

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: 3076

Site Name: Patapsco WWTP

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226

County: Baltimore City County

Start Date/Time: May 18, 2022 09:30 AM **End Date /Time**: May 21, 2022 03:00 PM

Complaint Number:

Media Type(s): NPDES Municipal Major Surface Water

Contact(s):

Neal Jackson Plant Manager Eric Johnson, Wastewater Supervisor Robert Lombardi , Wastewater Engineer Aaron Thomas, Consultant – Hazen & Sawyer

NPDES Municipal Major Surface Water

Permit / Approval Numbers: 15DP0580

NPDES Numbers: MD0021601

Inspection Reason: Follow-up (Non-Compliance), Routine Scheduled

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 Good

Inspection Findings:

The Patapsco WWTP is a 73 MGD capacity activated sludge wastewater treatment plant (WWTP) with ferric chloride for removal of phosphorus. The treatment system has Grit removal, mechanical fine screens, primary clarifiers, oxygen activated sludge reactors, secondary clarifiers, biological aerated filters for nitrification, de-nitrification filters, flow distribution chamber, chlorine contact chamber and cascade post aeration chamber. There is chlorination, dichlorination and post aeration prior to final discharge to the Patapsco River, designated Use II waters protected for estuarine and

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226

marine aquatic life. The average flow is approximately 55-57 MGD; however, during heavy rainfall flows can double due to infiltration from the sewer lines. Patapsco WWTP's biosolids are processed by Synagro, Inc., a private company, located on site that draws the undigested biosolids from the sludge blending tanks and then dewaters the biosolids and transports off site.

On May 18, 2022, I conducted the annual comprehensive Compliance Evaluation Inspection at the Patapsco WWTP for compliance with the individual NPDES Discharge Permit MD0021601 and State number 15-DP-0580 for the Patapsco WWTP. The permit effective date is 10/1/2017, expiration date 09/30/2022 and a reapplication date of 03/31/2021. The renewal application has been received. The facility's activity code or standard industrial classification (SIC) is 4952 and the North American Industry Classification System (NAICS) is 22132. I met Mr. Neal Jackson, Plant Manager, Mr. Eric Johnson, Wastewater Operations Supervisor II, and Mr. Robert Lombardi, Wastewater Division Operations Engineer, representing the Patapsco WWTP and Mr. Aaron Thomas, Senior Associate, Hazen and Sawyer, and Mr. Bernard Williams, Williams Environmental. Hazen and Sawyer and Williams Environmental have been contracted by Baltimore City to assist with getting the Patapsco WWTP into compliance with the NPDES permit.

There have been a series of permit effluent violations reported for the following constituents due to operational and process problems:

- Biochemical oxygen demand (BOD₅₎
- Total suspended solids (TSS)
- Total phosphorus (TP)

I began the inspection with an introductory meeting and then a discussion focusing on the effluent violations at Outfall 001 which have been caused by an overburden of sewage sludge and solids within the components of the WWTP. Synagro Inc., an onsite independent contractor is contracted by Baltimore City to process the sludge generated by the Patapsco WWTP. However, according to Mr. Jackson, Synagro is not consistently processing the sludge at the current agreed rate of 50 dry tons per day.

The management of biosolids at Patapsco WWTP has become increasingly problematic because the solids processing facility, Synagro Inc. has not been able to successfully keep up with the processing of the solids that are being generated by the treatment system on a daily basis. Originally, the analysis of the sludge revealed high hydrocarbon concentrations. Now Synagro has reported that diesel range organics, gasoline range organics and acetone have also been detected in the sludge. Synagro has concerns that there is a fire hazard and the potential for an explosion associated with the levels of hydrocarbons detected in the sludge if the sludge is processed through their dryer. Therefore, the air dryer normally used to efficiently process sludge is not being used. Synagro is no longer pelletizing the sludge but is processing solids to cake and at a much slower rate and this slower rate is not adequate to keep up with the amount of solids being produced by the wastewater treatment system.

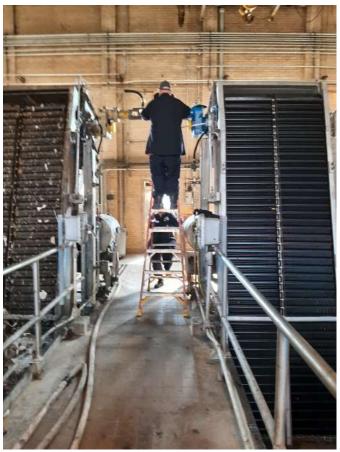
In summary, this issue has caused a high sludge blanket in the secondary clarifiers because wasting (sludge removal) cannot be performed at the level necessary for adequate performance. This in turn

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226

has led to increase solids concentrations in the secondary clarifier effluent that flows to the enhanced nutrient removal (ENR) system consisting of biological aerated filters (BAF) and denitrification filters (DNF). In addition, the facility's gravity sludge thickeners (GST) are receiving more sludge than can be adequately process in a given day. This has compromised the sludge dewatering process causing the effluent supernatant from the GSTs to have a high concentration of solids. The GST effluent flows to the beginning of the secondary treatment at the biological reactors. Because of the high solids concentration going into the biological reactors, the BOD is elevated, which in turn has hindered nitrification causing an increase in ammonia, which is toxic to aquatic life.

