



Maryland Department of Environment
Water and Science Administration
Compliance Program
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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: June 16, 2021 9:36AM
End Date /Time: August 11, 2021 9:36AM

Media Type(s): NPDES Municipal Major Surface Water

Contact(s):
Betty Jacobs, Plant Manager
Rayford McEachern, Plant Engineer
Daniel Latova, Plant Engineer
Ronald Turner, Storm Water Pollution Prevention Manager

NPDES Municipal Major Surface Water

Permit / Approval Numbers: 15DP0581
NPDES Numbers: MD0021555
Inspection Reason: Initial Yearly, PAF
Site Status: Active
Compliance Status: Noncompliance
Site Condition: Noncompliance
Recommended Action: Additional Investigation Required
Evidence Collected: Photos or Videos Taken, Record Review, Visual Observation
Delivery Method: Email
Weather: Clear Average

Inspection Findings:

The Back River WWTP is an activated sludge process sewage treatment plant with BNR (MLE process), ferric chloride for phosphorous removal, Denitrification filters, chlorination, and dechlorination. The flow is split at a junction box and a portion of the flow goes to outfall 001 to Back River via cascading outfall and the remaining goes to 002, which is further chlorinated and sent to Trade Point Atlantic. Although the facility has been upgraded to ENR, the contract 882 for the Activator 4 system is not complete. The reactors for the Activator 4 system are not online.

The facility's activity code or standard industrial classification (SIC) is 4952 and the North American Industry Classification System (NAICS) is 2213. The receiving water is Back River for

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Outfall 001, which is protected for Use II, water contact recreation and the protection of aquatic life and Outfall 002 discharges to Bear Creek also protected for Use II.

Today an announced routine inspection was conducted for compliance with the individual Discharge Permit NPDES # MD0021555 and State # 15-DP-0581 at the Back River WWTP. The permit effective date is 5/1/2018, expiration date of 4/30/2023 and a reapplication date of 10/31/2021. I met Ms. Betty Jacobs, Mr. Rayford McEachern, Mr. Ronald Turner, and Mr. Dan Latova representing the permittee. After a preliminary meeting with the above persons on my plans and what I expected to accomplish during this evaluation, I discussed the numerous effluent violations that I observed during the preliminary data review while preparing for this PAI. See **Table 4** for a list of violations extending from August 2020 through May 2021

During our discussion of the effluent violations, Ms. Jacobs stated that the treatment system lost reliable service of the WWTP's dewatering system. According to Ms. Jacobs, the main centrifuge at the plant began to have problems in January 2021 and is currently not functioning satisfactorily. The solids were not being processed properly and sludge wasting became a problem due to higher-than-normal solids content. These problems have affected the effluent as well. The solid concentrations have caused BOD and TSS violations and because of the high TSS concentrations, the ferric chloride is not able to adequately control the total phosphorous concentrations. This has caused total phosphorous violations as well. On March 3, 2021, the City contracted with Synagro Inc., to provide temporary portable dewatering centrifuges to process the backlog of solids throughout the treatment system. The temporary centrifuges are now producing cake sludge for disposal. My review determined that the effluent violations began in August 2020 well before the centrifuge failed in January 2021 as stated by the permittee. Therefore, there is evidence that the centrifuge began failing sometime in 2020 before the January 2021 reported fail date. Preventative maintenance may have prevented this problem or decreased the downtime to have repairs made.

Ms. Jacobs and Mr. Latova stated that they are renting several portable centrifuges to help process the solids. E. coli concentrations are also high for select samples.

Records and Reports

After the initial meeting with the above facility representatives, I reviewed the records and reports for the period of August 2020 - December 2020 and January – May of 2021.

These records included the following:

1. Discharge Monitoring Reports (DMR)
2. Monthly Operating Reports (MOR)
3. Routine Laboratory analytical reports
4. PCB congener data
5. Field instrument calibration records
6. Permit specified reports and plans
7. Whole effluent toxicity reports and statistical data

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I performed a comprehensive data trace on the compliance monitoring data reported and the daily operation log and MOR for the months of December of 2020 and May 2021. I found that the data checked were calculated, transcribed, and reported accurately on the DMR for the period of my review. However, I did observe the following problems associated with the records and reports, operations and the self-monitoring program detailed below:

Self-monitoring Program

I observed deficiencies in the Self-monitoring program associated with:

- Sample collection
- Sample monitoring equipment
- Laboratory analysis and reporting
- Collection of quality assurance samples
- Sample reporting

The permittee has failed to notify the Department of the effluent violations shown in **Table 4** within 24 – hours as specified by General Condition B. 1.

In addition, the WET tests initiated on 2/25/2021 and 5/25/2021 were chronically toxic to the *Americamysis bahia*. The IC25 for fecundity was 80.5% and 85.0 % respectively. These values are below the IWC of 98.2 %. The permittee is required to conduct additional WET testing within 30 days of finding toxicity in two consecutive tests. According to Mr. Latova, a repeat test was not done because they knew it would show toxicity if repeated. I explained to all present that the repeat WET testing is a permit condition (Special Condition D 10) and was not negotiable

According to Mr. Latova and Mr. McEachern, the permittee has not received the results of the annual toxic chemical testing that was conducted in February 2021. These results are due by the second week of April 2021. The permittee should contact the laboratory to request the results and submit to the Department for review.

Because of problem observed during an evaluation of the PCB data for 12/2020, I completed a review of 11 quarters of laboratory reports for the tPCB monitoring by EPA method 1668A at Outfall 001 and 002. This quarterly tPCB monitoring is required by the permit because the receiving water is impaired for PCBs. 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 001, based on the design flow of 130.0 MGD. 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 002, based on the design flow of 50.0 MGD.

