring only parameter)*	**Reporting**	All Year	REPORT lbs./d. (max. mth. avg.) REPORT lbs./d. (max. wk. avg.)	REPORT mg/L (max. mth. avg.) REPORT mg/L (max. wk. avg.)	N/A
	Minimum Monitoring		**Frequency** One per day	**Sample Type** 24-hour composite **	(15)(16) (17)
Total Ammonia Nitrogen as N ***(Interim Limits)*** *	**Limits**	5/1-10/31	1,518 lbs./d. (max. mth. avg.) 13,119 lbs./d. (max. daily)	1.4 mg/L (max. mth. avg.) 12.1 mg/L (max. daily)	N/A
		11/1-4/30	3,361 lbs./d. (max. mth. avg.)	3.1 mg/L (max. mth. avg.)	
	Minimum Monitoring	All Year	**Frequency** One per day	**Sample Type** 24-hour composite **	(15)(17)
Total Ammonia Nitrogen as N ***(Final Limits)*** *	**Limits**	5/1-10/31	759 lbs./d. (max. mth. avg.) 4,987 lbs./d. (max. daily)	0.7 mg/L (max. mth. avg.) 4.6 mg/L (max. daily)	N/A
		11/1-4/30	2,602 lbs./d. (max. mth. avg.)	2.4 mg/L (max. mth. avg.)	
	Minimum Monitoring	All Year	**Frequency** One per day	**Sample Type** 24-hour composite **	(15)(17)

III. Proposed Effluent Limits and Monitoring Requirements

(a) For Effluent Discharged at Outfalls 001A *(continued)*:

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
Total Nitrogen as N	**Limits**	5/1-10/31	99,782 lbs./mth. (monthly load) REPORT lbs./mth. (max. mth. load)	REPORT mg/L (mth. avg.)	(4)(8) (9)(10)
		All Year	REPORT lbs./mth. (mth. load) 1,582,055 lbs./yr. (annual max.)	REPORT mg/L (mth. avg.)	
	Minimum Monitoring	All Year	**Frequency** One per day	**Sample Type** Calculated	(15)(17) (18)
(Nitrite + Nitrate) as N *(Monitoring only parameter)*	**Reporting**	All Year	N/A	REPORT mg/L (mth. avg.)	N/A
	Minimum Monitoring		**Frequency** One per day	**Sample Type** 24-hour composite **	(15)(16) (17)
Organic Nitrogen as N *(Monitoring only parameter)*	**Reporting**	All Year	N/A	REPORT mg/L (mth. avg.)	N/A
	Minimum Monitoring		**Frequency** One per day	**Sample Type** Calculated	(15)(16) (17)
Orthophosphate as P *(Monitoring only parameter)*	**Reporting**	All Year	N/A	REPORT mg/L (mth. avg.)	N/A
	Minimum Monitoring		**Frequency** Two per week	**Sample Type** 24-hour composite **	(15)(16) (27)
Total Phosphorus as P	**Limits**	5/1-10/31	6,652 lbs./mth. (monthly load) REPORT lbs./mth. (max. mth. load)	REPORT mg/L (mth. avg.)	(4)(8) (9)(10)
		All Year	220 lbs./day (max. mth. avg.) 330 lbs./day (max. wk. avg.) REPORT lbs./mth. (max. mth. load) 79,277 lbs./yr. (annual max.)	0.2 mg/L (max. mth. avg.) 0.3 mg/L (max. wk. avg.)	
	Minimum Monitoring	All Year	**Frequency** One per day	**Sample Type** 24-hour composite **	(15)(18)

III. Proposed Effluent Limits and Monitoring Requirements

(a) For Effluent Discharged at Outfalls 001A *(continued)*:

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
Total Polychlorinated Biphenyls (tPCBs) *(Monitoring only parameter)*	**Reporting**	All Year	REPORT g./qtr. (qu. avg.) REPORT lbs./yr. (annual max)	REPORT *pg/L* (qu. avg.)	(4)(5)(7)
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(21)
Total Residual Chlorine (TRC)	**Limits**	All Year	N/A	0.013 mg/L	(11)
	Minimum Monitoring		**Frequency** Three per day, One per shift	**Sample Type** Grab	(15)(19) (20)
Enterococci	**Limits**	All year	N/A	35 MPN/100 ml (max mth. geometric mean)	N/A
	Minimum Monitoring		**Frequency** One per day	**Sample Type** Grab	(14)(15)
E. coli	**Limits**	All year	N/A	126 MPN/100 ml (max mth. geometric mean)	N/A
	Minimum Monitoring		**Frequency** One per day	**Sample Type** Grab	(14)(15)
Dissolved Oxygen (DO)	**Limits**	2/1 – 5/31	N/A	6.0 mg/L (min. wk. avg.)	N/A
		All Year	N/A	5.0 mg/L (min. at any time)	
	Minimum Monitoring	All Year	**Frequency** Three per day, One per shift	**Sample Type** Grab	(15)(20)
pH	**Limits**	All Year	N/A	6.5 SU (min.) 8.5 SU (max.)	N/A
	Minimum Monitoring		**Frequency** Three per day, One per shift	**Sample Type** Grab	(15)(20)

III. Proposed Effluent Limits and Monitoring Requirements

(a) For Effluent Discharged at Outfalls 001A *(continued)*:

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
Flow	**Reporting**	All Year	REPORT mgd (max. mth. avg.) REPORT mgd (d. max.)	N/A	N/A
	Minimum Monitoring		**Frequency** Continuous	**Sample Type** Recorded	(15)(22) (24)
Total Flow	**Reporting**	All Year	REPORT Mgal/mth. (mth. total)	N/A	N/A
	Minimum Monitoring		**Frequency** Monthly	**Sample Type** Calculated	(15)(25)
Whole Effluent Toxicity (WET) Acute and Chronic	**Limits**	All Year	N/A	$TU_a < 1.00$ $TU_c < 1.02$	(12)
	Minimum Monitoring		**Frequency** One per quarter	**Sample Type** 24-hour composite **	(15)(28) (29)
Total Cyanide	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** Grab ***	(15)(30) (31)
1,2-Diphenylhydrazine	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)
Benzidine	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)
Hexachlorobenzene	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)

III. Proposed Effluent Limits and Monitoring Requirements

(a) For Effluent Discharged at Outfalls 001A *(continued)*:

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
Benzo(a)Anthracene	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)
Benzo(k)Fluoranthene (11,12-benzofluoranthene)	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)
3,3' Dichlorobezidine	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)
3,4-Benzofluoranthene	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)
Chrysene	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)
Dibenzo(a,h)Anthracene (1,2,5,6-Dibenzanthracene)	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)
4,4'-DDD	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)

III. Proposed Effluent Limits and Monitoring Requirements

(a) For Effluent Discharged at Outfalls 001A *(continued)*:

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
4,4'-DDE	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)
4-4' DDT	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)
Butylbenzyl Phthalate	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)
Chlordane	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)
Indeno(1,2,3-cd) Pyrene	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)
Dieldrin	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)
Heptachlor	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)

III. Proposed Effluent Limits and Monitoring Requirements

(a) For Effluent Discharged at Outfalls 001A *(continued)*:

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
Heptachlor Epoxide	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)
Toxaphene	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)
Aldrin	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)
Endrin	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)
Copper	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(30) (31)
Cyanide Free	**Reporting**	All Year	REPORT	REPORT µg/L (qu. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** Grab ***	(15)(30) (31)

* The permittee shall follow Special Conditions II.P of the discharge permit pertaining to a compliance schedule and submission of a progress report to meet the total ammonia nitrogen as N final limits.

** The permittee shall conduct the flow-proportional composite monitoring at all times, unless receiving approval from the Department for the time-proportional composite monitoring. The time-proportional composite sampling may be approved when the permittee demonstrates the wastewater flow of the sampled stream is constant (i.e., the flow rates measured do not vary more than ±10 percent of the average flow rate over the sampling period).