After the preliminary meeting, I continued the inspection with a site review beginning at the fine screen building. The facility has two influent lines, domestic, which is 90% - 95% of the flow and industrial, which makes up the remaining 5 % - 10% of the flow. The domestic waste enters the plant at the grit building where there are six grit chambers. Hazen and Sawyer, Inc, is currently repairing and cleaning the grit building process equipment. Initially, Hazen and Sawyer determined that all six grit chambers were filled with rags, grit and other debris and the grit removal system was not functioning as designed. Four of the grit chambers have been cleaned and put into service. Hazen and Sawyer Inc. has also repaired and put into service one of the clamshell cranes. Maintaining the grit removal system will lead to improvements in the mitigation of FOG. Mr. Thomas also informed me that Baltimore City will refurbish the grit building under Capital Project SC 938. According to Mr. Jackson, because of problems with ventilation at the grit building respirators are required for entry to the grit building so I was not able to inspect the grit handling system. The facility generates 60 – 70 tons of grit per month, which is landfilled off site. The sewage travels from the grit chambers to the fine screening units, which is the first stop during the site review.

The sewage is pumped to the influent tank at the fine screen building and travels to the fine screening building. The facility has eight screening units, and according to Mr. Johnson, three units are always online for the fine screening of the wastewater. Five of the eight screens have been recently refurbished. Baltimore City has appropriated the funds to upgrade the bar screens by replacing all the internal parts and installing a more effective wash system. The three fine screens online were functioning satisfactorily. During the past three inspections conducted May 5, 2021, 10/6/2021 and 4/6/2022 I observed that the fine screening system was overwhelmed with trash and other debris and trash and debris were falling off of the conveyor belts causing the belts to stop working. However, today, I found that the conveyor belts were functioning. However, I still observed trash and debris falling off of the conveyor belts that will compromise proper functioning of the system. Screening removes items like rags, paper, plastics, and metals to prevent damage and clogging of downstream equipment and piping. The facility has slightly improved conditions at the fine screen building however, better housekeeping practices are still required to keep the system functioning properly and to prevent and minimize potential problems and maintenance issues downstream.



5/18/22 Number 5 fine screen unit being connected to electricity

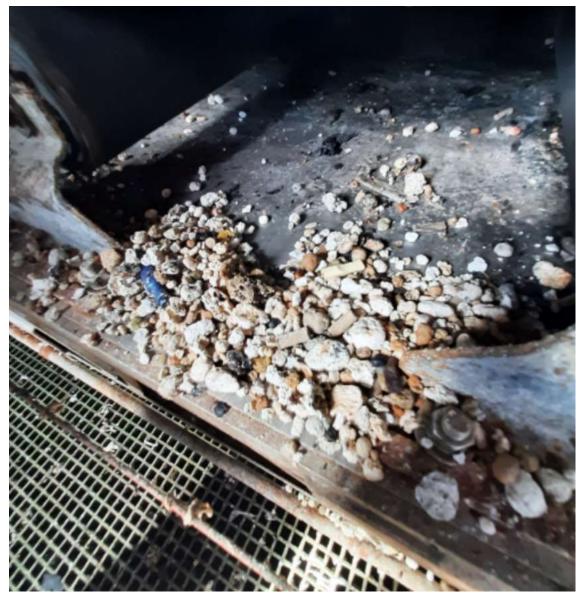


5/18/22 Housekeeping problems at Fine Screens Building



5/19/22 Housekeeping problems at the conveyor belt system.

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226



5/18/22 Trash and debris falling from the conveyor belts at the fine screening building

The wastewater travels from the fine screening to the primary settling tanks (PST) for initial settling of the solids. The plant has six primary settling tanks with 3 passes. The bottom sludge from the PSTs is gathered by screw collectors at the bottom of the tanks and collected in hoppers and then sent to the GSTs.

Three of the six PSTs were online at this time. PSTs currently online are #1, #4 and #5. According to Mr. Jackson PST #6 will be back online later today after repairs are made. I observed a considerable amount of floating scum and FOG floating on the surface of the active PSTs. According to Mr. Jackson, the increase in flow due to recent rainfall caused an increase in FOGs going through the plant creating a build of FOG in the PSTs. The condition of the PSTs is similar to what I observed during my April 6, 2022, inspection, which occurred the day after a rainfall event. There was rainfall four days prior to this inspection. I observed that the PSTs had floating

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226

scum and FOG to varying degrees. According to Mr. Jackson, the scum troughs are rotated twice a day to remove the scum and manual skimming with a net is being conducted as well to try to manage the floating scum and FOGs. During periods of high flows or hydraulic overloads, as experienced today more frequent rotations and active manual skimming are required.

I inspected the final effluent from the scum troughs and observed no floating scum going over the weir at this time. However, later during an evaluation of the entire area, I observed FOG that was not captured by the scum troughs or skimming efforts. One of the operators was asked to contain and collect the FOGs to prevent the FOGs from going to the reactors. The FOGs in the PSTs have begun to solidify in some areas and could cause potential problems such as clogging of pipes and pumps if not addressed. The facility shall ensure the operational integrity of primary treatment system and shall take a proactive approach by removing the accumulation of FOGs that have accumulated in some of the PSTs.

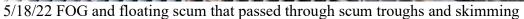


5/18/22 floating scum and FOG in PSTs



5/18/22 scum and FOG at scum trough. When rotated the scum trough will collect the FOG and scum







5/18/22 Floating scum and FOG at PSTs.

Inspection Date: May 18, 2022
Site Name: Patapsco WWTP
Facility Address: 3501 Asiatic Ava Crystic F

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226

The Patapsco WWTP is using the former Tailings Transfer Station as a temporary sludge storage area to store unprocessed sludge. The area is partially covered, and the concrete pad of the transfer station is sloped slightly to the rear. There are drains at the front of the pad that are connected back to the WWTP. The pad drains were designed to collect any drainage from the pad and preventing drainage from going into the roadway. The grates of the drains were clogged with solid material and therefore not able to function as designed. Therefore, any drainage from the pad can flow over these grates into the roadway where there are two storm drains. During this inspection, a sludge hauler truck was being loaded. The loading is conducted in close proximity to the storm drains, there was some spillage during the process. According to Mr. Jackson, the area is cleaned after each loading event to prevent stormwater contamination. A pollution prevention plan is required to ensure that the stormwater pollution is prevented.