As a part of the monitoring program, laboratory and sampling contamination is evaluated using method and rinsate blanks, respectively. In accordance with EPA guidance, DRBC requirements and the Department's protocol titled *REPORTING REQUIREMENTS FOR TOTAL PCBs (PCB CONGENERS) BY EPA METHOD 1668 C or A rev 11/9/2017*. This protocol specifies that the result of the rinsate blank shall not exceed 600 pg/L.

The analytical results from outfalls 001 and 002 show that the rinsate blank contamination concentration levels exceed the rinsate blank contamination criteria for 7 of the 20 samples evaluated where a rinsate blank was collected. **See Tables 1 and 2 below.** Because of this contamination, there are concerns over the validity and accuracy of the reported tPCB analytical results for the second quarter of 2018 through the fourth quarter 2020.

Table 1

Sample Date	6/30/2018	10/3/2018	12/12/2018	2/28/2019	6/13/2019	9/18/2019	12/18/2019
Outfall 001	744 pg/L	590 pg/L	799 pg/L	397 pg/L	1760 pg/L	1810 pg/L	1090 pg/L
Rinsate Blank / Equipment blank for Outfall 001	73.9 pg/L	159 pg/L	174 pg/L	107 pg/L	994 pg/L	615 pg/L	BIT
Outfall 002	No Sample collected	658 pg/L	770 pg/L	448 pg/L	1010 pg/L	1500 pg/L	988 pg/L
Rinsate Blank /Equipment blank for Outfall 002		136 pg/L	113 pg/L	118 pg/L	174 pg/L	1190 pg/L	234 pg/L
Method Blank	NR	NR	114 pg/L	NR	NR	141 pg/L	111 pg/L

Table 2

Sample Date	2/27/2020	6/2/2020	9/2/2020	12/2/2020
Outfall 001	1070 pg/L	706 pg/L	1310 pg/L	909 pg/L
Rinsate Blank / Equipment blank for Outfall 001	222 pg/L	818 pg/L	147 pg/L	1920 pg/L
Outfall 002	873 pg/L	555 pg/L	1480 pg/L	753 pg/L
Rinsate Blank /Equipment blank for Outfall 002	681 pg/L	319 pg/L	174 pg/L	1190 pg/L
Method Blank	NR	73.2 pg/L	NR	NR

rinsate blank results exceed 600 pg/L indicates excessive contamination during sampling

NR = Not reported

BIT – Broken in transit

After the December 2020 PCB sampling event, I provided Mr. Latova and Mr. McEachern with a sampling protocol and guidance for the cleaning and sampling of the PBC congeners to minimize sample contamination during sample collection. This protocol was used for sampling conducted in 2021 (see Table 3). The results of the rinsate blanks for these two sampling events are now within the acceptance limits.

Table 3

Sample Date	5/4/2021	5/26/2021
Outfall 001	787 pg/L	1090 pg/L
Rinsate Blank / Equipment blank for Outfall 001	255 pg/L	196 pg/L
Outfall 002	723 pg/L	1660 pg/L
Rinsate Blank /Equipment blank for Outfall 002	153 pg/L	118 pg/L
Method Blank	NR	NR

Finally, the laboratory reports are not complete. The permittee should request a complete legible laboratory data package from the laboratory as specified by section D of the MDE protocol REPORTING REQUIREMENTS / LABORATORY DELIVERABLES. The extremely toxic 12 dioxin-like PCB congeners identified by the World Health Organization (WHO) were not specifically reported as specified by the MDE’s Guidance document titled *REPORTING REQUIREMENTS FOR TOTAL PCBs (PCB CONGENERS) BY EPA METHOD 1668 C or A*. The tPCB 1668A laboratory report states that the method blanks met the acceptance criteria, but the laboratory failed to report the criteria or supply a copy of the method blank results. This data is needed to determine if the results meet the Department’s criteria outlined in REPORTING REQUIREMENTS FOR TOTAL PCBs (PCB CONGENERS) BY EPA METHOD 1668 C or A. This complete report should be submitted to the Department for future sampling events.

Operation and Maintenance

The analytical results of the samples show that there are problems meeting effluent limitations due to the performance of the treatment plant, which is discussed above. During an Evaluation of the

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permittee's operation and maintenance activities that impact plant performance, I found that the biggest problem is the plant's current ability to adequately process solids throughout the plant. There were scattered problem with broken or malfunctioning equipment and construction work in the Activation area, discussed later in this report. Below in Table 4 is a list of effluent violations for the period August 2020 through the month of May 2021. In addition, the permittee has failed to report these violations in accordance with General Condition B.1. Permit Noncompliance - Notification Requirements as noted above. This condition states that if the permittee does not comply with or will be unable to comply with any permit condition, the permittee shall, within 24 hours, notify the Department by telephone at (410) 537-3510 during work hours or at (866) 633-4686 during evenings, weekends, and holidays. Moreover, the permittee must also follow up with a written notification as described in General Condition B1 within 5 days.

Facility maintenance directly affects the ability of the treatment plant to operate efficiently and to comply with its NPDES permit. During the site review discussed below, I found malfunctioning equipment because of maintenance problems. Maintenance is done to correct existing problems and as a preventative measure to improve treatment reliability by minimizing the time equipment will be out of service and prevent effluent violations.