*** See Special Condition II.G.4 (Toxic Chemical Testing) of the permit.

III. Proposed Effluent Limits and Monitoring Requirements

(b) For Effluent Discharged at Outfall 002A:

The quality of effluent discharged by the facility at the discharge location, Outfall 002A[(1) (2) (3) (4)] shall be limited and/or monitored as shown below. The effluent characteristics shall be monitored at Monitoring Point 102A with coordinates: Longitude: **76° 29' 02.5" W** and Latitude: **39° 17' 33.1" N** (located after the Sand Filter Distribution Box and before the Diversion chambers), unless specified otherwise. The permittee shall ensure that the effluent samples taken at Monitoring Point 102A are representative of the effluent quality discharged at Outfall 002A.

Sampling for Enterococci, E. coli, and Flow shall be conducted separately at a sampling point with coordinates: Longitude: **76° 28' 58.0" W** and Latitude: **39° 17' 34.0" N** (situated after the Diversion chambers), ensuring representative effluent quality at Outfall 002A.

Except for the above noted parameters, the concentrations of all other effluent parameters listed below will be monitored at Monitoring Point 102A and reported as the concentration (*mg/L*) for Outfall 002A.

A table summarizing the monitoring location for each effluent parameter is provided on Page 67.

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
BOD_5	**Limits**	5/1-10/31	8,340 lbs./d. (max. mth. avg.) 12,520 lbs./d. (max wk. avg.)	20 mg/L (max. mth. avg.) 30 mg/L (max. wk. avg.)	N/A
		11/1-4/30	12,520 lbs./d. (max. mth. avg.) 18,770 lbs./d. (max. wk. avg.)	30 mg/L (max. mth. avg.) 45 mg/L (max. wk. avg.)	
	Minimum Monitoring	All Year	**Frequency** One per day	**Sample Type** 24-hour composite **	(15) (32)(33)
BOD_5, Percent Removal	**Limits**	All Year	N/A	85 % (min. mth. avg.)	(13)
	Minimum Monitoring		**Frequency** One per quarter	**Sample Type** Calculated	(15)(32) (33)

III. Proposed Effluent Limits and Monitoring Requirements

(b) For Effluent Discharged at Outfall 002A *(continued)*:

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
Total Suspended Solids (TSS)	**Limits**	All Year	12,520 lbs./d. (max. mth. avg.) 18,770 lbs./d. (max. wk. avg.) REPORT lbs./mth. (max. mth. load) 4,589,026 lbs./yr. (annual max.)	30 mg/L (max. mth. avg.) 45 mg/L (max. wk. avg.)	N/A
	Minimum Monitoring		**Frequency** One per day	**Sample Type** 24-hour composite **	(15)(18) (32)(33)
TSS, Percent Removal	**Limits**	All Year	N/A	85 % (min. mth. avg.)	(13)
	Minimum Monitoring		**Frequency** One per quarter	**Sample Type** Calculated	(15)(32) (33)
Total Kjeldahl Nitrogen (TKN) *(Monitoring only parameter)*	**Reporting**	All Year	REPORT lbs./d. (max. mth. avg.) REPORT lbs./d. (max. wk. avg.)	REPORT mg/L (max. mth. avg.) REPORT mg/L (max. wk. avg.)	N/A
	Minimum Monitoring		**Frequency** One per day	**Sample Type** 24-hour composite **	(15)(16) (17)
Total Ammonia Nitrogen as N ***(Interim Limits)** *	**Limits**	5/1-10/31	584 lbs./d. (max. mth. avg.) 5,046 lbs./d. (max. daily)	1.4 mg/L (max. mth. avg.) 12.1 mg/L (max. daily)	
		11/1-4/30	1,293 lbs./d. (max. mth. avg.)	3.1 mg/L (max. mth. avg.)	
	Minimum Monitoring	All Year	**Frequency** One per day	**Sample Type** 24-hour composite **	(15)(17)
Total Ammonia Nitrogen as N ***(Final Limits)** *	**Limits**	5/1-10/31	292 lbs./d. (max. mth. avg.) 1,918 lbs./d. (max. daily)	0.7 mg/L (max. mth. avg.) 4.6 mg/L (max. daily)	
		11/1-4/30	1,001 lbs./d. (max. mth. avg.)	2.4 mg/L (max. mth. avg.)	
	Minimum Monitoring	All Year	**Frequency** One per day	**Sample Type** 24-hour composite **	(15)(17)

III. Proposed Effluent Limits and Monitoring Requirements

(b) For Effluent Discharged at Outfall 002A *(continued)*:

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
Total Nitrogen as N	**Limits**	5/1-10/31	1,668 lbs./day (max. mth. avg.) 2,500 lbs./day (max. wk. avg.) REPORT lbs./mth. (max. mth. load) 304,590 lbs./period (seasonal load)	REPORT mg/L (max. mth. avg.)	(4)(8) (9)(10)
		All Year	REPORT lbs./mth. (mth. load) 609,185 lbs./yr. (annual max.)	REPORT mg/L (max. mth. avg.)	
	Minimum Monitoring	All Year	**Frequency** One per day	**Sample Type** Calculated	(15)(17) (18)
(Nitrite + Nitrate) as N *(Monitoring only parameter)*	**Reporting**	All Year	N/A	REPORT mg/L (mth. avg.)	N/A
	Minimum Monitoring		**Frequency** One per day	**Sample Type** 24-hour composite **	(15)(16) (17)
Organic Nitrogen as N *(Monitoring only parameter)*	**Reporting**	All Year	N/A	REPORT mg/L (mth. avg.)	N/A
	Minimum Monitoring		**Frequency** One per day	**Sample Type** Calculated	(15)(16) (17)
Orthophosphate as P *(Monitoring only parameter)*	**Reporting**	All Year	N/A	REPORT mg/L (mth. avg.)	N/A
	Minimum Monitoring		**Frequency** Two per week	**Sample Type** 24-hour composite **	(15)(16) (27)

III. Proposed Effluent Limits and Monitoring Requirements

(b) For Effluent Discharged at Outfall 002A *(continued)*:

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
Total Phosphorus as P	**Limits**	5/1-10/31	REPORT lbs./mth. (max. mth. load) 15,230 lbs./period (seasonal load)	REPORT mg/L (mth. avg.)	(4)(8) (9)(10)
		All Year	83 lbs./day (max. mth. avg.) 125 lbs./day (max. wk. avg.) REPORT lbs./mth. (max. mth. load) 30,459 lbs./yr. (annual max.)	0.2 mg/L (max. mth. avg.) 0.3 mg/L (max. wk. avg.)	
	Minimum Monitoring	All Year	**Frequency** One per day	**Sample Type** 24-hour composite **	(15)(18)
Total Polychlorinated Biphenyls (tPCBs) *(Monitoring only parameter)*	**Reporting**	All Year	REPORT g./qtr. (qu. avg.) REPORT lbs./yr. (annual max.)	REPORT pg/L (qu. avg.)	(4)(6) (7)
	Minimum Monitoring		**Frequency** One per Quarter	**Sample Type** 24-hour composite **	(15)(21)
Enterococci	**Limits**	All year	N/A	35 MPN/100 ml (max. mth. geometric mean)	N/A
	Minimum Monitoring		**Frequency** One per day	**Sample Type** Grab	(14)(15)
E. coli	**Limits**	All year	N/A	126 MPN/100 ml (max. mth. geometric mean)	N/A
	Minimum Monitoring		**Frequency** One per day	**Sample Type** Grab	(14)(15)

III. Proposed Effluent Limits and Monitoring Requirements

(b) For Effluent Discharged at Outfall 002A *(continued)*:

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
Dissolved Oxygen (DO)	**Limits**	2/1 – 5/31	N/A	6.0 mg/L (min. wk. avg.)	N/A
		All Year	N/A	5.0 mg/L (min. at any time)	
	Minimum Monitoring	All Year	**Frequency** Three per day, One per shift	**Sample Type** Grab	(15)(20)
pH	**Limits**	All Year	N/A	6.5 SU (min.) 8.5 SU (max.)	N/A
	Minimum Monitoring		**Frequency** Three per day, One per shift	**Sample Type** Grab	(15)(20)
Flow	**Reporting**	All Year	REPORT mgd (max. mth. avg.) REPORT mgd (d. max.)	N/A	N/A
	Minimum Monitoring		**Frequency** Continuous	**Sample Type** Calculated	(15)(23)
Total Flow	**Reporting**	All Year	REPORT Mgal/mth. (mth. total)	N/A	N/A
	Minimum Monitoring		**Frequency** Monthly	**Sample Type** Calculated	(15)(26)

* The permittee shall follow Special Conditions II.P of the discharge permit pertaining to a compliance schedule and submission of a progress report to meet the total ammonia nitrogen as N final limits.