5/18/22 Sludge transfer station after loading a sludge hauler truck

The next process area of evaluation were the GSTs discussed earlier. Gravity thickening is the process by which biosolids are condensed to produce a concentrated solids product and a relatively solids-free supernatant. The facility has 3 GSTs (#1, #2 and #4) and during this inspection, I observed that two were online. The #4 GST is down for repairs. The scrapers, drive and pumps require replacement. According to Mr. Jackson, the repairs are expected to be completed by September of 2022. During an inspection of #1 GST and #2 GST, I observed a few problems.

Inspection Date: May 18, 2022
Site Name: Patapsco WWTP
Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226

The sludge blankets were above an acceptable level. This condition is causing the effluent (supernatant) from the GST to have a higher-than-normal solids concentration. The solids are also accumulating on the effluent weirs blocking the flow of the supernatant. Because of this problem, operational staff must manually clean the weirs, to maintain the flow of the supernatant. The # 2 GST skimmer was not in complete alignment with the surface of the water. The high sludge blanket is also causing the top layer of supernatant to be charcoal in color.

The GSTs are designed to thicken biosolids to produce a concentrated solids material and a comparatively solids-free supernatant. The #1 and #2 GSTs are not producing a relatively solids-free supernatant. This problem along with inadequate wasting of the secondary and primary clarifiers have led to monthly effluent violations for BOD, TP and TSS as mentioned above and





5/18/22 GST showing thick layer of solids



5/18/22 GST #1 note heavy layer of floating solids.



5/18/22 operators cleaning the solid particles that are accumulating on the weirs of the GST #1.



5/18/22 effluent from GST #1

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226

From the GSTs we traveled to the high-pressure pure oxygen reactors, which are below ground. The liquid oxygen required for the reactors is produced in the liquid oxygen (LOX) plant. Originally the Lox Plant had two compressors for the production of oxygen. Currently only one of these compressors is functioning for oxygen production. According to Mr. Jackson, the second compressor is still being repaired. In 2021, there were effluent violations for total nitrogen loadings and during the growing season, ammonia violations. During my October 6, 2021, inspection. I discussed the violations with Mr. Jackson. According to Mr. Jackson the nutrient violations were associated with the reduced performance of the LOX Plant. At that time, the LOX Plant was not functioning properly due to problems with the compressors. The LOX plant has two compressors used for oxygen production. The facility had to purchase liquid oxygen from a private contractor. According to the Mr. Jackson, the purchased oxygen uses a different delivery system into the reactors that does not produce optimal O₂ concentrations in stage two of the biological process. Therefore, the aerobic microorganisms were not receiving the quality an amount of oxygen required for optimal performance. During my 4/6/22 inspection, I was told that one of the compressors was repaired and back online and the repairs to the second compressor have been made and the compressor is being shipped back to the plant. Since the compressors are critical to satisfactory nitrogen removal, the Patapsco WWTP shall determine the cause for the delay in receiving the second LOX compressor and submit a status report on the second LOX compressor to the Department within 15 days of the receipt of this report.

The next I conducted an evaluation of the secondary clarifiers. The waste streams from reactors are split between eight secondary clarifiers. Clarifier #6A has been out service for over one year because the return activated sludge (RAS) pumps are not working. According to Mr. Johnson, the repairs will be made some time in June of 2022. In addition, today I learned that one of the secondary clarifiers is now being used to store sludge. During this inspection, a total of five of the eight clarifiers are active and being used for wastewater treatment to settle solids. The water in the clarifiers was grey due to the TSS concentration. There were also media pellets from the BAF system observed in the water of secondary clarifier #1 and the skimmer arm on clarifier #5A was bent. I also observed bubbling of the water in the secondary clarifiers along with floating balls of black solids caused by anoxic conditions in the water due to over-aged sludge.



5/18/22 Secondary clarifier Note floating BAF media

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226



5/18/22 Secondary clarifier note floating black balls of solids

During an evaluation of the Biological Aerated Filter system (BAF), I observed excessive foaming in the filter cells and at the effluent overflow tanks. The foaming is due to the high BOD concentration in the water. Based on these conditions and my observations, I believe that the BAF nitrification process is impaired or diminished in function. I asked the operator assigned to this area if he could provide today's process information on the TSS and ammonia as N concentrations. The TSS concentration going into the BAF from the secondary clarifiers was 80 mg/L, which is twice the maximum desirable concentration of 40 mg/L and the ammonia as N concentration of the influent going to the BAF is 14.3 mg/L and the ammonia concentration of the effluent leaving the BAF is 10.3 mg/L, which is a 28% ammonia removal rate. The BAF should be capable of removing 75 – 90 % of Ammonia as N from the wastewater. Therefore, complete ammonia oxidation is not being performed by the BAF due to solid concentrations that are elevating the BOD and hindering nitrification. This data indicates that the BAF is not functioning to ENR standards as required by the permit.



5/18/22 BAF effluent overflow cell Note excessive foaming caused by high BOD concentration

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226



5/18/22 BAF filter cell Note excessive foam containing solids

The Denitrification Filter System (DNF) was the next stop during the site review. The facility has thirty-four denitrification filters for denitrification. During my evaluation of the DNF, I found that the DNF was not functioning. The cells are submerged and incapable of filtration and there was floating sludge in the filters indicating clogging of the system. The conditions indicate that the biosolids in the filters have been there for an extended period of time and the old sludge is coming up to the surface. According to Mr. Jackson, they are currently bypassing the DNF treatment. I was not informed of this bypass, so I asked if the Department had been notified of the bypass. Mr. Jackson stated that the Department had not been informed of the bypass. The bypass is a violation under III General Condition B 5 which is discussed under the operations and maintenance section of this report. I asked Mr. Jackson to report the bypass today. In addition, the DNF system is an integral component in the ENR process and bypassing this system is a violation of Special Condition A2 footnote 5 of the permit which states:

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

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226

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.