In addition, staff must be trained and competent to perform maintenance inspection and make precise repairs as required. During this inspection, I learned that of the 76 certified operators only 2 have permanent licenses and the remaining are temporary. According to Mr. Turner, some have not been able to pass the test and others have not tried because there is no incentive to have a permanent license. Only well-trained, dedicated plant operators can be expected to perform adequate physical inspections, repairs, and preventive maintenance. The Back River WWTP should ensure that **all** staff is adequately trained and committed to the satisfactory operations of the treatment plant. The Back River WWTP should develop an updated Operations and Maintenance Manual considering at minimum the following areas of concern:

1. Emergency Situations
2. Energy conservation
3. Equipment record system
4. Inventory management
5. hydraulic overloads
6. Staff scheduling
7. Laboratory contracts and deliverables
8. Permit requirements
9. Preventative maintenance planning
10. Process control
11. Pumping stations
12. Safety
13. Sludge disposal
14. Staff training
15. Treatment chemical supply
16. Treatment process

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Table 4

Date	Parameter	Result	Permit Violation	Permit Limitation
August, 2020	Total Nitrogen	105,102 lbs./Month	Exceeded Monthly Average	99,782 lbs./Month
August, 2020	Total Nitrogen	108,392 lbs./Month	Exceeded Monthly Average	99,782 lbs./Month
August 2020	Total Nitrogen	143,203 lbs./Month	Exceeded Monthly Average	99,782 lbs./Month
September, 2020	Total Nitrogen	108,392 lbs./Month	Exceeded Monthly Average	99,782 lbs./Month
October, 2020	Total Nitrogen	142,303 lbs./Month	Exceeded Monthly Average	99,782 lbs./Month
December 15 - 21, 2020	Total Suspended Solids	22,704 lbs./Week.	Exceeded Weekly Average	16,000 lbs./Week.
December 22 - 28, 2020	Total Suspended Solids	18,278 lbs./Week.	Exceeded Weekly Average	16,000 lbs./Week.
December 15 - 21, 2020	Total Phosphorous	0.42 mg/L	Exceeded Weekly Average	0.3 mg/L
December, 2020	Total Phosphorous	298 lbs./Month	Exceeded Monthly Average	220 lbs./Month
December 15 - 21, 2020	Total Phosphorous	712 lbs./Week	Exceeded Weekly Average	330 lbs./Week
December 22 - 28, 2020	Total Phosphorous	481 lbs./Week	Exceeded Weekly Average	330 lbs./Week
January 8-14, 2021	Total Suspended Solids	17,426 lbs./Week	Exceeded Weekly Average	16,000 lbs./Week
January 8-14, 2021	Total Suspended Solids	16 mg/L/ Week	Exceeded Weekly Average	15 mg/L
January, 2021	Total Phosphorous	241 lbs./Month	Exceeded Monthly Average loading	220 lbs./Month
February, 2021	BOD5	26,044 lbs./Month	Exceeded Monthly Average loading	11,000 lbs./Month
February 8-14, 2021	BOD5	18,077 lbs./Weekly Av.	Exceeded Weekly Average loading	16,000 lbs./Week
February 15-21, 2021	BOD5	25,746 lbs./Weekly Av.	Exceeded Weekly Average loading	16,000 lbs./Week

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February 22-28, 2021	BOD5	50,488 lbs./Week Av.	Exceeded Weekly Average loading	16,000 lbs./Week
February, 2021	BOD5	16.6 mg/L/Weekly Average	Exceeded Weekly Average concentration	15 mg/L/Weekly Average concentration
February, 2021	BOD5	19.2 mg/L/Weekly Average	Exceeded Weekly Average concentration	15 mg/L/Weekly Average
February, 2021	BOD5	35.3 mg/L/Weekly Average	Exceeded Weekly Average Concentration	15 mg/L/Weekly Average
February, 2021	BOD5	20 mg/L /Monthly Average concentration	Exceeded Monthly Average concentration	10 mg/L Monthly Average Concentration
February 8-14, 2021	Total Phosphorous	0.48 mg/L/Weekly Average Concentration	Exceeded Weekly Average Concentration	0.3 mg/L Weekly Average Concentration
February 15-21 2021	Total Phosphorous	0.41 mg/L/Weekly Average Concentration	Exceeded Weekly Average Concentration	0.3 mg/L Weekly Average Concentration
February 22-28, 2021	Total Phosphorous	1.1 mg/L/Weekly Average Concentration	Exceeded Weekly Average Concentration	0.3 mg/L Weekly Average Concentration
February 1-7, 2021	Total Phosphorous	369 lbs./ Weekly Average Loading		330 lbs./ Weekly Average Loading
February 8-14, 2021	Total Phosphorous	524 lbs./ Weekly Average Loading		330 lbs./ Weekly Average Loading
February 15-21, 2021	Total Phosphorous	530 lbs./ Weekly Average Loading		330 lbs./ Weekly Average Loading
February 22-28, 2021	Total Phosphorous	1668 lbs./ Weekly Average Loading	Exceeded weekly average loading	330 lbs./ Weekly Average Loading
February, 2021	Total Phosphorous	0.6 mg/L Monthly Average Concentration		0.2 mg/L Monthly Average
February, 2021	Total Phosphorous	1.1 mg/L Weekly Average Concentration		0.3 mg/L Weekly Average Concentration
February, 2021	Total Suspended Solids	54768.0 lbs./Monthly Average Loading		11,000 lbs./ Monthly Average Loading
February 8	Total	18,077 lbs./Week		16,000

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– 14, 2021	Suspended Solids			lbs./Weekly Average
February 15 – 21, 2021	Total Suspended Solids	25,746 lbs./Week		16,000 lbs./Weekly Average
February, 2021	Total Suspended Solids	40 mg/L Max. Monthly Average		10 mg/L Monthly Average
February, 8-14, 2021	Total Suspended Solids	28.9 mg/L Weekly Average Concentration		15 mg/L Weekly Average
February 15-21, 2021	Total Suspended Solids	47.3 mg/L Weekly Average Concentration		15 mg/L Weekly Average
February 22-28, 2021	Total Suspended Solids	70.1 mg/L Weekly Average Concentration		15 mg/L Weekly Average
February, 8-14, 2021	Total Suspended Solids	31,571 lbs./Week		16,000 lbs./Week
February 15-21, 2021	Total Suspended Solids	70,938 lbs./Week		16,000 lbs./Week
February 22-28, 2021	Total Suspended Solids	102,949 lbs./Week		16,000 lbs./Week
February 22-28, 2021	Total Suspended Solids Outfall 002	52 mg/L/ Weekly Average		45 mg/L/ Weekly Average
March 1-7, 2021	Total Suspended Solids	26.4 mg/L/ Weekly Average	Exceeded weekly average concentration	15 mg/L/ Weekly Average
March 15-21, 2021	Total Suspended Solids	32.6 mg/L/ Weekly Average	Exceeded weekly average concentration	15 mg/L/ Weekly Average
March 22-28, 2021	Total Suspended Solids	89.4 mg/L/ Weekly Average	Exceeded weekly average concentration	15 mg/L/ Weekly Average
March 1-7, 2021	Total Suspended Solids	38,616 lbs./Week	Exceeded weekly average loading	16,000 lbs./Week

