

# **Maryland Department of Environment**

Water and Science Administration Compliance Program 1800 Washington Blvd, Suite 420 Baltimore, MD 21230-1719 410-537-3510, 1-800-633-6101

**Inspector**: Ronald Wicks

**AI ID**: 8449

**Site Name**: Back River WWTP

Facility Address: 8201 Eastern Ave, Baltimore, MD 21224

**County**: Baltimore County

**Start Date/Time**: March 26, 2022 01:03 PM **End Date /Time**: March 26, 2022 05:05 PM

**Complaint Number:** 

Media Type(s): NPDES Municipal Major Surface Water

Contact(s):

Betty Jacobs, Plant Manager Ronald Turner Operations Engineer

## **NPDES Municipal Major Surface Water**

Permit / Approval Numbers: 15DP0581

NPDES Numbers: MD0021555

Inspection Reason: Follow-up (Non-Compliance)

Site Status: Active

Compliance Status: Noncompliance Site Condition: Noncompliance

**Recommended Action:** Additional Investigation Required **Evidence Collected:** Photos or Videos Taken, Visual Observation

**Delivery Method:** Email

Weather:

### **Inspection Findings:**

The Back River WWTP is a 180 MGD activated sludge process sewage treatment plant with BNR (MLE process), ferric chloride for phosphorous removal, Enhanced Nitrogen Removal (Denitrification filters), sand filters, chlorination and dechlorination. The flow is split at a junction box after the sand filters and the main portion of the flow goes to Outfall 001 to Back River and about 20 MGD of the flow goes to Outfall 002. The effluent from Outfall 002 is sent to Tradepoint Atlantic, where it flows to High Head Lake and then discharged to Bear Creek through outfalls at the Tradepoint Atlantic site. The facility's activity code or standard industrial classification (SIC) is 4952 and the North American Industry Classification System (NAICS) is 2213. The receiving

Facility Address: 8201 Eastern Ave, Baltimore, MD 21224

water is Back River and a tributary named Bread and Cheese Creek. The Back River basin is protected for Use II, water contact recreation and the protection of aquatic life.

On March 26, 2022, I met Ms. Betty Jacobs and Mr. Ronald Turner representing the Back River WWTP for a follow up to an inspection conducted on March 22, 2022, to determine the status of the corrective action specified in the 3-22-2022 inspection report and to determine compliance with the Special Conditions A.1, A.2, H and General Conditions B of the above authorization.

I conducted a site review accompanied by Ms. Jacobs and Mr. Turner. The first stop was at the primary settling tanks (PST). There, I found that only two (#8 and #11 PST) of the eleven PSTs were in operation. Mr. Turner told me that PST #9 was being cleaned and the drive unit on PST #10 was not functioning.

During the previous inspection only two of the eleven PSTs were in operation. Today there were 2 PSTs in operation which is below the number of PSTs necessary to treat the primary wastewater entering the system as stated by operators during the 3/22/22 inspection. This problem is impacting the treatment plant's ability to properly remove solids, scum, and FOG in the primary treatment phase.

Next, I checked the wastewater traveling in the channels from the PSTs to the activated sludge plants. This wastewater was a dark grey color indicating a high concentration of solids in the waste stream. This is similar to my finding on 3/22/22. See pictures below:



Turbid dark grey wastewater flowing from the PST primary treatment to the biological reactors 3/26/22

Inspection Date: March 26, 2022
Site Name: Back River WWTP
Facility Address: 8201 Eastern Ave, Baltimore, MD 21224

The wastewater leaving the PSTs flows to a series of biological reactors for nitrogen removal. The facility has two trains with six reactors in each train for a total of 12. Each reactor has a three-pass design designated A, B and C. During an inspection of the reactors, I found the reactors were in the same condition as described in the 3/22/22 inspection report.