** The permittee shall conduct the flow-proportional composite monitoring at all times, unless receiving approval from the Department for the time-proportional composite monitoring. The time-proportional composite sampling may be approved when the permittee demonstrates the wastewater flow of the sampled stream is constant (i.e., the flow rates measured do not vary more than ±10 percent of the average flow rate over the sampling period.

III. Proposed Effluent Limits and Monitoring Requirements

(c) For Effluent Monitored at Monitoring Point 102A:

The quality of effluent discharged by the facility at the discharge locations Outfall 001A and Outfall 002A[(1) (2) (3) (4)] shall be monitored at Monitoring Point 102A, with coordinates: Longitude: **76° 29' 02.5" W** and Latitude: **39° 17' 33.1" N** (located after the Sand Filter Distribution Box and before the Diversion chambers), unless otherwise specified in the tables above for each individual Outfall. The permittee shall ensure that the effluent samples taken at Monitoring Point 102A are representative of the effluent quality discharged at Outfall 001A and Outfall 002A, unless otherwise stated.

The effluent limitations and monitoring requirements for the parameters listed in the table below are applicable for an annual average flow of 180.00 MGD.

A table summarizing the monitoring location for each effluent parameter is provided on Page 67.

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
Total Suspended Solids (TSS)	**Limits**	All Year	REPORT lbs./mth. (max. mth. load) 8,548,254 lbs./yr. (annual max.)	REPORT mg/L (mth. avg.)	N/A
	Minimum Monitoring		**Frequency** Monthly	**Sample Type** 24-hour composite *	(4)(15) (18)
Total Nitrogen as N	**Limits**	All Year	REPORT lbs./mth. (max. mth. load) 2,192,800 lbs./yr. (annual max.)	REPORT mg/L (mth. avg.)	(4)(8) (9)(10)
	Minimum Monitoring		**Frequency** Monthly	**Sample Type** Calculated	(15)(17) (18)
Total Phosphorus as P	**Limits**	All Year	REPORT lbs./mth. (max. mth. load) 109,600 lbs./yr. (annual max.)	REPORT mg/L (mth. avg.)	(4)(8) (9)(10)
	Minimum Monitoring		**Frequency** Monthly	**Sample Type** 24-hour composite *	(15)(18)

III. Proposed Effluent Limits and Monitoring Requirements

(c) For Effluent Monitored at Monitoring Point 102A *(continued)*:

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
Flow	**Reporting**	All Year	REPORT mgd (max. mth. avg.) REPORT mgd (d. max.)	N/A	N/A
	Minimum Monitoring		**Frequency** Continuous	**Sample Type** Recorded	(15)(22) (24)
Total Flow	**Reporting**	All Year	REPORT Mgal/mth. (mth. total)	N/A	N/A
	Minimum Monitoring	All Year	**Frequency** Monthly	**Sample Type** Calculated	(15)(25)

* The permittee shall conduct the flow-proportional composite monitoring at all times unless receiving approval from the Department for the time-proportional composite monitoring. The time-proportional composite sampling may be approved when the permittee demonstrates the wastewater flow of the sampled stream is constant (i.e., the flow rates measured do not vary more than ±10 percent of the average flow rate over the sampling period).

(d) For Raw Wastewater Influent at Sampling Point 101A:

The quality of the wastewater influent entering the Back River WWTP shall be monitored at Influent Chamber (Longitude: **76° 28' 41.60" W** and Latitude: **39° 17' 39.22" N**) all the time as shown below:

Influent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
BOD_5	**Reporting**	All Year	N/A	REPORT mg/L (mth. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter *	**Sample Type** 24-hour composite	(15)(32) (33)
TSS	**Reporting**	All Year	N/A	REPORT mg/L (mth. avg.)	N/A
	Minimum Monitoring		**Frequency** One per Quarter *	**Sample Type** 24-hour composite	(15)(32) (33)

III. Proposed Effluent Limits and Monitoring Requirements

(d) For Raw Wastewater Influent at Sampling Point 101A *(continued)*:

* The monitoring frequency to determine BOD_5/TSS removal efficiency (in percentage) will be on a quarterly basis. The permittee shall select a calendar month and a minimum of one day (in that calendar month) in each calendar quarter to collect samples from the influent and effluent to calculate the removal efficiency. The calendar quarter shall end in March, June, September, and December. The permittee may take additional samples of BOD_5 and TSS in the influent on different days within the selected calendar month. All the sampling results for this requirement shall be reported on the Monthly Operating Report (MOR) for the same calendar month.

For the compliance determination of the percent removal requirement, the individual results of BOD_5/TSS in the influent and effluent collected on the same day must be incorporated to calculate the monthly average concentrations of the specific parameter in the influent and effluent.

These monthly average concentrations shall be applied to calculate the percent removal efficiency using formula listed in the footnote 32, and the results of the percent removal shall be reported on the DMR for the ending month of the calendar quarter. The permittee shall also prepare and submit a report as a copy of record (COR) along with the ending month's NetDMR for each calendar quarter. The COR shall provide details, including but not limited to, name of facility, sampling time (day(s), month, and year), individual results as well as monthly average concentrations of influent and effluent, laboratory sheets and pertinent information for analytes, and results of the percent removal calculation results.

(e) The monitoring requirements for Nutrient and Sediment Performance-based Credit Reporting Schedule at Monitoring Point 102A:

Under COMAR 26.08.11, Maryland Water Quality Trading Program, the permittee is authorized to generate nutrient and sediment credits for trading to industrial and municipal stormwater permit holders. For each calendar month, the permittee shall calculate and report on the monthly DMR the effluent related nutrient (Total Nitrogen and Total Phosphorus) and sediment (TSS) performance-based benchmark loads and performance-based credits as listed below.

Should the permittee seek to trade the reported credit, the permittee shall also submit information related to the generation of annual performance-based credit on the "***Credit Verification and Registration Form for Wastewater Point Source***" provided by the Department.

The completed form shall be sent to the Department's Water and Science Administration Trading Administrator by the end of each January to report credits generated during the prior calendar year.

III. Proposed Effluent Limits and Monitoring Requirements

(e) Nutrient and Sediment Performance-based Credit Reporting Schedule *(continued)*:

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
TSS (Performance-based Benchmark Load)	Reporting	All Year	REPORT lbs./yr. (YTD Cum_load)	N/A	
	Minimum Monitoring		**Frequency** One per month	**Sample Type** Calculated	(15)(34)(35)
Total Nitrogen as N (Performance-based Benchmark Load)	Reporting	All Year	REPORT lbs./yr. (YTD Cum_load)	N/A	
	Minimum Monitoring		**Frequency** One per month	**Sample Type** Calculated	(15)(34)(35)
Total Phosphorus as P (Performance-based Benchmark Load)	Reporting	All Year	REPORT lbs./yr. (YTD Cum_load)	N/A	
	Minimum Monitoring		**Frequency** One per month	**Sample Type** Calculated	(15)(34)(35)
TSS (Performance-based Credit)	Reporting	All Year	REPORT lbs./yr. (YTD Cum_load)	N/A	
	Minimum Monitoring		**Frequency** One per month	**Sample Type** Calculated	(15)(34)(35)
Total Nitrogen as N (Performance-based Credit)	Reporting	All Year	REPORT lbs./yr. (YTD Cum_load)	N/A	
	Minimum Monitoring		**Frequency** One per month	**Sample Type** Calculated	(15)(34)(35)
Total Phosphorus as P (Performance-based Credit)	Reporting	All Year	REPORT lbs./yr. (YTD Cum_load)	N/A	
	Minimum Monitoring		**Frequency** One per month	**Sample Type** Calculated	(15)(34)(35)
Flow Year-to-date (YTD) Total	Reporting	All Year	REPORT MGal/yr. (YTD flow)	N/A	
	Minimum Monitoring		**Frequency** One per month	**Sample Type** Calculated	(15)(34)(35)

III. Proposed Effluent Limits and Monitoring Requirements

Footnotes for Effluent Limitations & Monitoring Requirements in Section III.a – III.d

(1) When this permit is renewed, the new limitations may not be equal to the above limitations.