5/18/22 DNF – Nonfunctioning submerged filters

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226



5/18/22 DNF cell Note black balls of floating solids and stagnant water

Next, I inspected the chlorine contact basins prior to the final discharge. There are 4 contact chambers and 3 of the 4 are currently online. Each contact chamber has 3 scum logs or troughs to remove floating scum. There was an operator skimming the floating scum and solids. I observed excessive foaming at the final common discharge chamber prior to overflow. I could not see the final effluent because of the excessive foaming. I also notice a heavy scum layer on the surface of the water in the chlorine contact basins.

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226



5/18/22 Final discharge Note persistent foam and scum

The facility is collecting a 24-hr, flow-proportioned composite samples at Outfall 001 in accordance with the requirements of the permit. The primary refrigerated, automatic composite sampler was inspected, and I found that the temperature of the compartment was satisfactory, and the sampling container was also clean.

The temperature of the refrigerated compartment was 4.8 degrees C, which meets 40 CFR Part 136 requirements. However, the accuracy of the thermometer has not been checked as required. The facility also has an identical back-up refrigerated, automatic composite sampler, I inspected the final effluent in the sampling container and observed that the composite sample was a medium amber color with visible particulates (see pictures). This condition is not acceptable, and measures must be taken to correct the problem of high solids in the final effluent and throughout the treatment system.

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226



5/18/22 Effluent sample Amber color with suspended particulates

After the site review, I returned to the Administration building to review the records and reports. These records included the following categories for the fourth quarter of 2021 – April 2021:

- 1. Operational data Discharge Monitoring Reports (DMR) obtained through NetDMR
- 2. Monthly Operating Reports (MOR) obtained through NetDMR
- 3. Laboratory analytical reports- (select routine analytical reports)
- 4. Operator logs
- 5. Field instrument calibration records (reviewed on site)
- 6. Annual cumulative monitoring data for 2020 and 2021 obtained through NetDMR
- 7. Operations and Maintenance records
- 8. Toxic chemical testing (TCT) reports for 2022
- 9. FOG mitigation records

Operation and Maintenance

The results of the samples show that there have been problems meeting effluent limitations due to the performance of the treatment plant. The specific problems and issues observed are discussed

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226

above. Below in Table 1 is a list of effluent violations for the period October 1, 2021, through the month of April 2022. In addition, the permittee failed to meet the total annual cumulative load for total nitrogen and total phosphorus for the year 2021 (see Table 4 below for details). According to Mr. Jackson, the violations have been caused by equipment failures. The drives on several clarifiers stopped functioning and the denitrification filter system has either been bypassed or not functioning effectively because of a problem with the air compressor and problems with the removal and processing of biosolids as mentioned above.

During the course of the site review, I found that the permittee is bypassing the DNF without prior authorization by the Department. This is violation under III General Condition B 5, which states the following:

Any bypass of treatment facilities is prohibited unless the bypass does not cause any violations of the effluent limitations specified in Special Condition II.A, and is for essential maintenance to assure efficient operation, or unless the permittee can prove that:

a. the bypass is unavoidable to prevent loss of life, personal injury, or substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources; and

b. there are no feasible alternatives to the bypass; and

c. the Department receives notification pursuant to General Condition III.B.1 above. Where the need for a bypass is known (or should have been known) in advance, this notification shall be submitted to the Department for approval at least ten days before the date of the bypass or at the earliest possible date if the period of advance knowledge is less than ten days; and d. the bypass is allowed under conditions approved by the Department to be necessary to minimize adverse effects.

All treatment system bypassing shall be done in accordance with General Condition 5 of the permit. The Patapsco WWTP shall immediately inform the Department of any bypassing and all bypassing shall not result in an effluent violation.

FOG in the influent and organic compounds detected in the sludge have been a major problem that must be addressed. In addition, recent 2022 total recoverable metals data show nickel and copper concentrations above the chronic water quality criteria. Special Condition H for the permit states that "The permittee shall operate and maintain the pretreatment program in accordance with COMAR 26.08.08, the General Pretreatment Regulations for Existing and New Sources of Pollution..."

Under 40 CFR Part 403, EPA has promulgated General Pretreatment Regulations that require the pretreatment programs to control pollutants which pass through or otherwise be incompatible with the treatment works or interfere with the wastewater treatment processes. To meet these requirements may require detailed investigation or evaluation of FOG from food service

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226

establishments. The Pretreatment Program regulations at 40 CFR 403.5(b)(3) prohibit "solid or viscous pollutants in amounts which will cause obstruction" in the POTW and its collection system. The Patapsco WWTP should evaluate the pretreatment program to ensure that the program is effectively managing the

compliance status of food service establishments and other IU to ensure compliance with 40 CFR Part 403.

This has led to a backlog of untreated solids and higher than optimal TSS concentrations of the final effluent. Patapsco WWTP is storing the unprocessed solids at an on-site transfer station and in a secondary clarifier. Based on my conversations with Mr. Jackson and Mr. Thomas, there is no plan going forward on how to effectively manage biosolids in order to bring the Patapsco WWTP into compliance with the permit. If Synagro is not able to process the solids, the Patapsco WWTP has no backup plan. Baltimore City DPW has been working with Synagro for over a year to resolve the problem with no resolution that I am aware of. Meanwhile, the tributary strategy total nitrogen and phosphorus annual cumulative loading limits have been exceeded.

The monthly average TSS results noted above are increasing. The average TSS concentration for April 2022 is 61.2 mg/L, BOD 38.2 mg/L and Total Nitrogen 23.6 mg/l. BOD is up over 50% from December 2021 and TSS is 5-fold higher than observed in December 2021. Based on the results of this inspection, high concentrations of TSS have compromised process equipment, making it impossible to meet effluent limitations because of the need to bypass certain necessary treatment processes.