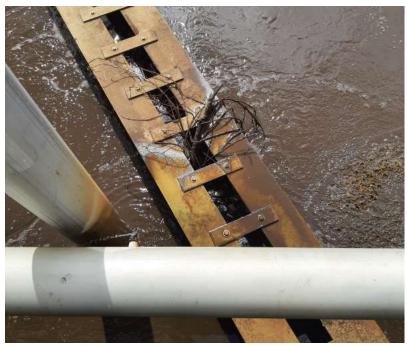
Next, I inspected the reactors. There, I found the following problems listed below:

- 1. Some of the mixers in the A pass have vegetation growing on the blades which is hindering mixing capabilities. See picture below:
- 2. There is a heavy accumulation of solids with vegetation growing at the end of the reactor before going to the clarifiers. See pictures below:
- 3. The mixed liquor concentration (MLSS) in each reactor are ranging from 3190 6,500. Ideally the MLSS should be maintained approximately 3,000. The facility's target is between 2,600 2,800, however there is a wide range depending on the reactor. According to the plant engineer, Mr. Dan Latova due to the number of solids in the system they cannot meet that goal.



3/26/22 Vegetation growing in solids accumulated in one of the reactors

Inspection Date: Site Name: Facility Address: March 26, 2022 Back River WWTP 8201 Eastern Ave, Baltimore, MD 21224



3/26/22 vegetation growing in reactor



Vegetation growing in the reactor 3/26/22

Inspection Date: Site Name: Facility Address: March 26, 2022 Back River WWTP 8201 Eastern Ave, Baltimore, MD 21224



Solid's accumulation in the one of the reactors 3/26/22

Inspection Date: Site Name: Facility Address: March 26, 2022 Back River WWTP 8201 Eastern Ave, Baltimore, MD 21224



Mixer unable to turn properly due to solids in the reactor 3/26/22

Facility Address: 8201 Eastern Ave, Baltimore, MD 21224



Floating solids in one of the reactors 3/26/22

After inspecting the reactors, I inspected the secondary clarifiers. During an inspection of the secondary clarifiers, I found conditions similar to what I found during the March 22 inspection. There were problems with maintenance that inhibited operations and ultimately performance of the clarifiers. There was evidence of algae growth within the clarifiers. There was an accumulation of solids within in the clarifiers and floating solids and scum in the center well. The conditions of the clarifiers were the same as I observed during the previous inspection. The reed grasses and other vegetation remain in the clarifiers causing operational problems. Pictures below show concerns over the operation of the secondary clarifiers.

8201 Eastern Ave, Baltimore, MD 21224



3/26/22 Secondary clarifier- vegetation and solids clogging the system and short-circuiting of the weirs.



3/26/22 Secondary clarifier

Inspection Date: March 26, 2022 Back River WWTP Site Name:

Facility Address: 8201 Eastern Ave, Baltimore, MD 21224

From the secondary clarifiers I traveled to the denitrification filter building. During this inspection, I found conditions similar to what I found during the last two inspections. Many of the filters were not functioning as designed. Quads #1, #2 and #4 were all submerged under water due to clogging during my last inspection. This condition has improved and not all of the filters are submerged as observed during the 3/22/22 inspection. However, some of the filters were submerged and not functioning as designed. The control stats show that 40 of the 52 are functioning and many of the filters had a floating layer of scum as described during the 3/22/22 inspection.



3/26/22 submerged DN filter

Facility Address: 8201 Eastern Ave, Baltimore, MD 21224



Submerged DN filters 3/26/22

Next, I inspected the effluent from the DN filters entering the sand filters. The water appeared dark grey. See picture below. I continued this inspection with an inspection of the sand filters. The facility has 48 sand filters and according to Mr. Turner, 15 of the 48 are functioning. During an inspection of the sand filters, the traveling bridges appeared to be not functioning.

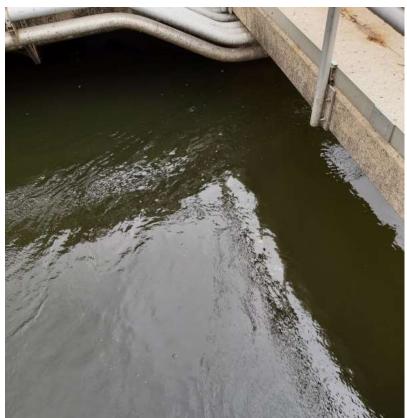
Facility Address: 8201 Eastern Ave, Baltimore, MD 21224