(2) There shall be no discharge of floating solids or visible foam other than trace amounts.

(3) The permit may also be reopened in accordance with the requirements of MDE's Watershed Permitting Plan under which all discharge permits in a watershed are issued the same year.

(4) The Back River (basin number 02130901) is on the 303(d) list of impaired waters for PCBs in both, sediment (1998) and fish tissue (2008), Sediments (1996), Chlordane (1996), Nitrogen and Phosphorus (1996), Chlorides (2012), and Sulfates (2012).

The Back River TMDL approved by EPA on July 15, 2004, allocated the following nutrient loads to the Back River WWTP for a flow of 130.00 MGD at Outfall 001A discharging to Back River:

1. Total Nitrogen: 99,782 lbs/month (5/1 – 10/31) and 1,582,055 lbs/year (Annual Average)
2. Total Phosphorus: 6,652 lbs/month (5/1-10/31) and 79,277 lbs/year

The Baltimore Harbor TMDL approved by EPA on December 17, 2007 with a latest revision date of December 22, 2022, allocated the following nutrient loads to the Back River WWTP for a flow of 50.00 MGD at Outfall 002A discharging to Baltimore Harbor through Bear Creek.

1. Total Nitrogen: 304,590 lbs/period (5/1 – 10/31) and 609,185 lbs/year (Annual Average)
2. Total Phosphorus: 15,230 lbs/period (5/1-10/31) and 30,459 lbs/year (Annual Average)

The facility shall meet the following annual load limits allocated per the Maryland Phase II Watershed Implementation Plan (WIP) Appendix F (Final Target Loads for Significant Facilities) for a combined 180.00 mgd from Outfall 001A and Outfall 002A:

1. Total Nitrogen: 2,192,800 lbs/yr
2. Total Phosphorus: 109,600 lbs/yr
3. Total Suspended Solids: 8,548,254 lbs/yr

Total Nitrogen is the sum of ammonia-N, organic-N and (nitrite + nitrate)-N based on samples collected on the same day.

Chlordane, E. coli and Zinc = No WLA was made to the Back River WWTP.

This permit is in conformance with the "Chesapeake Bay TMDL for Nitrogen, Phosphorus and Sediment" established on December 29, 2010.

When TMDLs for other remaining parameters are completed, limits may be imposed, after the public participation process, to incorporate any TMDL requirements.

(5) The TMDL for PCBs for Back River approved by the EPA on 10/1/2012, has included a tPCBs annual waste load allocation (WLA) of 48.5 grams/year (0.107 pounds/year) for Outfall 001A (that is based on the design flow of 130.00 mgd and the water column TMDL endpoint tPCBs concentration of 0.27 nanograms per liter (ng/L).

(6) The TMDL for the Baltimore Harbor approved by the EPA on 10/1/2012, included a tPCBs WLA of 18.66 g/year (0.0411 pound/year) for the Back River WWTP Outfall 002A (that is based on the design flow of 50.00 mgd and the water column TMDL endpoint tPCBs concentration of 0.27 nanograms per liter (ng/L).

(7) The above stated (footnotes 5 and 6) WLAs of tPCBs included in the TMDLs for Back River and Baltimore Harbor do not impose effluent limits for tPCBs in the discharge permit at this time. Refer to Special Condition II.Q.1 and II.Q.2 of the discharge permit for further details on tPCBs.

III. Proposed Effluent Limits and Monitoring Requirements

(8) The permittee shall operate the ENR facility in a manner that optimizes the nutrient removal capability of the facility as stipulated in the Grant Agreement for ENR upgrade. The first exceedance of the permit limit shall be counted and reported as daily exceedances beginning from the first exceedance, determined to the nearest day, through December 31. In addition, after any such exceedance, the permittee shall demonstrate to the Department's satisfaction that the facility is optimizing its nutrient removal capability, and neither the arrival of the next calendar year nor the issuance of a permit renewal during a period of noncompliance shall obviate continuance of any noncompliance status related to treatment optimization requirements.

(9) At the end of each calendar year, the permittee shall comply with the *concentration-based* limitations for the Annual Maximum Loading Rate defined below or the *Tributary Strategy-based* loading rate limitation listed in above in the effluent limitations table, whichever is lower:

(a) TN Limitation (lbs/year): 4.0 mg/L x annual total flow (calendar year based in million gallons per year) x 8.34. To the extent that the permittee alleges that temperature levels of 12 degrees C or lower have diminished the treatment system's capability of complying with this *concentration-based* loading rate limitation for Total Nitrogen, the permittee shall provide notification beginning with the calendar year report under the "Upset" provision in Section III.B.6 of the permit. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

(b) TP Limitation (lbs/year): 0.20 mg/L x annual total flow (calendar year based in million gallons per year) x 8.34.

The details and results of all required annual calculations shall be submitted to the Department with the Discharge Monitoring Report for December. See Special Condition II.K of the discharge permit for further details.

The *concentration-based* loading requirements may be revised if the limits or schedule are determined to be impracticable based on actual performance and the Department re-opens the permit as a major modification (which requires public participation) to impose (an) alternate effluent limitation(s) or revised schedule.

(10) The permittee may request that the permit be reopened and modified to include nutrient trading consistent with all applicable regulations and requirements in effect at that time.

(11) Total Residual Chlorine (TRC) limitation of 0.013 mg/L as instantaneous maximum shall be applicable at Outfall 001A. The effluent directly discharged from the Back River WWTP through Outfall 001A into the Back River shall be dechlorinated to reduce effluent total residual chlorine concentration to the nondetectable level (See Definition I.M). Also refer to footnote 19 for further information regarding compliance with the above stated TRC limit. This requirement for a TRC limit does not apply to the effluent sent to Trade Point Atlantic (TPA) through Outfall 002A and regulated by a separate NPDES surface discharge permit (MD0001201) issued to TPA.

(12) TU_a is defined as 100 divided by the LC_{50} value resulting from the first 48 hours of a valid acute or chronic toxicity test. Compliance with the LC_{50} requirements shall be determined through testing performed in accordance with Special Condition II.D. TU_c is defined as 100 divided by the IC_{25} value resulting from a valid chronic toxicity test. Compliance with the IC_{25} requirements shall be determined through testing performed in accordance with Special Condition II.D.

(13) In accordance with 40CFR §133.102, the 30-day average percent removal for BOD_5 and TSS shall not be less than 85 (eighty-five) percent as the minimum level of effluent quality attainable by the secondary treatment. Refer to the footnotes 32 and 33 for further details for calculations and reporting requirements toward compliance to the BOD_5 and TSS percent removal effluent limitations (See Definition I.V included in the discharge permit).

III. Proposed Effluent Limits and Monitoring Requirements

(14) Unless the permittee notifies the Department, parallel testing for E. coli and Enterococci is granted for the first twelve (12) months after the effective date of the permit, following which only the Enterococci monitoring shall remain in effect. Should the permittee decide to discontinue parallel testing sooner than the 12-month period, and switch to Enterococci monitoring only, a written notification shall be provided to the Department at least sixty (60) days in advance. Upon notification, the monitoring for E. coli shall no longer be in effect as of the date included in the written notice to the Department.