A reduction in TSS will also reduce BOD loads as well allowing for better nitrification. The data show that the TSS concentration at Outfall 001 ranged from 22 mg/L to 615 mg/L and an average of 61.2 mg/L for the month of February 2022. The very high TSS concentrations were not continuous, however; these levels can cause acute conditions during the days of high TSS discharges such as:

- 1. Impact the ability of the biological treatment system to nitrify.
- 2. Increasing ammonia level in the final effluent.
- 3. Lower than normal dissolved oxygen at the point of discharge for the period of the discharge.
- 4. Harm aquatic life
- 5. Increased turbidity in the mixing zone

Backup Power Procedures and Contingency Plan

The Patapsco WWTP had a power outage the morning of May 4, 2021, and the backup generators failed to engage due to failure of the batteries. The facility was without power for over an hour, which caused an upset of the system and high enterococcus sample values. At that time, I was told that they now have a procedure for checking the batteries monthly. On February 26, 2022, there was another power outage due to a failed transfer switch. I asked to see the facility's Contingency Plan for Power Outages and Backup Power procedures; however, I was not provided with a copy. Therefore, the Patapsco WWTP shall develop and implement a contingency plan to address power

Inspection Date: Site Name:

May 18, 2022 Patapsco WWTP 3501 Asiatic Ave, Curtis Bay, MD 21226 Facility Address:

outages. The contingency plan shall be submitted to the Department for review within 30 days of the receipt of this report.

Table 1

Date	Parameter	Result	Permit Violation	Permit Limitation
October 2021	Total Phosphorus	203100.0 lbs. total cumulative annual loading for July 2021	Exceeded the 2021 total cumulative annual loading for 2021 in May 2021 and will continue to exceed the limit until 12/31/2021	66,700 lbs./year
October 2021	Total Phosphorus	162, 600.0 lbs.	Exceeded the Season 5/1-10/31 Limit in June 2021. Will continue to exceed the seasonal limit until 10/31/2021	33,330 lbs.
October 2021	Total Nitrogen	862,500.0 lbs.	Exceeded the Season 5/1-10/31 Limit Will continue to exceed the seasonal limit until 10/31/2021	333,330 lbs.
October 2021	Total Nitrogen	1647600.0 lbs.	Exceeded the total annual cumulative loading for 2021. The limit was exceeded in May 2021. Will continue to exceed the limit until 12/31/2021	889,300 lbs. annual
November 2021	Total Phosphorus	223,800.0 lbs. total cumulative annual loading for July 2021	Exceeded the 2021 total cumulative annual loading for 2021 in May 2021 and will continue to exceed the limit until 12/31/2021	66,700 lbs./year
November 2021	Total Nitrogen	1,850,400.0 lbs.	Exceeded the total annual cumulative loading for 2021. The limit was exceeded in May 2021. Will continue to exceed the limit until 12/31/2021	889,300 lbs. annual
January 2022	Enterococcus	Reported Monthly	Exceeded Monthly Geomean	35 MPN/100 mL

		Geomean 64 MPN/100 mL		
January 2022	Total Phosphorus	Reported Monthly Average Concentration 2.4 mg/L	Exceeded Monthly Average Concentration	2.0 mg/L
January 2022	Biochemical Oxygen Demand	Reported Monthly Average Concentration 39 mg/L	Exceeded Monthly Average Concentration	30 mg/L
January 15 - 21 2022	Biochemical Oxygen Demand	Reported Weekly Average Concentration 50 mg/L	Exceeded Weekly Average Concentration	45 mg/L
February 2022	TSS	Monthly Average Concentration 34 mg/L	Exceeded Monthly Average Concentration	30 mg/L
February 2022	Biochemical Oxygen Demand	Reported Monthly Average Concentration 33 mg/L	Exceeded Monthly Average Concentration	30 mg/L
February 8 – 14, 2021	Total Phosphorus	Reported Weekly Average Concentration 3.2 mg/L mg/L	Exceeded Weekly Average Concentration	3.0 mg/L
February 2022	Total Phosphorus	Reported Monthly Average Concentration 2.4 mg/L	Exceeded Monthly Average Concentration	2.0 mg/L
March 2022	Total Phosphorus	Reported Monthly Average Concentration 2.1 mg/L	Exceeded Monthly Average Concentration	2.0 mg/L
March 2022	Total Phosphorus	Reported Total Cumulative Annual Loading of 93,000 Lbs.	Exceeded the 2022 total cumulative annual loading	66,700 lbs./year

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226

April*	TSS	Monthly	Exceeded Monthly	30 mg/L
2022		Average	Average Concentration	
		Concentration 61		
		mg/L		
April	Total	129,381.0 lbs.	Exceeded the 2022	66,700 lbs./year
2022	Phosphorus	total cumulative	total cumulative annual	
		annual loading	loading for 2022 in	
		for July 2021	March 2022 and will	
			continue to exceed the	
			limit until 12/31/2022	
April	Total Nitrogen	1,11,800.0 lbs.	Exceeded the total	889,300 lbs./yr.
2022			annual cumulative	
			loading for 2022. Will	
			continue to exceed the	
			limit until 12/31/2021	
April 22	Enterococcus	Monthly	Exceeded Monthly	35 MPN/ 100 ml
		Geomean	Geomean	
		concentration 54	Concentration	
		MPN/100 ML		

^{*}April data is based on available information at the writing of this report. Additional violations for April are possible.

Total Annual Cumulative Load for 2020, 2021 and 2022

The annual nitrogen load for 2020 was 1,029,200 lbs. and the annual phosphorus load for 2020 was 114,500 lbs. The facility did not meet the annual loading limitations for these parameters for 2020. The cumulative totals for 2021 were also not met and increased by approximately 50% from 2020, which indicates no discernable progress in improving treatment. See Table 2 below. In addition, as reported in Table 1 above, the annual cumulative totals specified by the permit were exceeded for total phosphorus in March of 2022 and April of 2022 for total nitrogen.