Effluent from the DN filters going to the sand filters. 3/26/22

The effluent from the sand filters flows to the chlorine contact chamber. The effluent appeared dark grey. See picture below:

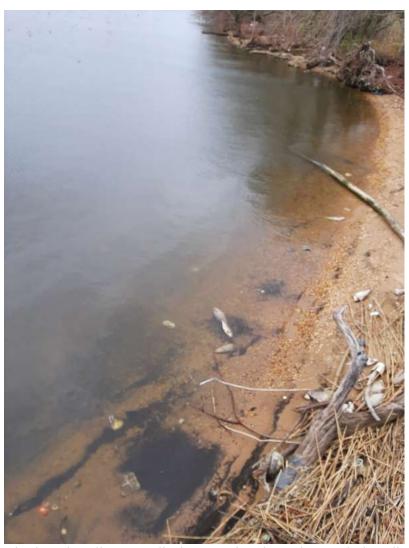
Facility Address: 8201 Eastern Ave, Baltimore, MD 21224



Effluent from the sand filters 3/26/22 has a dark grey color.

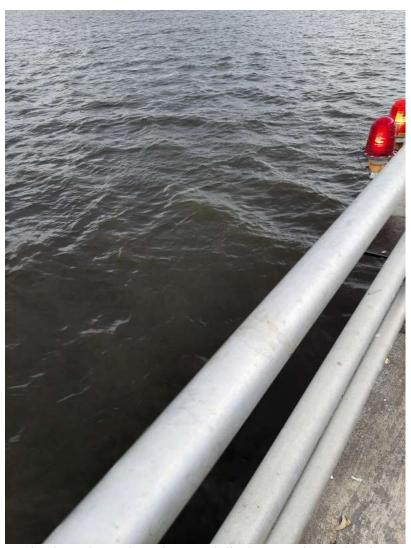
During an inspection of the contact chambers, I found conditions similar to the last inspection. The wastewater in the contact chambers was a dark grey color with intermittent small black clumps of floating solids flowing to the final discharge point. Next, I inspected the final effluent at the step post aeration system. The final effluent was grey in color with some turbidity. Next, I traveled to the end of the pier that goes 1200 feet from shore to the point where the effluent mixes with the Back River. I also checked the shoreline. Below are pictures of the river at that point.

8201 Eastern Ave, Baltimore, MD 21224



3/26/22 Shoreline near discharge point shows heavy dark sediments along the shoreline.

Facility Address: 8201 Eastern Ave, Baltimore, MD 21224



Back River above the submerged discharge point to the river at the end of the pier 3/26/22

The Back River WWTP has not complied with the corrective actions listed in the March 22, 2022, inspection and the following problems still exist:

- 1. Only 2 of the 11 primary settling tanks ("PSTs") were in service, and 1 of the 2 operating PSTs requires maintenance to function properly. The Back River WWTP does not have sufficient PST capacity to treat its primary waste stream.
- 2. Denitrification filters ("DN Filters") are not functioning as designed because of the presence of a high solids' concentration in the DN Filter influent. At least 12 of the 52 DN filters were not functioning.
- 3. January 2022 concentrations of TSS in DN Filter influent ranged between 31 and 292 mg/L. This indicates that the solids settling processes are failing as substantiated by the clogging of the DN Filters and turbidity of the final effluent. These high concentrations are causing intermittent and chronic clogging of the DN Filter system.

Facility Address: 8201 Eastern Ave, Baltimore, MD 21224

4. Significant algal and vegetation are still present on the weirs of the secondary clarifiers. This has caused the short circuiting of the system and likely negatively impacts TSS concentration in the Plant's treatment train wastewater.

- 5. Significant amounts of solids are still present in the secondary clarifiers. This accumulation is decreasing the quality of the Plant's final effluent.
- 6. A significant amount of reed grasses and other vegetation are established in the secondary clarifiers. This is preventing the proper functioning of these clarifiers
- 7. Significant amounts of vegetation (*e.g.*, reed grasses) have grown and are established in the biological reactors and on the mixers in the reactors. This is preventing the proper functioning of these reactors.