Footnotes for Monitoring Requirements in Sections III.a – III.e

(15) "STORET" (short for STOrage and RETrieval) is a widely used repository for water quality data reporting and monitoring. The STORET codes for the effluent characteristics described as limitations and/or monitoring requirements are: BOD5 (00310), BOD5 percent removal (81010), Total Suspended Solids (00530), Total Suspended Solids percent removal (81011), TKN (00625), Total Ammonia Nitrogen as N (00610), Total Phosphorus as P (00665), Total Nitrogen as N (00600), (Nitrite + Nitrate) as N (00630), Organic Nitrogen as N (00605), Orthophosphate as P (04175), Enterococci (61211), E. coli (51040), Total Residual Chlorine (50060), Dissolved Oxygen (00300), pH (00400), Flow (50050), Total flow (82220), PCBs (79819), Hexachlorobenzene (39700), Chlordane (39350), Toxaphene (39400), 4,4'-DDT (39300), Heptachlor (39410), 3,3' Dichlorobenzidine (34631), Aldrin (39330), Heptachlor Epoxide (39420), Benzidine (39120), Cyanide Total (00720), Dieldrin (39380), 1,2-Diphenylhydrazine (34346), Benzo(a)Anthracene (34526), 3,4-Benzofluoranthene (79531), Chrysene (34320), 4,4'-DDD (39310), 4,4'-DDE (39320), Benzo(k)Fluoranthene (11,12-benzofluoranthene) (34242), Dibenzo(a,h)Anthracene (1,2,5,6-Dibenzanthracene) (34556), Indeno(1,2,3-cd)Pyrene (34403), Butylbenzyl Phthalate (34292), Endrin (39390), Copper (01256), Cyanide Free (00722), WET Acute Toxicity (TS000) and WET Chronic Toxicity (TT000), Sediment as TSS Performance-based Benchmark Load (00530(P)), TSS Performance-based Credit (00530(Q)), Total Nitrogen Performance-based Benchmark Load (00600(P)), Total Nitrogen Performance-based Credit (00600(Q)), Total Phosphorus Performance-based Benchmark Load (00665(P)), Total Phosphorus Performance-based Credit (00665(Q)) and Flow YTD Total (74076(R)).

(16) This parameter (without effluent limitations) must be monitored, and it shall be reported on the Monthly Operating Report (MOR) as individual results and on the Discharge Monitoring Report as monthly average concentrations.

(17) Total nitrogen as N (in mg/L) is a calculated parameter as the sum of individual results for total ammonia nitrogen as N, organic nitrogen as N and (nitrite + nitrate) as N. Total Kjeldahl Nitrogen (TKN) is defined as the total concentration of organic nitrogen and ammonia as N. All nitrogen species must be sampled at the same day. The monitoring result for organic nitrogen may be calculated through the subtraction of the total Ammonia as N monitoring result from the result of TKN sample taken at the same day.

(18) The permittee shall also calculate and report on the monthly DMR the TN, TP and TSS total monthly loads plus year-to-date cumulative loads for the calendar year in question for Monitoring Point 102A, Outfall 001A and Outfall 002A. For each calendar month, the total monthly flow discharged at MP 102A, Outfall 001A and 002A, shall be incorporated to calculate the total monthly waste loading rates.

For each calendar year, the year-to-date cumulative loads of TN, TP, and TSS for the month of December shall represent the total annual loads at Monitoring Point 102A, Outfall 001A and Outfall 002A, and they must be incorporated toward complying with the respective annual maximum load limits. Refer to Special Condition II.K of the discharge permit for "Reporting TN and TP total annual loads for compliance to the Concentration-based maximum annual loading rate limits."

(19) The Minimum monitoring requirements of Three per day-grab samplings for total residual chlorine shall be applicable, when chlorine or any chlorine compound is used in any treatment process(es), including but not limited to disinfection, that could become a potential constituent of the effluent discharged from the Back

III. Proposed Effluent Limits and Monitoring Requirements

River WWTP Outfall 001A. The minimum level (quantification level) for total residual chlorine is 0.10 mg/L. The permittee may report all results below the minimum level as <0.10 mg/L. All results reported below the minimum level shall be considered in compliance.

Footnotes for Monitoring Requirements in Sections III.a – III.e (continued)

(20) Samples for these parameters (total residual chlorine, pH and dissolved oxygen) shall be taken at intervals evenly distributed throughout the staffed period each day to comply with General Condition III.A of the discharge permit for the representative sampling requirements.

(21) To incorporate the TMDL of PCBs for Back River and Baltimore Harbor, approved by the EPA on 10/1/2012, the permittee shall continue to monitor total PCBs (tPCBs) at a minimum frequency of one per quarter. The quarters shall end in March, June, September and December. The testing shall be conducted using the approved EPA testing methods in accordance with MDE's protocol titled "*Reporting Requirements for Total PCBs (PCB Congeners) by EPA Method 1668 C.*" The tPCBs monitoring shall be conducted at a frequency of once per quarter. The quarters shall end in March, June, September and December.

The tPCBs shall be reported on the Monthly Operating Reports (MORs) as individual results in picograms (*pg/L*); and on the monthly Discharge Monitoring Reports (DMRs) for the quarter-ending month as the quarterly average concentration in picogram/liter (*pg/L)*, total quarterly loading rate in grams/quarter *(g/qtr)*, and year-to-date cumulative load in grams/year (*g/yr*). The year-to-date cumulative loading rate *(g/yr)* shall be a sum of the individual total quarterly loads from the 1st reporting quarter through the 4th reporting quarter for a calendar year. The tPCBs year-to-date cumulative load reported for the month of December shall represent the annual maximum loading rate. The monitoring data sheet and laboratory analytical report for PCBs shall be submitted along with the monthly NetDMR for evaluation. The permittee may report all results below 5 *pg/L* as a non-detectable.

Based on the tPCBs monitoring results, the Department will determine whether to continue tPCBs monitoring or change the tPCBs monitoring frequency after the tPCBs sources are identified and eliminated through the PCB Minimization Plan required by the discharge permit. Any changes to the effluent tPCBs limits and/or monitoring requirements shall be addressed through the permit modification process. Please refer to Special Condition II.Q.1 and II.Q.2 of the discharge permit for complete details.

(22) Flows at Outfall 001A and Monitoring Point 102A shall be reported individually in million gallons per day (mgd) to at least the nearest 10,000 gallons per day. (Example: A flow of 1,524,699 gallons per day shall be reported as 1.52 mgd). For each calendar month, flows shall be reported on the MOR as daily individual results and on the DMR as monthly average (mgd) and daily maximum (mgd) for each location.

(23) Flow at Outfall 002A shall be calculated by subtracting flow monitored at Outfall 001A from Monitoring Point 102A. This flow shall be reported in million gallons per day (mgd) to at least the nearest 10,000 gallons per day. (Example: A flow of 1,524,699 gallons per day shall be reported as 1.52 mgd.). For each calendar month, flow shall be reported on the MOR as daily individual results and on the DMR as monthly average (mgd) and daily maximum (mgd) for this location.

(24) Continuous electronic flow measurement and recording which can produce a permanent record are acceptable to the Department.

(25) Total flow is a calculated parameter that shall be reported individually for Outfall 001A and Monitoring Point 102A. It is calculated as a sum of the daily flow results at each individual location in a calendar month. The parameter shall be reported on the monthly DMR as the Total monthly flow in million gallons (MG) to at least the nearest 10,000 gallons. (Example: A flow of 1,524,699 gallons shall be reported as 1.52 MG). The results will be used to calculate the Total Monthly Loading Rates (in lbs./month) for TN,

III. Proposed Effluent Limits and Monitoring Requirements

TP and TSS at each individual location.

The total flow calculated at Monitoring Point 102A must be the same as the sum of individual flows calculated at Outfall 001A and Outfall 002A for each month.

(26) Total flow at Outfall 002A is a calculated parameter equal to the sum of the daily flow results for this location in a calendar month. It shall be reported on the monthly DMR as the Total monthly flow in million gallons (MG) to at least the nearest 10,000 gallons. (Example: A flow of 1,524,699 gallons shall be reported as 1.52 MG). Results of Total Flow at Outfall 002A will be used to calculate the Total Monthly Loading Rates (in lbs./month) for TN, TP and TSS at this outfall.

(27) The permittee shall distribute the timing for effluent sampling with (a) minimum of 48-hour apart for two per week monitoring frequencies, (b) minimum of 24-hours apart for three per week monitoring frequencies, or (c) no more than one per day for five per week monitoring frequencies. The 48 hours interval for two per week sampling shall be defined as the period between the starting times of the two consecutive effluent sample collections for the same effluent parameter.

(28) Whole Effluent Toxicity (WET) samples shall be collected quarterly, analyzed, and reported in accordance with the MDE Water Management Administration's "Effluent Biotoxicity Testing Protocol for Industrial and Municipal Effluents" and Special Condition II.D.

(29) The quarterly WET monitoring shall be required upon the effective date of this permit. Refer to Special Condition II.D of the Discharge Permit for additional requirements for the WET monitoring and reporting requirements.