Table 2

Parameter	Cumulative Total for 2020	Cumulative Total for 2021	Limit	Compliance
Total	1,690,800 lbs./yr.	3,192,300 lbs./yr.	6,669,776	Y
Suspended	, ,	, , ,	lbs./yr.	
Solids				
Total	1,029,200 lbs./yr.	1,993,300 lbs./ yr.	889,300 lbs./yr.	N
Nitrogen	_			
Total	114,500 lbs./yr.	252,300 lbs./yr.	66,700 lbs./yr.	N
Phosphorus		_		
Flow	18,098.2 MG/yr.	18,340.6	NA	NA

Operator Certification Documentation

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226

Next, I reviewed the certification status of the operators to ensure that all operators have the proper certification to operate the treatment works to comply with the requirements in COMAR 26.06.01.04. During my review of the records, I found that there are 52 operators on staff not including 4 new hires. Sixteen of the fifty-two operators licenses have expired. However, twelve of these operators have applied for the renewal and are waiting for the renewal to be processed. Mr. Johnson has the paperwork for these operators. Currently there are four operators that have not submitted proof to management at the Patapsco WWTP that they have applied for the license renewal. The Patapsco WWTP shall provide adequate and certified operational staff qualified to carry out operation, maintenance and testing functions required to ensure compliance with the above authorization. All operators must be certified by the Board of Waterworks and Waste Systems Operators. The Patapsco WWTP shall submit a corrective action plan within 30 days of the receipt of this report detailing the corrective measures that will be implemented to ensure that all operators working at the plant have the proper license required under COMAR 26.06.01.04.

FOG Mitigation Plan

To assess compliance with the permittee's FOG Mitigation Plan, I discussed the implementation of the plan with Mr. Jackson, Mr. Johnson, and Mr. Lombardi. Section 3.2.1 of the FOG mitigation plan specifies specific operational procedures that will be performed by operating staff, which includes inspecting the Chlorine Contact Chambers every two hours and manually skimming and records are updated daily and maintained in the Administration Building. I reviewed these records and observed that many of the daily records are missing days and shifts (or times) for the evaluations and skimming. On 4/28/22, the Department submitted a letter to Director Jason Mitchell requesting revisions to the FOG Mitigation Plan with a list of corrections. The letter was received on 4/29/22. The revised plan shall be submitted to the Department by May 31, 2022. Finally Special Condition M of the permit specifies that the Patapsco WWTP shall report to the Department on an annual basis at the end of each calendar year all measures taken to comply with the FOG Mitigation Plan. Noncompliance with the Plan shall be deemed an enforceable condition of this permit. Within 90 days of the receipt of this letter, the Patapsco WWTP shall submit a report listing all FOG mitigation measures taken in 2021.

Field instrument calibration records

The calibration records were reviewed for DO and pH and were found to be acceptable. However, there are no quality assurance records for the Dissolved Oxygen test SM 4500 O G. or. In addition, in accordance with Standard Methods 4020I quality assurance requirements for the measurement of DO, the following quality assurance requirements must be met:

- 1. Duplicate analysis must be performed at a rate of 10% to assess precision.
- 2. A zero-oxygen sample must be run at a rate of 20%.
- 3. Documentation for membrane changes for the DO probe

The colorimeter used for the measurement of TRC is checked for accuracy before use with secondary standards. To comply with EPA requirements, the colorimeter shall also be checked at least quarterly with a series of primary standards in the range of 0.05 to 2 mg/L.

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226

Total PCB Monitoring for TMDL Program

The total PCB loading for the 1st through 4th quarters of 2021 is 206.5 grams, which is above the annual waste load allocation (WLA) of 27.2 grams/year. Special Condition A2 footnote 4b specifies that within 60 days of exceeding the WLA, the permittee shall submit a plan to the Department for approval to track the sources and Best Management Practice (BMP) implementation. Within 60 days of the receipt of this letter, the Patapsco WWTP shall submit to the Department for approval a PCB minimization plan designed to track and eliminate PCB sources entering the treatment plant.

Flow Calibration Reports

On 5/199/22, I requested the results of the influent and effluent flow calibration records. As of the writing of this report the permittee has not sent these records to me for evaluation. General Condition A 5 of the permit specifies that the permittee shall calibrate and maintain all monitoring and analytical

instrumentation to ensure accuracy of measurements.

Laboratory Reports

During a review of the laboratory reports, I found the following problems:

- Sample holding time exceedances
- Lost samples by the laboratory
- The laboratory failed to submit sample results in time to meet reporting requirements
- Incorrect dates on the Chain of custody sheets
- Permit specified reporting limits not met by the laboratory.

With respect to the above MDE authorization the following violations of Environmental Article 9 by the Patapsco WWTP were observed on this date:

A. The treatment and disposal of solids at Patapsco WWTP are not at the level necessary to keep the treatment works and treatment processes functioning satisfactorily. The high TSS concentrations have affected the treatment processes enabling effluent violations for a number of effluent parameters as detailed in this report. The Patapsco WWTP is having ongoing problems for over one year getting the sludge processing contractor, Synagro, to

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226

process biosolids on a daily basis at the quantity required to keep the treatment works and treatment processes functioning satisfactorily.