Total suspended solids concentrations of the waste stream going into the denitrification filters or influent has increased considerably compared to past operational data. The facility is experiencing BOD, total phosphorous violations due to the high concentrations of TSS throughout the processes and in the final effluent. These high TSS concentrations are also a violation of the above authorization. Table 1 below show the reported violations reported to date for the month of February. A complete report will be available by March 28.

Table 1

Date	Parameter	Result	Permit Violation	Permit Limitation
February, 2022	BOD5	11 mg/L /Monthly Average concentration	Exceeded Monthly Average concentration	10 mg/L Monthly Average Concentration
February, 2022	Total Suspended Solids	19,165 lbs./Day Average Loading	Exceeded Monthly Average Loading	11,000 lbs./ Day Average Loading
February 2022 Week 4	Total Suspended Solids	19,063 lbs./ Weekly Average loading	Exceeded Weekly Average loading	16,000 lbs./Weekly Average
February, 2022	Total Suspended Solids	19 mg/L Max. Monthly Average concentration	Exceeded Monthly Average concentration	10 mg/L Monthly Average
February 2022 Week 4	Total Suspended Solids	18 mg/L Weekly Average Concentration	Exceeded Weekly Average Concentration	15 mg/L Weekly Average
February 2022 Week 4	Total Suspended Solids Outfall 002	32 mg/L/ Monthly Average Concentration	Exceeded Monthly Average concentration	30 mg/L/ Monthly Average Concentration

Facility Address: 8201 Eastern Ave, Baltimore, MD 21224

February,	Total	1,055 Lbs./Day	Exceeded Monthly	220 lbs./Month
2022	Phosphorous		Average loading	
February	Total	1.07 mg/L/ Monthly	Exceeded Monthly	0.2 mg/L/
2022	Phosphorous	Average Concentration	Average	Monthly
			concentration	Average
				Concentration
February	Total	884/ Lbs. Day Weekly	Exceeded weekly	330 lbs./ Weekly
2022	Phosphorous	Average Loading	average loading	Average Loading
Week 4				
February	Total	0.87 mg/L Weekly	Exceeded weekly	0.3 mg/L
2022	Phosphorous	Average	average	Weekly Average
Week 4		Concentration	concentration	Concentration
February	Total	242 Lbs./day Monthly	Exceeded Monthly	83/Lbs. Day
2022	Phosphorous	Average loading	Average loading	Monthly
	Outfall 002			Average loading
February	Total	1.57 mg/L Monthly	Exceeded Monthly	0.2 mg/L
2022	Phosphorous	Average	average	monthly Average
	Outfall 002	Concentration	concentration	Concentration

To bring this site into compliance with Environment Article Title 9, the Back River WWTP must address the problems listed above.

STATE LAW PROVIDES FOR PENALTIES FOR VIOLATIONS OF MARYLAND ENVIRONMENT ARTICLE TITLE 9 FOR EACH DAY THE VIOLATION CONTINUES. THE MARYLAND DEPARTMENT OF THE ENVIRONMENT MAY SEEK PENALTIES FOR THE AFOREMENTIONED VIOLATIONS OF TITLE 9 ON THIS SITE FOR EACH DAY THE VIOLATION CONTINUES

#### NPDES Municipal Major Surface Water - Inspection Checklist

Inspection Item	Status	Comments
Does the facility have a discharge permit?	No Violations Observed	
Is the discharge permit current?	No Violations Observed	
If the permit is not current, has facility applied for renewal?	No Violations Observed	
Does the facility operate as authorized bytheir current permit?	No Violations Observed	
Has the Permitee exceeded the permitted capacity of the WWTP?	No Violations Observed	
Is the number and location of discharge points as described in the	No Violations Observed	
discharge permit?		
Has permittee submitted correct name and address of receiving	No Violations Observed	
waters?		
Is the permittee meeting the compliance schedule per permit	4 - Not Evaluated	
requirements?		
Has the operator or superintendent been certified by the Board in	No Violations Observed	
the appropriate classification for the facility?		