(30) The toxic substances shall be measured and reported in units of µg/L, using the appropriate minimum Limit of Quantification (LOQ) levels suggested in the Department's most updated revision of the protocol. The LOQ is a minimum reporting limit which is the minimum value of the calibration ranges of an analyte. The permittee must ensure that the laboratory contracted for analysis and reporting of the toxic substances shall comply with all requirements of the MDE's most updated "Toxic Pollutant Monitoring Protocol and Reporting Requirements for Toxic Chemical Testing Analytical Data, *as amended*." The permittee must ensure that the laboratory contracted for analysis and reporting of the toxic substances shall comply with all requirements of the above listed MDE's latest TCT protocol including but not limited to the analytical methodology, detection levels, holding times, preservation methods, sample type, and reporting. In addition to the data submitted by the monthly DMR, the permittee shall submit a copy of the laboratory report for the parameter to MDE in accordance with General Condition III.A.2.c of the discharge permit. Water used for the operation of sampling/analysis apparatus shall be free of the elements and compounds under investigation as well as any other elements or compounds whose presence could interfere with the analysis

(31) The concentration of this parameter shall be monitored for at least four consecutive quarters during the first year of the permit cycle. Samples for Total Cyanide and Free Cyanide shall be collected as a grab sample. For the remaining pollutants, 24-hour composite samples shall be collected using a glass sample container with Polytetrafluoroethylene (PTFE) intake tubing and minimal flexible tubing for the peristaltic pump. After the fourth test, the permittee shall submit all results along with detailed lab reports to the Department for review. Based on the findings from the initial four quarters, the City may request the discontinuation of monitoring for this parameter from Special Condition II.B.1.a. The Department retains the right to make the final determination on whether to discontinue the monitoring requirement.

(32) Wastewater influent samples for BOD_5 and TSS shall be collected per the sampling type and reporting frequency specified in Table III (d). These measurements shall be utilized to calculate BOD_5 and TSS percent removed using the formula listed below in footnote 33, and results shall be used to comply with the Percent removal effluent limits of BOD_5 and TSS (Table III (a), (b)). Any effluent excursion of the percent removal limit (in Table III (a), (b)) reported at the end of each monitoring period will be considered as violation for the full period as specified.

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(33) At the end of each reporting period, the permittee shall incorporate BOD5 and TSS monthly average concentrations in the influent and effluent (both reported on a monthly DMR for the calendar month of the influent sampling), and calculate monthly percent (%) of a parameter (BOD5 or TSS) removed using the following formula:

$$Monthly\ Average\ Percent\ (\%)\ of\ Parameter\ Removed\ = \left\{\frac{(A-B)}{A}\right\} \times 100$$

Where:

A = Monthly Average Concentration of Parameter in Influent, mg/L

B = Monthly Average Concentration of Parameter in Effluent, mg/L

The results (monthly average percent (%) of BOD_5 and TSS removed) shall be reported in the DMR submitted for the last calendar month of the reporting period. *(Example: If the monitoring frequency of the percent (%) removal is one per quarter, the results shall be reported in the DMRs for March, June, September, and December)*.

(34) ***Nutrient and Sediment Performance-Based "Benchmark Loads":***

At the end of each month, based on the effluent monitoring results at Monitoring Point 102A, a year-to-date cumulative nutrient and sediment (as total nitrogen, total phosphorus and total suspended solids in the effluent) performance-based "benchmark load" for this facility should be calculated and reported on monthly DMR using the formulas listed below:

(a) For TN:

Year-to-date cumulative Performance-Based Benchmark Load for TN (pounds) = 3.0 mg/L × 8.34 × Flow YTD Total (million gallons/year).*

(b) For TP:

Year-to-date cumulative Performance-Based Benchmark Load for TP (pounds) = 0.30 mg/L × 8.34 × Flow YTD Total (million gallons/year).*

(c) For Sediment:

*Year-to-date cumulative Performance-Based Benchmark Load for Sediment (pounds) = 30 mg/L *× 8.34 × Flow YTD Total (million gallons/year).*

**Or any more stringent effluent concentration-based limit required in the discharge permit.*

(35) ***Nutrient and TSS "Performance-Based Credit" (footnote in the monitoring & reporting requirement section)***

At the end of each month, the facility shall subtract the year-to-date nutrient and sediment cumulative loads (as defined in Section I.H.6 of the discharge permit (22DP0581)) calculated and reported for Monitoring Point 102A from the year-to-date nutrient and sediment performance-based benchmark loads (stated in footnote 34) and report the result as year-to-date "performance-based credit" on the monthly DMR. The "performance-based credit" generated by the facility at the end of each calendar year may be eligible for trading activities authorized by COMAR 26.08.11.

(36) Flow YTD Total (at Monitoring Point 102A) is calculated and reported in million gallons per year as the sum of total flows (stated in footnote 25) from January 1st through the reporting month.

III. Proposed Effluent Limits and Monitoring Requirements

Regulations and Rationale for Effluent Limitations	
BOD_5	**Regulations:** 40 CFR §133.102, COMAR 26.08.02.03-3C(8), COMAR 26.08.04.04C(1) and COMAR 26.08.0l.01B(80). **Discussion and Rationale(s):** The technical analysis was performed by Science Services Administration (SSA) in July1995 using a mathematical model (WASP) to establish the effluent limits requirements for discharge flows up to 130.00 MGD. There is no increase of the discharge flow for the permit renewal; and also, there are no indications of apparent changes to the receiving stream. Therefore, the BOD_5 and dissolved oxygen effluent limits established in 1995 and incorporated in previous permit 15-DP-0581 have been considered at this time for the proposed permit renewal. These limits will be protective of meeting the dissolved oxygen criteria in downstream portion of the effluent receiving stream(s). The BOD_5 85 % removed limit in conjunction with the influent BOD_5 monitoring have been included as per the 40 CFR, §133.102(a) for minimum requirement of the secondary treatment to the wastewater. The reporting frequency for 85% BOD_5 removal limit (Section III (a), (b), pages 37 and 45) and influent BOD_5 (Section III (d), page 51) have been determined based on both the wastewater treatment technology of the existing facility and the most recent sixty months (01/2019 to 12/2023) performance record.
Total Suspended Solids (TSS)	**Regulations:** 40 CFR §130.7, 40 CFR §133.102, COMAR 26.08.02.03-3C(5,) COMAR 26.08.02.03-3A(5), COMAR 26.08.04.04C(1), COMAR 26.08.0l.01B(80), COMAR 26.08.11, and 40 CFR§133.102 - §133.105. **Discussion and Rationale(s):** Under the Chesapeake Bay Watershed Implementation Plan as adopted in the Chesapeake Bay TMDL, all the significant point sources (WWTPs) discharging into the Chesapeake Bay watershed have been assigned with the individual WLA for TSS. The proposed TSS limits are also in conformance with the requirements of the Chesapeake Bay TMDL as accepted by EPA on 12/29/2010. The TSS 85 % removed limit in conjunction with the influent TSS monitoring have been included as per the 40 CFR, §133.102(a) for minimum requirement of the secondary treatment to wastewater. The reporting frequency for 85% TSS removal limit (Section III (a), (b), page 38 and 46) and influent TSS (Section III(d), page 51) have been determined based on both the wastewater treatment technology of the existing facility and the most recent sixty months (01/2019 to 12/2023) performance record.
Total Kjeldahl Nitrogen (TKN)	**Regulations:** COMAR 26.08.02.03-3A(2), COMAR 26.08.02.03-3C(8). **Discussion and Rationale(s):** Refer to Discussion and Additional Rationale for BOD_5.