- B. The Patapsco WWTP has failed to submit the influent and effluent flow calibration records.
- C. The fine screening system is not being maintained to the level necessary to keep the current equipment functioning satisfactorily. During previous inspections in 2021 and 2022, the belt conveyors were not operable due to the accumulation debris such as rags, paper and plastic items. During this inspection, the belts were functioning; however, there was an accumulation debris on and around the belts. The belts are old with missing and damaged skirting which allows the debris to fall from the belt and clog the mechanical parts. Because of this issue the system requires constant maintenance to prevent blockage of the belt mechanisms.
- D. The GSTs are not processing the sludge as designed. During gravity thickening the biosolids are condensed to produce a concentrated solids material and a relatively solidsfree supernatant.
- E. The LOX plant compressor #2, which is necessary for the operation of the LOX plant has not been received after it was reported as repaired. Failure of the #1 compressor would cause serious problems for the biological reactor process.
- F. Clarifier #6A has been out service for over one year because the return activated sludge (RAS) pumps are not working. The Department was informed that the repairs will be made some time in June of 2022.
- G. The accuracy of the thermometers used to monitor the temperature of the automatic samplers are not checked at least annually.
- H. There was spilled sludge near the storm drains after loading sludge onto a sludge hauler truck at the Sludge Transfer Station. This station is used to hold sludge until transported offsite. A sludge best management practices (BMP) plan is necessary to control potential pollution problems.
- I. Currently there are four operators that have not submitted proof to management at the Patapsco WWTP that they have applied for the license renewal.
- J. The instrument calibration requirements for total residual chlorine do not meet 40 CFR Part 136 requirements and the quality assurance requirements specified in Standard Methods 4020I are not being followed for the measurement of dissolved oxygen.
- K. The Patapsco WWTP does not have a contingency plan for power outages and backup power procedures.

Inspection Date: May 18, 2022
Site Name: Patapsco WWTP
Facility Address: 3501 Asiatic Ave.

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226

L. The total PCB loading for the 1st through 4th quarters of 2021 is 206.5 grams, which is above the annual waste load allocation (WLA) of 27.2 grams/year. The first quarter of 2022, show high tPCB concentrations and if the trend continues the Patapsco WWTP will exceed the WLA for 2022.

- M. In 2022, there have been a significant number of samples that have been mishandled resulting in no data because of unsatisfactory collection, holding time exceedances or handling practices by the laboratory or the permittee.
- N. The PSTs had an accumulation of floating scum and FOG which may impede and impact downstream treatment processes.
- O. The Patapsco WWTP is currently bypassing the DNF treatment at the ENR facility and bypassing this system is a violation of Special Condition A2 footnote 5 of the permit and General Condition B5
- P. Skimming and scum log procedures are not being performed as specified by Section 3 of the FOG Mitigation Plan. Accurate and complete documentation of FOG Skimming procedures are not being performed as specified by the FOG Mitigation Plan. Section 3 *Interim FOG Prevention Measures Plan and Schedule* of the FOG Mitigation plan specifies specific operational procedures that will be performed and documented by the operators including the following:
 - 1. Inspect the chlorine contact chambers every hour
 - 2. Evaluate if the water level is high enough to use the scum logs.
 - 3. If a buildup of scum is observed during normal flow, the scum logs will be rotated.
 - 4. Scum log records and manually skimming records are updated daily and maintained in the administration building
- Q. FOG in the influent and organic compounds detected in the sludge have been a major problem that must be addressed. These issues have caused numerous process problems and prevented the adequate processing of biosolids at the treatment works. The causes of the excessive amounts of FOG entering the treatment works along with the high concentration of organic compounds found in the sludge should be investigated and corrected by evaluating significant industrial users and source tacking activities.
- R. There have been at least 19 effluent violations at the Patapsco WWTP for the period of my review (10/1/21-4/30/22)

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226

To bring this site into compliance with Environment Article Title 9, the Patapsco WWTP shall make the following corrections:

- 1. With respect to item A above, the Patapsco WWTP shall take immediate action to begin processing the biosolids at a sufficient level to maintain satisfactory performance in all treatment processes and taking into consideration the backlog of solids within the system that must be removed. Within 5 days of the receipt of this report the Patapsco WWTP shall submit to the Department the plan of action for completing the above achievement. Within 30 days of the receipt of this report, the Patapsco WWTP shall negotiate and implement a permanent solution for the management of biosolids and submit the details of the resolution to the Department on how the Patapsco WWTP plans to achieve this goal.
- 2. With respect to item B above, within 5 days of the receipt of this report the Patapsco WWTP shall submit the influent and effluent flow meter calibration records for the period 1/1/2020 present.
- 3. With respect to item C above, the Patapsco WWTP shall immediately initiate better maintenance and housekeeping practices at the fine screen building to prevent and minimize potential problems and maintenance issues downstream. Within 15 days of the receipt of this report, the Patapsco WWTP shall develop, implement and submit to the Department for review a corrective actions plan designed to keep rags, paper, plastics, and other debris from clogging the transport belt. The plan shall include procedures for regular manual cleaning of the belt transport system.
- 4. With respect to item D above, the Patapsco WWTP shall operate and process sludge in the GSTs in a manner that maintains a solids-free supernatant. Within 15 days of the receipt of this report, the Patapsco WWTP shall submit to the Department a status report on the progress of the repairs to the #3 GST with an updated report every 30 days until the #3 GST is back in service.
- 5. With respect to item E above, the Patapsco WWTP shall submit a status report on the second LOX compressor to the Department within 15 days of the receipt of this report and an update every 60 days until the compressor is repaired and returned to the LOX plant.
- 6. With respect to item F above, within 15 days of the receipt of this report, the Patapsco WWTP shall submit a report detailing when the RAS pumps for the #6 secondary clarifier will be repaired and submit a status report every 30 days until the repairs are completed.
- 7. With respect to item G above, within 15 days of the receipt of this report, the thermometers in the automatic sampler shall be checked for accuracy against a NIST certified or traceable thermometer and the results submitted to the Department for review. Thereafter, the thermometer accuracy checks shall be conducted at least

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226

annually. The results shall document and used to assess the daily accuracy of the thermometers.