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March 15-21, 2021	Total Suspended Solids	35,020 lbs./Week		16,000 lbs./Week
March 22-28, 2021	Total Suspended Solids	118,355 lbs./Week		16,000 lbs./Week
March 2021	Total Suspended Solids	43 mg/L Max. Monthly Average	Exceeded monthly average concentration	10 mg/L Monthly Average
March 2021	Total Suspended Solids	53,075 lbs./Monthly Average Loading	Exceeded Monthly Average loading	11,000 lbs./ Monthly Average Loading
March 22-28, 2021	BOD5	36.2 mg/L/Weekly Average	Exceeded Weekly Average	15 mg/L/Weekly Average
March 2021	BOD5	21 mg/L /Monthly Average concentration	Exceeded Monthly Average concentration	10 mg/L Monthly Average Concentration
March 2021	BOD5	22,757 lbs./Month	Exceeded Monthly Average loading	11,000 lbs./Month
March 1-7, 2021	BOD5	19,321 lbs./Weekly Av.	Exceeded Weekly Average loading	16,000 lbs./Week
March 8-14, 2021	BOD5	16,725 lbs./Weekly Av.	Exceeded Weekly Average loading	16,000 lbs./Week
March 22-28, 2021	BOD5	49,153 lbs./Weekly Av.	Exceeded Weekly Average loading	16,000 lbs./Week
March 1-7, 2021	Total Phosphorous	0.61 mg/L Weekly Average Concentration	Exceeded Weekly Average Concentration	0.3 mg/L Weekly Average Concentration
March 8-14, 2021	Total Phosphorous	0.52 mg/L Weekly Average Concentration	Exceeded Weekly Average Concentration	0.3 mg/L Weekly Average Concentration
March 22-28, 2021	Total Phosphorous	1.52 mg/L Weekly Average Concentration	Exceeded Weekly Average Concentration	0.3 mg/L Weekly Average Concentration
March 1-7, 2021	Total Phosphorous	870 lbs./ Weekly Average Loading	Exceeded weekly average loading	330 lbs./ Weekly Average Loading
March 8-14, 2021	Total Phosphorous	598 lbs./ Weekly Average Loading	Exceeded weekly average loading	330 lbs./ Weekly Average Loading
March 15 – 21, 2021	Total Phosphorous	368 lbs./ Weekly Average Loading	Exceeded weekly average loading	330 lbs./ Weekly Average Loading
March 22-28, 2021	Total Phosphorous	1,920 lbs./ Weekly Average Loading	Exceeded weekly average loading	330 lbs./ Weekly Average Loading
March 2021	Total Phosphorous	0.8 mg/L Monthly Average Concentration	Exceeded monthly average	0.2 mg/L Monthly

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			concentration	Average
March 2021	Total Phosphorous	940 lbs./Month	Exceeded Monthly Average loading	220 lbs./Month
March 22-28, 2021	Total Suspended Solids Outfall 002	64 mg/L/ Weekly Average	Exceeded weekly average concentration	45 mg/L/ Weekly Average
March, 2021	Total Suspended Solids Outfall 002	36 mg/L Max. Monthly Average	Exceeded monthly average concentration	30 mg/L Monthly Average
March, 2021	Total Suspended Solids Outfall 002		Sample collected on March 12, 2021, was not analyzed by the laboratory	
March, 2021	BOD5 Outfall 002		Sample collected on March 12, 2021, was not analyzed by the laboratory	
April 1-7, 2021	Total Suspended Solids	43 mg/L/ Weekly Average	Exceeded weekly average concentration	15 mg/L/ Weekly Average
April 8-14, 2021	Total Suspended Solids	36.6 mg/L/ Weekly Average	Exceeded weekly average concentration	15 mg/L/ Weekly Average
April 15-21, 2021	Total Suspended Solids	27.6 mg/L/ Weekly Average	Exceeded weekly average concentration	15 mg/L/ Weekly Average
April 22-28, 2021	Total Suspended Solids	64.4 mg/L/ Weekly Average	Exceeded weekly average concentration	15 mg/L/ Weekly Average
April 1-7, 2021	Total Suspended Solids	48,626 lbs./Week	Exceeded weekly average loading	16,000 lbs./Week
April 8-14, 2021	Total Suspended Solids	38,258 lbs./Week	Exceeded weekly average loading	16,000 lbs./Week
April 15-21, 2021	Total Suspended Solids	25,652 lbs./Week	Exceeded weekly average loading	16,000 lbs./Week
April 22-28, 2021	Total Suspended	60,228 lbs./Week	Exceeded weekly average loading	16,000 lbs./Week