8201 Eastern Ave, Baltimore, MD 21224

## NPDES Municipal Major Surface Water - Inspection Checklist

Inspection Item	Status	Comments
Are adequate records being maintained for the sampling date, time,	4 - Not Evaluated	
and exact location; analysis dates and times; individual performing		
analysis; and analytical results?		
Are adequate records being maintained for the analytical	4 - Not Evaluated	
methods/techniques used?		
Does the permittee retained a minimum of 3 years worth of	No Violations Observed	
monitoring records including raw data and original strip chart		
recordings; calibration and maintenance records; and reports?		
Do lab records reflect that lab and monitoring equipment are being	4 - Not Evaluated	
properly calibrated and maintained?		
Does the permittee/laboratory use suitable QA/QC procedures and	4 - Not Evaluated	
operate a formal quality assurance (QA) program using appropriate		
controls?		
Has the permittee submitted the monitoring results on the proper	No Violations Observed	
Discharge Monitoring Report form?		
Do the Discharge Monitoring Reports reflect permit conditions?	4 - Not Evaluated	
Has the permittee submitted these results within the allotted time	No Violations Observed	
electronically?		
Is the facility being properly operated and maintained including:(a)	Out of Compliance	See narrative
stand-by power or equivalent provisions available, (b) adequate		
alarm system for power or equipment failure available, (c) all		
treatments units are in service, .		
Is sewage sludge managed correctly per permit requirements?	Not Evaluated	
If a by-pass occurred since last inspection, has the permittee	4 - Not Evaluated	
submitted notice of the by-pass within the allotted time?		
If a non-complying discharge occurred since the last inspection,	No Violations Observed	
was the regulatory agency notified within the allotted time?		
If applicable, has the permitee complied with all special conditions	Out of Compliance	See narrative
of their permit?		
Have overflows occurred since the last inspection?	4 - Not Evaluated	
Have records of overflows been maintained at the facility for at	4 - Not Evaluated	
least five years?		
Are flow measuring devices properly installed and operated,	4 - Not Evaluated	
calibration frequency of flow meter adequate, flow measurement		
parameter inequality of now inequality, now inequalities		
equipment adequate to handle expected ranges of flow?		
	No Violations Observed	
equipment adequate to handle expected ranges of flow?	No Violations Observed	
equipment adequate to handle expected ranges of flow?  Are discharge monitoring points adequate for representative	No Violations Observed  No Violations Observed	
equipment adequate to handle expected ranges of flow?  Are discharge monitoring points adequate for representative sampling?		
equipment adequate to handle expected ranges of flow?  Are discharge monitoring points adequate for representative sampling?  Do parameters and sampling frequency meet the minimum	No Violations Observed	
equipment adequate to handle expected ranges of flow?  Are discharge monitoring points adequate for representative sampling?  Do parameters and sampling frequency meet the minimum requirements?	No Violations Observed	
equipment adequate to handle expected ranges of flow?  Are discharge monitoring points adequate for representative sampling?  Do parameters and sampling frequency meet the minimum requirements?  Does the permittee use the method of sample collection required by	No Violations Observed	
equipment adequate to handle expected ranges of flow?  Are discharge monitoring points adequate for representative sampling?  Do parameters and sampling frequency meet the minimum requirements?  Does the permittee use the method of sample collection required by the permit?	No Violations Observed  No Violations Observed	

8201 Eastern Ave, Baltimore, MD 21224

## NPDES Municipal Major Surface Water - Inspection Checklist

Inspection Item	Status	Comments
Has the permittee notified the Department of the name and address	No Violations Observed	
of the commercial laboratory?		
Were discharges observed at the authorized outfalls?	No Violations Observed	
If discharges were observed, do the discharges or receiving waters	Out of Compliance	See narrative
have any visible pollutants observed?		
Were discharge samples collected?	4 - Not Evaluated	
Does this facility have coverage under a a NPDES stormwater	4 - Not Evaluated	
discharge permit?		
If the permittee has coverage under a NPDES storm water permit,	4 - Not Evaluated	
has a storm water pollution prevention plan been developed and		
implemented as required?		
Are the permit conditions being met?	Out of Compliance	

Inspector:	Renald Wicks 2/26/22	Received by:		
	Ron Wicks /Date ron.wicks@maryland.gov 410-537-3510		Signature/Date	
			Print Name	