- 8. With respect to item H above, within 30 days of the receipt of this report, the Patapsco WWTP shall develop, implement and submit to the Department a pollution prevention BMP plan for the Sludge Transfer Station to ensure that the sludge is managed properly to prevent pollution of stormwater.
- 9. With respect to item I above, the Patapsco WWTP shall maintain an adequate qualified operating staff certified to carry out operation, maintenance and testing functions required to ensure compliance with the permit requirements. Operators shall be certified by the Board of Waterworks and Waste Systems Operators. The Patapsco WWTP shall submit a corrective action plan within 30 days of the receipt of this report detailing the corrective measures that will be implemented to ensure that all operators working at the plant have the proper license required under COMAR 26.06.01.04 and how management plans to track and ensure that all operators maintain proper operator certification.
- 10. With respect to item J above, the following quality assurance requirements must be met for dissolved oxygen testing as specified by Standard Methods 4020I, quality assurance (QA) requirements for the measurement of DO. These QA measures shall be implemented within 30 days of the receipt of this report:
 - Duplicate analysis must be performed at a rate of 10% to assess precision.
 - A zero-oxygen sample must be run at a rate of 10%.

In addition, there shall be documentation for membrane changes for the DO probe.

Within 30 days of the receipt of this report, the colorimeter used for the measurement of chlorine must be checked quarterly at a minimum of three points using a series of primary chlorine standards in the range of 0.05 to 4.0 mg/l. The results of these checks must be recorded and be available onsite for auditor review.

- 11. With respect to item K above, the Patapsco WWTP shall develop and implement a contingency plan for power outages and backup power procedures. The contingency plan shall be submitted to the Department for review within 30 days of the receipt of this report.
- 12. With respect to item L above, within 60 days of the receipt of this report, the Patapsco WWTP shall submit to the Department for approval a PCB minimization plan designed to track and reduce or eliminate PCB sources entering the treatment plant. The permittee has been provided with guidelines on the preparation of the plan.
- 13. With respect to item M above, the Patapsco WWTP shall ensure that all samples collected in support of the CWA meet all requirements in 40 CFR Part 136 and the

Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226

approved method. Within 30 days of the receipt of this report, the permittee should develop and submit a BMP plan to address the problems with the collection, shipment, and the contract laboratory's responsibility to prevent violations in reporting under 40 CFR Parts 122 and 125 which include the timely submission of testing data to meet the reporting requirements of the permit.

- 14. With respect to item N above, the Patapsco WWTP shall immediately ensure the operational integrity of primary treatment system and must take a proactive approach by removing the accumulation of FOG that has accumulated in some of the PSTs.
- 15. With respect to item O above, all treatment system bypassing shall be done in accordance with General Condition 5 of the permit. The Patapsco WWTP shall immediately inform the Department of any bypassing and all bypassing shall not result in an effluent violation. In addition, the Patapsco WWTP 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. Therefore, the ENR processes shall not be bypassed without prior approval or an agreement with the Department.
- 16. With respect to item P above, the FOG skimming activities shall immediately follow the FOG Mitigation Plan and manual skimming and scum log records shall be maintained as specified by the FOG plan.
- 17. With respect to item Q above, the Patapsco WWTP shall immediately ensure that the pretreatment program is being operated and maintained in accordance with COMAR 26.08.08, the General Pretreatment Regulations for Existing and New Sources of Pollution.
- 18. With respect to item R above, the Patapsco WWTP shall immediately meet the effluent limitations of the permit.

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.

May 18, 2022 Patapsco WWTP 3501 Asiatic Ave, Curtis Bay, MD 21226

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?	Out of Compliance	See Narrative Section
	1	for details
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	2 - Not Applicable	
requirements?		
Has the operator or superintendent been certified by the Board in	Out of Compliance	See Narrative Section
the appropriate classification for the facility?	1	
Are adequate records being maintained for the sampling date, time,	No Violations Observed	
and exact location; analysis dates and times; individual performing		
analysis; and analytical results?		
Are adequate records being maintained for the analytical	No Violations Observed	
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	Out of Compliance	Only field
properly calibrated and maintained?		measurements were
		evaluated. DO, pH,
		Temperature and
		chlorine, residual
	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?	No Violations Observed	
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 Section
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?	Out of Compliance	See Narrative Section
If a by-pass occurred since last inspection, has the permittee	Out of Compliance	See Narrative Section
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?		

May 18, 2022 Patapsco WWTP 3501 Asiatic Ave, Curtis Bay, MD 21226

NPDES Municipal Major Surface Water - Inspection Checklist

Inspection Item	Status	Comments
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,	Out of Compliance	See Narrative Section
calibration frequency of flow meter adequate, flow measurement		
equipment adequate to handle expected ranges of flow?		
Are discharge monitoring points adequate for representative	No Violations Observed	
sampling?		
Do parameters and sampling frequency meet the minimum	No Violations Observed	
requirements?		
Does the permittee use the method of sample collection required by	No Violations Observed	
the permit?		
Are analytical testing procedures used approved by EPA?	No Violations Observed	
If alternate analytical procedures are being used, has proper	No Violations Observed	
approval been obtained?		
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?	Corrective Actions	Persistent foam, floating
	Required	scum and suspended
		particulates observed
If discharges were observed, do the discharges or receiving waters	Out of Compliance	Persistent foam, floating
have any visible pollutants observed?		scum and suspended
		particulates observed
Were discharge samples collected?	No Violations Observed	
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	See Narrative Section

Inspection Date: Site Name: May 18, 2022 Patapsco WWTP

Facility Address:

3501 Asiatic Ave, Curtis Bay, MD 21226

Inspector: Zonald Wieks 5/24/22

Received by:

Ronald Wicks /Date ron.wicks@maryland.gov

410-537-3510

Signature/Date

Neal Dackson

Print Name