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	Solids			
April, 2021	Total Suspended Solids	41 mg/L Max. Monthly Average	Exceeded monthly average concentration	10 mg/L Monthly Average
April, 2021	Total Suspended Solids	41,100 lbs./Monthly Average Loading	Exceeded Monthly Average loading	11,000 lbs./ Monthly Average Loading
April 1-7, 2021	BOD5	19.4 mg/L/Weekly Average	Exceeded Weekly Average Concentration	15 mg/L/Weekly Average
April 8-14, 2021	BOD5	28.3mg/L/Weekly Average	Exceeded Weekly Average Concentration	15 mg/L/Weekly Average
April 22-28, 2021	BOD5	27.5 mg/L/Weekly Average	Exceeded Weekly Average Concentration	15 mg/L/Weekly Average
April 1-7, 2021	BOD5	21,833 lbs./Weekly Av.	Exceeded Weekly Average loading	16,000 lbs./Week
April 8-14, 2021	BOD5	29,777 lbs./Weekly Av.	Exceeded Weekly Average loading	16,000 lbs./Week
April 22-28, 2021	BOD5	26,343 lbs./Weekly Av.	Exceeded Weekly Average loading	16,000 lbs./Week
April, 2021	BOD5	22 mg/L /Monthly Average concentration	Exceeded Monthly Average concentration	10 mg/L Monthly Average Concentration
April, 2021	BOD5	22,155 lbs./Month	Exceeded Monthly Average loading	11,000 lbs./Month
April 1-7, 2021	Total Phosphorous	0.93 mg/L Weekly Average Concentration	Exceeded Weekly Average Concentration	0.3 mg/L Weekly Average Concentration
April 8-14, 2021	Total Phosphorous	0.88 mg/L Weekly Average Concentration	Exceeded Weekly Average Concentration	0.3 mg/L Weekly Average Concentration
April 15-21, 2021	Total Phosphorous	0.57 mg/L Weekly Average Concentration	Exceeded Weekly Average Concentration	0.3 mg/L Weekly Average Concentration
April 22-28, 2021	Total Phosphorous	1.4 mg/L Weekly Average Concentration	Exceeded Weekly Average Concentration	0.3 mg/L Weekly Average Concentration
April 1-7, 2021	Total Phosphorous	1,065 lbs./ Weekly Average Loading	Exceeded weekly average loading	330 lbs./ Weekly Average Loading
April 8-14, 2021	Total Phosphorous	922 lbs./ Weekly Average Loading	Exceeded weekly average loading	330 lbs./ Weekly Average Loading
April 15-	Total	548 lbs./ Weekly Average	Exceeded weekly	330 lbs./ Weekly

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21, 2021	Phosphorous	Loading	average loading	Average Loading
April 22-28, 2021	Total Phosphorous	1,355 lbs./ Weekly Average Loading	Exceeded weekly average loading	330 lbs./ Weekly Average Loading
April, 2021	Total Phosphorous	0.9 mg/L Monthly Average Concentration	Exceeded monthly average concentration	0.2 mg/L Monthly Average
April, 2021	Total Phosphorous	964 lbs./Month	Exceeded Monthly Average loading	220 lbs./Month
April, 2021	E. coli	157 MPN/100 ML monthly Geomean	Exceeded Monthly maximum Geomean	126 MPN/100 ML monthly maximum Geomean
April 2021 Outfall 002	E. coli	341 MPN/100 ML monthly Geomean	Exceeded Monthly maximum Geomean	126 MPN/100 ML monthly maximum Geomean
May 1 – 7, 2021	Total Suspended Solids	21.4 mg/L/ Weekly Average	Exceeded weekly average concentration	15 mg/L/ Weekly Average
May 15 – 21, 2021	Total Suspended Solids	15.9 mg/L/ Weekly Average concentration	Exceeded weekly average concentration	15 mg/L/ Weekly Average
May 1 – 7, 2021	Total Suspended Solids	18,600 lbs./Week	Exceeded weekly average loading	16,000 lbs./Week
May, 2021	Total Suspended Solids	17 mg/L Max. Monthly Average	Exceeded monthly average concentration	10 mg/L Monthly Average
May, 2021	Total Suspended Solids	15,867 lbs./Monthly Average Loading	Exceeded Monthly Average loading	11,000 lbs./ Monthly Average Loading
May, 2021	Total Suspended Solids	5,251,859 lbs. cumulative total to date	Exceeded annual cumulative total loading	3,959,228 lbs./year maximum annual cumulative total loading
May, 2021	Total Nitrogen	168,255 lbs. monthly total	Exceeded monthly total loading	99,782 lbs. Monthly total
May 1 – 7, 2021	Ammonia	3.34 mg/L/ Weekly Average concentration	Exceeded weekly average concentration	3 mg/L/ Weekly Average
May 22-28, 2021	Ammonia	4.2 mg/L/ Weekly Average concentration	Exceeded weekly average	3 mg/L/ Weekly Average

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			concentration	Concentration
May, 2021	Ammonia	2,450 lbs./ Monthly Average Loading	Exceeded Monthly Average loading	2,200 lbs./ month maximum weekly average loading
May, 2021	Ammonia	2.7 mg/L /Monthly Average concentration	Exceeded Monthly Average concentration	2 mg/L Monthly Average Concentration
May 1-7, 2021	Total Phosphorous	423 lbs./ Weekly Average Loading	Exceeded weekly average loading	330 lbs./ Weekly Average Loading
May 8-14, 2021	Total Phosphorous	336 lbs./ Weekly Average Loading	Exceeded weekly average loading	330 lbs./ Weekly Average Loading
May 15-21, 2021	Total Phosphorous	421 lbs./ Weekly Average Loading	Exceeded weekly average loading	330 lbs./ Weekly Average Loading
May 22-28, 2021	Total Phosphorous	351 lbs./ Weekly Average Loading	Exceeded weekly average loading	330 lbs./ Weekly Average Loading
May 1-7, 2021	Total Phosphorous	0.47 mg/L Weekly Average Concentration	Exceeded Weekly Average Concentration	0.3 mg/L Weekly Average Concentration
May 8-14, 2021	Total Phosphorous	0.39 mg/L Weekly Average Concentration	Exceeded Weekly Average Concentration	0.3 mg/L Weekly Average Concentration
May 15-21, 2021	Total Phosphorous	0.50 mg/L Weekly Average Concentration	Exceeded Weekly Average Concentration	0.3 mg/L Weekly Average Concentration
May 22-28, 2021	Total Phosphorous	0.40 mg/L Weekly Average Concentration	Exceeded Weekly Average Concentration	0.3 mg/L Weekly Average Concentration
May, 2021	Total Phosphorous	0.5 mg/L Monthly Average Concentration	Exceeded monthly average concentration	0.2 mg/L Monthly Average
May, 2021	Total Phosphorous	504 lbs./Month	Exceeded Monthly Average loading	220 lbs./Month
May, 2021	Total Phosphorous	14,709 lbs. monthly total	Exceeded monthly total loading	6,652 lbs. Monthly total
May, 2021	Total Phosphorous	97,797 lbs. cumulative total to date	Exceeded annual cumulative total loading	79,277 lbs./year maximum annual cumulative total loading
May 1 – 7, 2021 Outfall 002	Ammonia	4.41 mg/L/ Weekly Average concentration	Exceeded weekly average concentration	3 mg/L/ Weekly Average
May 22-28, 2021 Outfall 002	Ammonia	4.14 mg/L/ Weekly Average concentration	Exceeded weekly average concentration	3 mg/L/ Weekly Average Concentration