III. Proposed Effluent Limits and Monitoring Requirements

Regulations and Rationale for Effluent Limitations	
Total Ammonia Nitrogen as N	**Regulations:** COMAR 26.08.02.03-2J, COMAR 26.08.02.03-2K and COMAR 26.08.02.05C, COMAR 26.08.02.05D. **Discussion and Rationale(s):** The reasonable potential of the Back River WWTP effluent to cause a violation of the receiving stream's ammonia water quality criteria was investigated to process the discharge permit renewal. An in-house SPREADSHEET program (developed by the Municipal Surface Discharge Permits Division) was used as a tool for toxicity analysis. The dilution factors, based on the applicable mixing zone criteria, were incorporated in the analysis. As the ammonia toxicity criteria are pH dependent, the effluent Summer pH of 7.9 and Winter pH of 7.8 which is a median of the maximum effluent pH data (for the period of 1/1/2020 – 12/31/2022) were used in the analysis. Refer to Section II "Special Condition Compliance Schedule for Meeting Total Ammonia Nitrogen as N Effluent Limits" on pages 32 - 33 for further details.
Total Nitrogen as N	**Regulations:** 40 CFR §130.7, COMAR 26.08.02.04, COMAR 26.08.03.01C(3), COMAR 26.08.04.04C, COMAR 26.08.11, and in addition, the Chesapeake Bay Nutrient Reduction Strategy, and the Enhanced Nutrient Removal (ENR) Policy. **Discussion and Rationale(s):** TN performance-based credit load monitoring and reporting requirements are included for the offset trading. Refer to Section II (Special Requirements and Conditions) on page 16 for further details.
Total Phosphorus as P	**Regulations:** 40 CFR §130.7, COMAR 26.08.02.04, COMAR 26.08.03.01C(3), COMAR 26.08.04.04C, COMAR 26.08.11, and in addition, the Chesapeake Bay Nutrient Reduction Strategy, and the Enhanced Nutrient Removal (ENR) Policy. **Discussion and Rationale(s):** Refer to Section II (Special Requirements and Conditions) on page 15 for ENR load limits and Section III (Proposed Effluent Limits and Monitoring Requirements) pages 52 and 53 for the performance-based TP credit load requirements.
Enterococci	**Regulations:** COMAR 26.08.02.03-3C(1), and COMAR 26.08.02.03-3A(1), COMAR 26.08.04.02-1A2, COMAR 26.08.09.08. **Discussion and Rationale(s):** The E. coli limit (126 MPN/100 ml) established in the previous permit (15-DP-0581A) is replaced with an Enterococci limit of 35 MPN/100 ml as Geometric Mean (GM) and as an action level of 130 MPN/100ml as Statistical Threshold Value (STV) in conformance with COMAR 26.08.02.03-3C for effluent discharges directly into tidally influenced waters designated as Use II non-shellfish harvesting areas and to ensure human health protection during primary water contact recreation.

III. Proposed Effluent Limits and Monitoring Requirements

Regulations and Rationale for Effluent Limitations	
Total Residual Chlorine	**Regulations:** COMAR 26.08.02.03-2G(1), COMAR 26.08.02.05C, COMAR 26.08.02.05D,COMAR 26.08.03.06C(5), COMAR 26.08.03.06D, COMAR 26.08.03.06F. **Discussion and Rationale(s):** The reasonable potential of the Back River WWTP effluent to cause a violation of the receiving stream's TRC water quality criteria was investigated to process the discharge permit renewal. An in-house SPREADSHEET program (developed by the Municipal Surface Discharge Permits Division) is used as a tool for toxicity analysis. The toxicity-based limit was compared with the effluent quality criteria to set the TRC limit requirement.
pH	**Regulations:** COMAR 26.08.02.03-3A(4), COMAR 26.08.02.03-3C(4). **Discussion and Rationale(s):** The limits are set equal to the stream water quality criteria. Also, refer to Discussion and Additional Rationale for Total Ammonia Nitrogen as N.
Dissolved Oxygen (DO)	**Regulations:** COMAR 26.08.02.03-3A(4), COMAR 26.08.02.03-3C(8) and COMAR 26.08.02.08.
	Discussion and Rationale(s): The limits are set equal to the stream water quality criteria. Also, refer to Discussion and Additional Rationale for BOD_5.
Flow	**Regulations:** COMAR 26.08.04.02A(2). The discharge is consistent with the Baltimore City water and sewer master plan. **Discussion and Rationale(s):** The permit flow considered for this permit renewal is equivalent to the rated design capacity of the facility. It is not a limitation, but it incorporated with concentration limits to calculate the waste load limits for BOD_5, TSS, Ammonia-N, TP and TN.
WET Limits	**Regulations:** COMAR 26.08.03.07. **Discussion and Rationale(s):** Refer to Section II "Special Requirements and Condition" for additional information pertaining to the WET requirements.

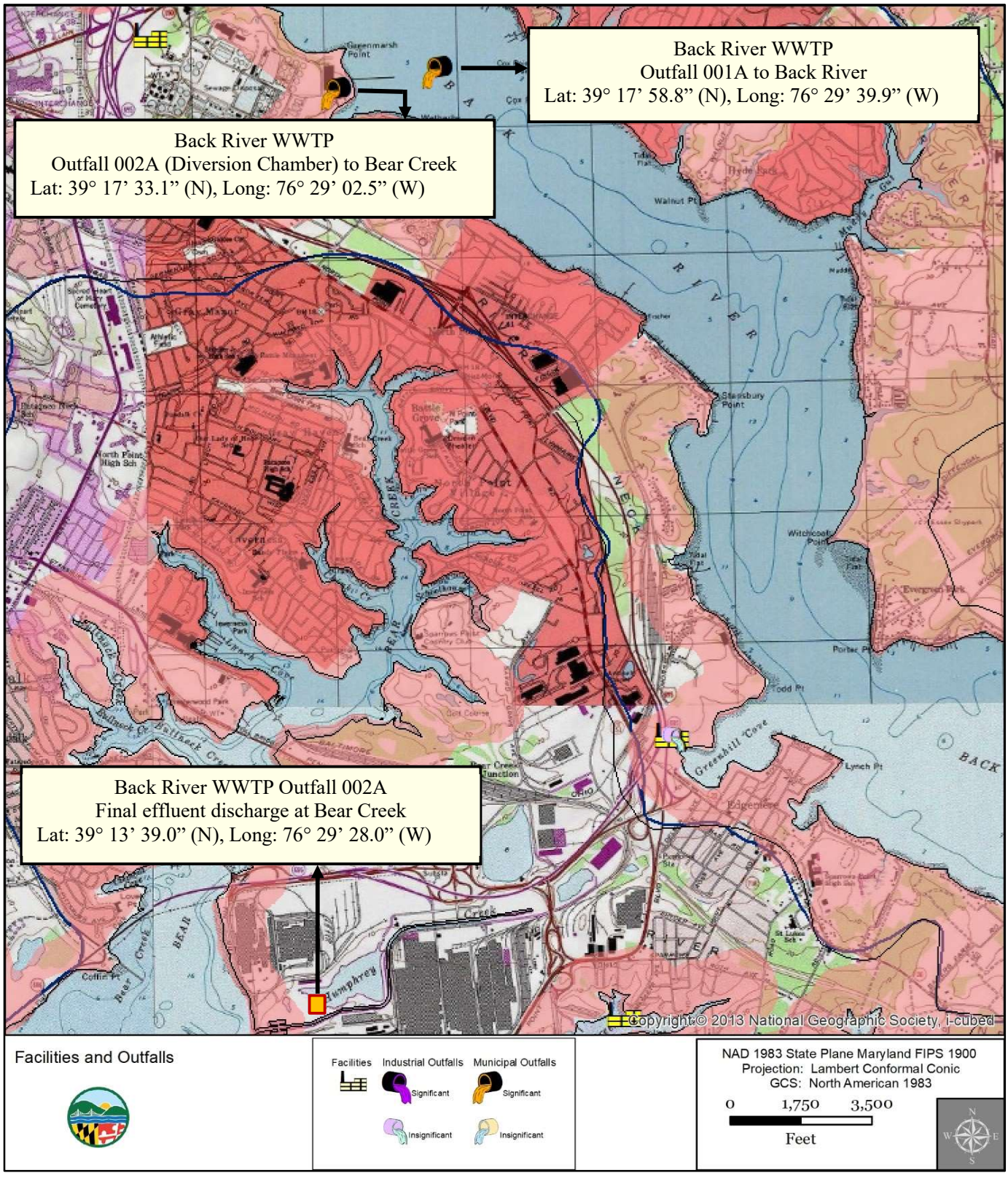
III. Proposed Effluent Limits and Monitoring Requirements

Additional Rationales for Effluent Limitations
(A) Anti-backsliding Policy Review: Provisions as stipulated in Federal Regulations [CWA §303(d)(4), CWA §402(o) & 40 CFR 122.44(l) require a reissued permit to be as stringent as the previous permit requirements, with some exceptions as determined by the Department. The effluent limitations established for the permit renewal are in conformance with the above stated provisions. **(B) Anti-Degradation Policy Review**: Is there Tier II water downstream of the Point of Discharge Location (Outfall 001A) for this facility? Yes ☐ No ☒ The waters of this State shall be protected and maintained for existing uses and the basic uses of water contact recreation, fishing, protection of aquatic life and wildlife, and agricultural and industrial water supply as identified in Use I. The discharge permit being processed includes sufficient limits in order to maintain and protect water quality intended for the existing designated uses. *Rationale: COMAR 26.08.02.04 and COMAR 26.08.02.04-1*
{SPACE RESERVED FOR FUTURE USE TO ADDRESS TIER III WATERS REQUIREMENTS}
Rationale: COMAR 26.08.02.04-2
Regulations and Rationale(s) for Monitoring Requirements
COMAR 26.08.04.03A. Also, the memorandums dated 7/24/1996 and 3/6/2008 referred as the Department Guidelines to establish the minimum monitoring requirements to process the discharge permit (re)issuance for this facility.