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May 2021 Outfall 002	Ammonia	3.2 mg/L /Monthly Average concentration	Exceeded Monthly Average concentration	2 mg/L Monthly Average Concentration

During the next phase of this inspection, I conducted a site review beginning at the headworks. Under the provisions of a consent order, the headworks have been upgraded and have increase capacity to receive 600 MG of flow into the headworks. The headworks upgrade consists of new piping, coarse and fine screening, grit removal system, and equalization tanks. In addition, a new influent pumping station has been constructed.

The screening units have coarse and fine screens and larger more effective grit removal system. In addition, there are 36 MG storage capacity /equalization tanks that can be utilized during high flows to prevent collection system backups during high flow events above 400 MG.



Lift pumps at headworks pumping station

Waste enters the plant at the mechanical screen building where there are four coarse screening units, and each unit can handle a flow rate of 200 million gallons per day (MGD). There was one unit in service during this inspection. The coarse screened sewage flows from the coarse screens to the deep wet wells. There are two deep wet wells that are over 50 feet deep that receive wastewater from the Coarse Screening units. Wastewater travels from the deep wet wells through suction pipes that draw water into the Headworks Influent Pumping Station. The influent headworks pump station has 8 lift pumps. Four of these pumps are used to pump the screened sewage from the wet wells to the fine screening system. The headworks is equipped with six fine screening units with a processing flow rate of 100 MGD. During this inspection, all six units were online. The fine screened sewage then travels to the grit removal system. Travelling Bridges remove grit from the waste stream, and this is done at the rectangular tanks. The bridges travel back and forth using submersible pump/suction plate systems, that continuously removes settled grit from the tanks and transfers the grit to the grit dewatering processes consisting of spinning classifiers. The classified grit is dried and then sent off-site for disposal.

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Coarse screening unit

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Fine screening unit

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Traveling Bridge for grit removal

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Grit removal system

The water from the grit removal system flows to the primary clarifiers for primary stage settling. The facility has 12 primary clarifiers called primary settling tanks (PSTs) 2 with 200' diameters and 10 are 170' in diameter. During an inspection of several of the PST, I observed that PST #11 had an accumulation of floating debris because of a nonfunctioning skimmer arm. The Back River WWTP should ensure that the repairs are made as soon as possible to get the unit functioning properly. No problems were observed at the other PST #8 that I inspected.

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PST #11

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PST # 11

After primary settling, the wastewater flows to the flow distribution building and from there the wastewater flows to the area called the “Activated Area”, consisting of a series of biological reactors for nitrogen removal. The facility has two sets of six reactors. Each has a three-pass train designated A, B and C for each reactor. According to Mr. Latova, MLSS in the aeration tanks is maintained between 2600 – 3000 mg/L. Activator 4 area covered under Contract 882 of the consent agreement is still under construction. There will be six additional reactors with a two-pass design in the Activator 4 area. According to the plant engineer, the contractors are over two years behind in the completion of this project.

The wastewater travels from the reactors to the secondary clarifiers. The facility maintains 24 secondary clarifiers for secondary settling.

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Biological reactor

The wastewater leaves the secondary clarifiers and then flows to the ENR denitrification filter process. The system uses Tetra filters with up flow backwash. The wastewater from the backwash operation travels back to the head of the plant for treatment. Final disinfection with chlorine and dechlorination occurs in contact chambers.

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The effluent flow is monitored in a vault with full flowing pipes that have mag meters. The signal from the mag meters is totalized and recorded on a circular chart recorder and sent to a computer trend chart that tracks flow.

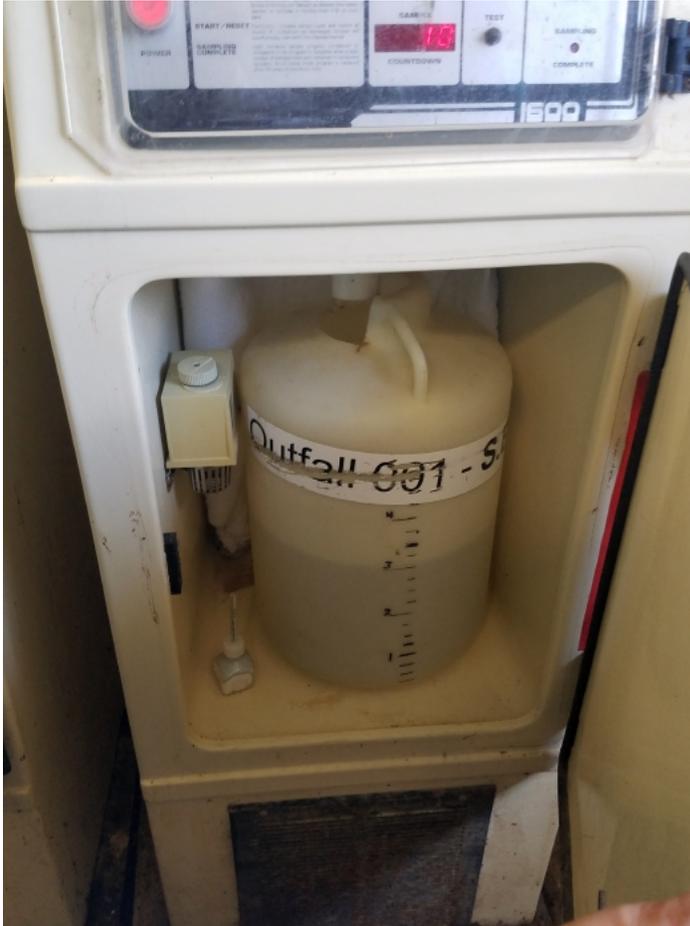
The facility collects two automatic refrigerated, flow proportioned, 24-hour composite samples each day for 001 and 002. The composite sample bottles were relatively clean but the container for Outfall 001 had some discoloration from residue. The accumulation of residue should be cleaned with detergent and acid. Most of the intake tubing was not visible for inspection. However, it is recommended that the intake tubing is replaced on a routine basis (e.g., every week). The temperatures of cooling compartment for the automatic samplers for outfalls 001 and 002 were 4° C and 4.5° C respectively, which meet 40 CFR Part 136 temperature requirements.

Cleaning Procedure for Sample Container

1. Clean container thoroughly with hot tap water and a laboratory detergent like Liquinox using a bottle brush to remove particulates.
2. Rinse thoroughly with hot tap water removing all signs of the detergent
3. Rinse in a 5-percent (v/v) HCl solution to remove any remaining organic films and inorganic deposits. Containers can be soaked for 30 minutes to remove persistent residues. Use precautions when using and handling HCL.
4. Rinse thoroughly with tap water

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5. Final rinse with deionized water



Automatic Sampler for Outfall 001

Bacterial testing and dissolved oxygen measurements are made at the actual cascading outfall of the discharge of 001.

Evaluation for the reagents, test equipment, methodology was checked for the daily grab testing for pH, total residual chlorine (TRC) and dissolved oxygen conducted by operational personnel.

The date received and the date opened is not being recorded on the reagents used for pH and TRC. **The date received and the date opened should be recorded on all buffers and reagents. In addition, the burette, used for the amperometric titration for TRC, should be standardized for accuracy at least yearly and the results documented.**

Next, I observed the final discharge at the step aeration system. I did not observe any foam that did not dissipate within 10 minutes or any visual particulates.

During the next phase of this inspection, I inspected the sludge dewatering area.

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The primary sludge goes to the gravity thickener or the gravity belt thickener. There are 6 in-ground and 2 large egg-shaped digesters for activated sludge processing. The activated sludge is sent to the DAF unit and then to one of the digesters mentioned above. The sludge from the digesters is dewatered in a centrifuge and then loaded into hoppers and the water is sent back to the head of the plant.

Because of loss of reliability of the facility's centrifuge due to flooding in the centrifuge area, the facility is using portable centrifuges for the dewatering and the sludge is being sent to several contractors. There is a backlog of sludge throughout the treatment system causing higher than normal solids throughout the system. The higher solids concentrations have caused suspended solids, total phosphorous and BOD5 effluent violations as well as nitrogen compounds.

After the site review, Mr. Latova and I returned to the Administration Building to meet with Ms. Jacobs, Mr. McEachern, and Mr. Turner. During this meeting, I discussed my inspection findings based on my observations and data provided to me by that date. I also requested data and reports that had not yet been submitted to the Department. The data included:

1. PCB reports for Outfall 001 and 002 for the second quarter of 2021
2. Toxic chemical testing data
3. Whole effluent toxicity (WET) reports for the 1st and 2nd quarters of 2021.

With respect to the above MDE authorization, the following violations were observed under Environment Article Title 9 for the Back River WWTP:

1. There have been a series of effluent violations for the period of my review, which were caused by operational and maintenance problems. The treatment operations have failed to produce a final effluent that has consistently met the effluent limitations of the permit.
2. The Back River WWTP has failed to report all effluent violations to the Department and follow up with a letter of explanation within 5 days of reporting the violation(s).
3. The Back River WWTP has failed to respond to the email sent by USEPA for the DMR/QA Study 41 proficiency testing.
4. During the first and second quarters of 2012 there were two consecutive valid toxicity tests that were chronically toxic to the *Americamysis bahia*. The Back River WWTP failed to conduct the third confirmation test within 30 days of the second test as specified by Special Condition D10 of the permit.
5. Because of reported contamination of the rinsate blanks, there are concerns over the validity and accuracy of the reported tPCB analytical results for 2018 – 2020. Therefore, the Back River WWTP shall thoroughly clean

6. The Back River WWTP has failed to report the PCB congener results as specified by the MDE's Guidance document titled *REPORTING REQUIREMENTS FOR TOTAL PCBs (PCB CONGENERS) BY EPA METHOD 1668 C or A*.
7. The Back River WWTP failed to submit the results of the 2021 Toxic Chemical testing as specified by IIF of the permit.
8. The automatic sampler container for Outfall 001 had a slight accumulation of solids.
9. Considering changes to the treatment, operational changes, equipment failures and effluent violations, the site requires an updated Operations and Maintenance Manual

To bring this site into compliance with Environment Article Title 9, the Back River WWTP should make the following corrections:

- A. With respect to item 1 above, the permittee shall ensure that the permit limitations are always met. In addition, the permittee should ensure that all process equipment is maintained appropriately to ensure satisfactory operation and compliance with the effluent limitations of the permit. All required repairs and maintenance should be performed quickly to prevent degradation of the quality of the final effluent and prevent effluent violations.
- B. With respect to item 2 above, the permittee shall, within 24 hours, notify the Department by telephone at (410) 537-3510 during work hours or at (866) 633-4686 during evenings of any effluent violations. weekends, and holidays and follow up with a written notification as described in General Condition B1 of the permit.
- C. With respect to item 3 above, the Back River WWTP shall provide to the State Coordinator at ron.wicks@maryland.gov all contact information for the responsible person for the USEPA DMR/QA proficiency testing for the site.
- D. With respect to item 4 above, if the test results of any two consecutive valid toxicity tests show acute or chronic toxicity (LC50 equal to or less than 100% for acute tests and an IC25 equal to or less than the in-stream waste concentration for chronic tests), the permittee shall repeat the test within 30 days to confirm the findings of acute or chronic toxicity.
- E. With respect to item 5 above, the Back River WWTP shall thoroughly clean all sampling equipment prior to use for the monitoring of PCBs for the TMDL WLA.
- F. With respect to item 6 above, the laboratory deliverable for the PCB congeners shall follow the requirements specified in Section D of the MDE's Guidance document titled *REPORTING REQUIREMENTS FOR TOTAL PCBs (PCB CONGENERS) BY EPA METHOD 1668 C or A*.

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G. With respect to item 7 above, within 30 days of the receipt of this report, the permittee should obtain the results of the 2021 toxic chemical testing from their contract laboratory and submit to the Department for review.

H. With respect to item 8 above, the automatic sampler container should be cleaned as detailed in this report.

1. With respect to item 9 above, within 180 days of the receipt of this report, the permittee should develop and submit an updated Operations and Maintenance Manual taking into consideration the items listed on page 5 and 6 of this report.

NPDES Municipal Major Surface Water - Inspection Checklist

<i>Inspection Item</i>	<i>Status</i>	<i>Comments</i>
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 by their current permit?	No Violations Observed	
Has the Permittee exceeded the permitted capacity of the WWTP?	No Violations Observed	
Is the number and location of discharge points as described in the discharge permit?	No Violations Observed	
Has permittee submitted correct name and address of receiving waters?	No Violations Observed	
Is the permittee meeting the compliance schedule per permit requirements?	No Violations Observed	
Has the operator or superintendent been certified by the Board in the appropriate classification for the facility?	No Violations Observed	
Are adequate records being maintained for the sampling date, time, and exact location; analysis dates and times; individual performing analysis; and analytical results?	No Violations Observed	
Are adequate records being maintained for the analytical methods/techniques used?	No Violations Observed	
Does the permittee retained a minimum of 3 years worth of monitoring records including raw data and original strip chart recordings; calibration and maintenance records; and reports?	No Violations Observed	
Do lab records reflect that lab and monitoring	4 - Not	Contract laboratory not evaluated

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NPDES Municipal Major Surface Water - Inspection Checklist

<i>Inspection Item</i>	<i>Status</i>	<i>Comments</i>
equipment are being properly calibrated and maintained?	Evaluated	
Does the permittee/laboratory use suitable QA/QC procedures and operate a formal quality assurance (QA) program using appropriate controls?	4 - Not Evaluated	Contract laboratory not evaluated
Has the permittee submitted the monitoring results on the proper Discharge Monitoring Report form?	No Violations Observed	
Do the Discharge Monitoring Reports reflect permit conditions?	No Violations Observed	
Has the permittee submitted these results within the allotted time electronically?	No Violations Observed	
Is the facility being properly operated and maintained including:(a) stand-by power or equivalent provisions available, (b) adequate alarm system for power or equipment failure available, (c) all treatments units are in service, .	Out of Compliance	See narrative section. Numerous effluent violations.
Is sewage sludge managed correctly per permit requirements?	Corrective Actions Required	Equipment failures preventing satisfactory management of solida.
If a by-pass occurred since last inspection, has the permittee submitted notice of the by-pass within the allotted time?	No Violations Observed	
If a non-complying discharge occurred since the last inspection, was the regulatory agency notified within the allotted time?	Out of Compliance	See narrative.
If applicable, has the permittee complied with all special conditions of their permit?	No Violations Observed	
Have overflows occurred since the last inspection?	4 - Not Evaluated	Collection system is managed by a separate program and not by the WWTP staff.
Have records of overflows been maintained at the facility for at least five years?	4 - Not Evaluated	
Are flow measuring devices properly installed and operated, calibration frequency of flow meter adequate, flow measurement equipment adequate to handle expected ranges of flow?	No Violations Observed	
Are discharge monitoring points adequate for representative sampling?	No Violations Observed	
Do parameters and sampling frequency meet the minimum requirements?	No Violations Observed	
Does the permittee use the method of sample collection required by the permit?	No Violations Observed	
Are analytical testing procedures used	No Violations	

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NPDES Municipal Major Surface Water - Inspection Checklist

<i>Inspection Item</i>	<i>Status</i>	<i>Comments</i>
approved by EPA?	Observed	
If alternate analytical procedures are being used, has proper approval been obtained?	No Violations Observed	
Has the permittee notified the Department of the name and address of the commercial laboratory?	No Violations Observed	
Were discharges observed at the authorized outfalls?	No Violations Observed	
If discharges were observed, do the discharges or receiving waters have any visible pollutants observed?	Corrective Actions Required	effluent not clear slight tan color.
Were discharge samples collected?	No Violations Observed	pH, TRC and DO noted.
Does this facility have coverage under a a NPDES stormwater discharge permit?	No Violations Observed	
If the permittee has coverage under a NPDES storm water permit, has a storm water pollution prevention plan been developed and implemented as required?	No Violations Observed	Storm water requirements addressed under a separate report.
Are the permit conditions being met?	Out of Compliance	See narrative

Inspector: Ronald A. Wicks 8/9/2021
 Ron, Wicks/Date
 ron.wicks@maryland.gov
 410-537-3510

Received by: _____
 Signature/Date

 Print Name