IV. Chronological Log of Meetings, Site Visits, Telephone Calls, etc. (Reports are in official file):

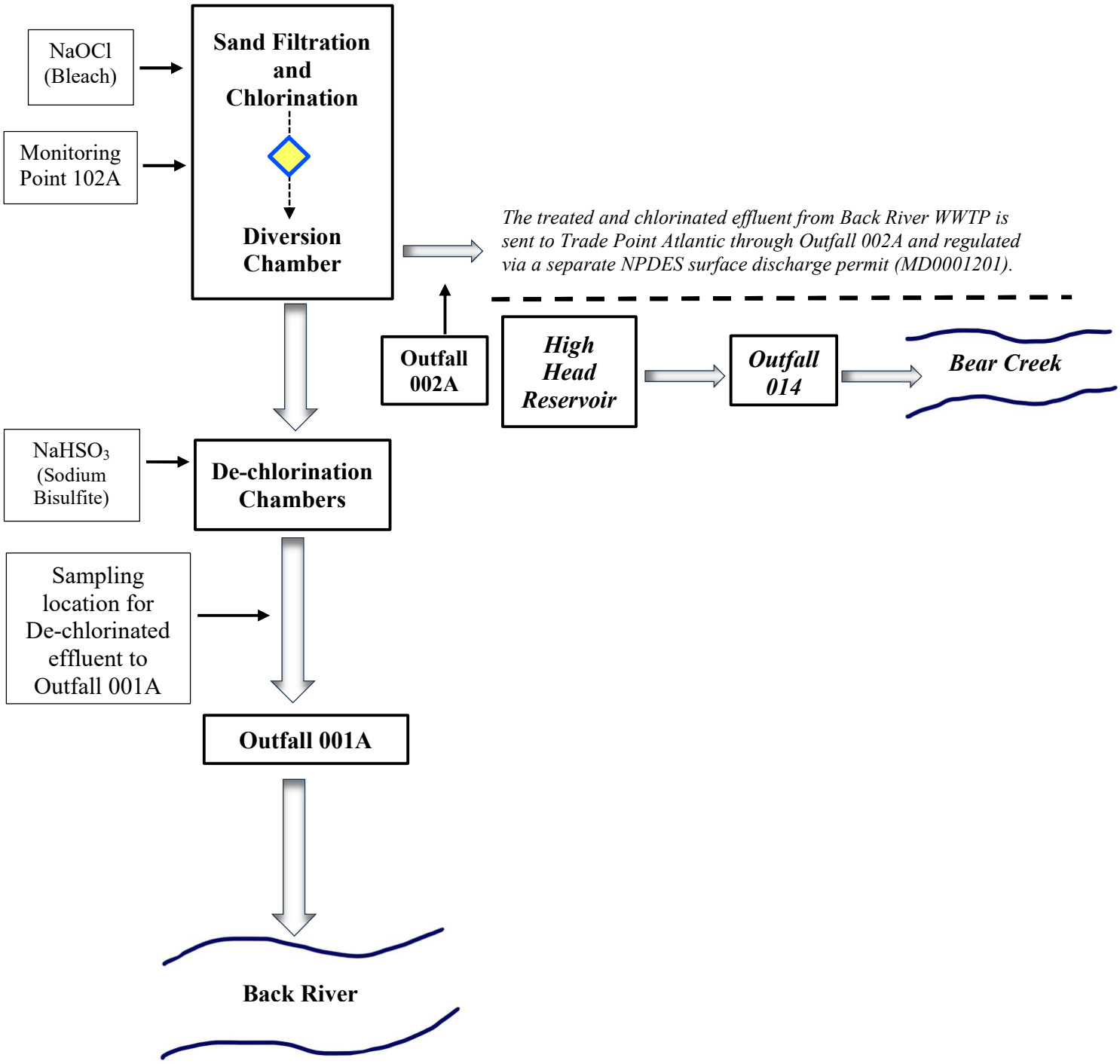
DATE	ACTIVITY DESCRIPTION
11/10/2021	Received discharge permit application dated **11/10/2021** completed and signed by Elizabeth R. Jacobs, Acting Plant Manager.
12/14/2022	Site visit conducted.
07/13/2023	Received memo from MDE's Water Resources Planning Division stating that the proposed discharge flow is consistent with the 2006 Baltimore City Water and Sewer Plan.
08/14/2023	Notified applicant and interested person(s) by letters concerning Notice of Application publication on 08/16/2023 and 08/23/2023 in the "*The Sun*" newspaper.
09/01/2023	Received letter dated 08/30/2023 from Delegate Bob Long with particular interest concerning the permit application.
11/08/2023	Informational Meeting was held at MDE Headquarters in Baltimore City.
4/19/2024	Draft permit sent to EPA and Baltimore City for review and comments.
5/13/2024	Virtual meeting conducted with EPA to discuss draft permit and SRFS.
5/19/2024	Comments received from EPA on the draft permit.
6/6/2024	Virtual meeting conducted with Baltimore City to discuss the draft permit.
6/21/2024	Updated information emailed to Baltimore City, as requested, including revised ammonia criteria.
7/12/2024	Comments received from Baltimore City on the draft permit.
11/8/2024	Revised draft permit and SRFS, along with MDE's Comment Response Document (CRD) sent to EPA.
3/25/2025	Latest draft permit and SRFS, along with MDE's revised CRD sent to EPA and Baltimore City, prior to proceeding with publication of Tentative Determination (TD) and public hearing.

V. MAP SHOWING POINT OF DISCHARGE LOCATION



V. MAP SHOWING POINT OF DISCHARGE LOCATION

Conceptual Flow Schematic for Final Effluent Discharge at Back River WWTP



V. MAP SHOWING POINT OF DISCHARGE LOCATION

Summary of Monitoring Locations for Effluent Parameters at Back River WWTP

Monitoring Point 102A (*180 MGD*)

MEASURED AT MP 102A

- BOD_5
- TSS
- Total Kjeldahl Nitrogen
- Total Ammonia Nitrogen as N
- Total Nitrogen as N
- (Nitrate + Nitrite) as N
- Organic Nitrogen as N
- Total Phosphorus as P
- Orthophosphate as P
- Dissolved Oxygen
- pH
- tPCBs
- Flow
- 24 additional Toxic Chemical Testing (TCT) parameters

CALCULATED AT MP 102A

- Annual Loadings for TSS, Total Phosphorus as P, and Total Nitrogen as N
- Total Flow
- Year-to- date (YTD) Flow

Outfall 001A (*130 MGD*)

MEASURED AT 001A

- Flow
- Total Residual Chlorine
- Enterococci
- E. coli
- Whole Effluent Toxicity (WET)

CALCULATED AT 001A

- Loading Rates for BOD_5, TSS, Total Ammonia Nitrogen as N, Total Phosphorus as P, Total Nitrogen as N, and tPCBs.
- Total Flow

Outfall 002A (*50 MGD*)

MEASURED AT 002A

- Enterococci
- E. coli

CALCULATED AT 002A

- Loading Rates for BOD_5, TSS, Total Ammonia Nitrogen as N, Total Phosphorus as P, Total Nitrogen as N, and tPCBs.
- Flow
- Total Flow