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: Christopher Lepadatu
AI ID: 3076

Site Name: Patapsco WWTP
Facility Address: 3501 Asiatic Ave, Curtis Bay, MD 21226
County: Baltimore City County

Start Date/Time: August 29, 2023 09:30 AM
End Date /Time: August 29, 2023 01:30 PM

Media Type(s): NPDES Industrial Major Surface Water

Contact(s): Andrea Buie-Branam – Environmental Compliance Manager of Baltimore City
Anthony Marrow – Operation Supervisor II of Patapsco WWTP
Kevin McFadden – Operation Supervisor II of Patapsco WWTP

NPDES Industrial Major Surface Water

Permit / Approval Numbers: 15DP0580
NPDES Numbers: MD0021601
Inspection Reason: Follow-up (Non-Compliance)
Site Status: Active
Compliance Status: Noncompliance
Site Condition: Noncompliance
Recommended Action: Additional Investigation Required
Evidence Collected: Photos or Videos Taken, Record Review, Visual Observation
Delivery Method: Email
Weather: Calm, Overcast, Good

Inspection Findings:

Introduction:

The Patapsco Wastewater Treatment Plant (WWTP) is permitted to discharge to the Patapsco River which is designated as Use II waters protected for estuarine and marine aquatic life. The Patapsco WWTP features advanced treatment processes to achieve enhanced nutrient removal (ENR), chlorination and de-chlorination. The Patapsco WWTP is rated to treat an average daily flow of up to 73 MGD.

The treatment system includes preliminary treatment (grit removal and fine screening), primary treatment (primary settling tanks (PSTs)), secondary treatment (biological nutrient removal activated sludge process and additional filter nitrification), tertiary treatment (denitrification filters for enhanced nutrient removal) and disinfection (chlorination).

Primary sludge (PS) and waste activated sludge (WAS) produced by the primary treatment and secondary treatment process is thickened on-site. The solids thickening process consists of Gravity Sludge Thickeners (GSTs) and dissolved air flotation tanks. The thickened sludge is stored in a sludge blend tank and then conveyed to the drying facility on-site which is operated by a third-party, Synagro.

On this day, Andrea Buie-Branam and I inspected the WWTP with Anthony Marrow guiding us through the preliminary and primary treatment systems, and Kevin McFadden guiding us through the secondary, tertiary, and disinfection systems.

Site Walkthrough:

The Industrial Plant Influent (IPI) contains two (2) fine screens and four (4) pumps for conveying flow to the primary clarifiers. The IPI building has approximately 2-3 MGD capacity for industrial influent. Bar screen #1 was not in use during the time of the inspection. The two (2) fine screens in the IPI building receive flow by means of individual channels and gates for flow control. The gate for Bar screen #1 is not functional and needs maintenance. Bar screen #2 was observed to be in operation. Screened and raked material is discharged into rolling dumpsters, one for each fine screen. The dumpsters rest in a concrete channel where they can be winched to the exterior of the IPI building for waste collection. Bar screen #2 was observed as having greasy rags lying on one side and clinging to the metal cladding of the bar screen. BAF filter media was observed on the floor near bar screen #2.

Image 1: IPI Building, Bar Screen #2.

The Fine Screen facility contains eight (8) fine screens divided into two groups of four. Each group of screens has a conveyor and compactor associated with it to carry screened material to the compactor before discharging it to waste dumpsters. At the time of the site visit, it was reported that all eight (8) fine screens are operational. One (1) fine screen (#3) was off during the site visit, the remaining seven (7) screens were in operation. A project for replacing the compactors and conveyor belts for both groups of screens was in its beginning stages at the time of the site visit. The BAF media, rags, and grease observed during the last inspection in the steel channels embedded in the concrete and near the waste dumpsters appeared to have been removed and cleaned on the day of this inspection.

Image 2: Fine Screen Facility.

Fats, oils, and grease (FOG) is an ongoing issue for the facility. Andrea reported that Baltimore City had previously discussed and shared a plan to investigate and study the major sewer flows to the Patapsco WWTP in an effort to identify the source of the FOG which is causing issues for the plant. Such a study may be beneficial to the operations of the plant if the source of the FOG can be identified and properly regulated and treated at the source before discharging to the sewer.

Transfer Station:

The transfer station has a roof, low wall on three sides, and trench drains in its concrete floor. Grease and grit from the preliminary treatment systems (screening) are stored in the transfer station. Liquid that drains into the trench drains of the transfer station is pumped back into the gravity sludge thickeners (GSTs). Dried waste and grit are taken to the Quaratine Road Municipal Landfill for disposal.

Image 3: Transfer Station.

On this day, the screens for the trench drains were removed and the drains were being cleared. Through the process of operating trucks and equipment in the transfer station, heavy grease tracks were observed outside of the covered area of the transfer station on the asphalt surface.

Gravity Sludge Thickeners (GSTs):

There are three (3) 65-ft diameter gravity sludge thickeners (GSTs) in the sludge handling area of the plant. The GSTs are numbered #1, #2, and #4. GSTs #1 and #2 are built on grade and GST #4 is elevated above grade. The skimming arms of GST #1 and #2 are missing significant portions of the rubber flaps which should extend down to the liquid surface to effectively remove surface scum. Currently, staff spray water on the surface of GST #1 and #2 in order to manually remove surface scum. Repairs for the skimming arms are reportedly planned and a vendor has been selected to complete the repairs.


Image 4: GST #1.

Image 5: GST #2.

At the time of the site inspection, GSTs #1 and #2 had significant amounts of floating sludge outside of the V-notch weirs. The scum trough on GST #1 was clear and the scum trough on GST #2 had a buildup of sludge on the surface but was clear and operational. Vegetation was observed growing along the scum trough on GST #2. Synagro was reportedly pulling from GST #2 at the time of the inspection for sludge processing. GST #4 was nearly empty. Anthony Merill reported that GST #4 was drawn down for cleaning to put it into service. Anthony Merill reported that they continue to have issues with Synagro shutting down due to mechanical issues.

Primary Treatment:

The primary treatment system consists of six (6) large, rectangular Primary Settling Tanks (PSTs), each equipped with a chain and flight sludge conveyance mechanism, scum logs, and screw sludge collector.

At the time of the site inspection, PSTs #2, #4, #5, and #6 were in service. Routine maintenance was being completed on PST #3. PST #1 is down for the installation of new troughs and actuators. Baffles will also be replaced in PST #1. Following the completion of these repairs on PST #1, Anthony Merill reported the same repairs will be completed on #3 followed by #2, #4, #5, and #6. PST #2 was observed as having a light layer of floating solids at the surface on the effluent end that two operators were skimming off. PSTs #4, #5, and #6, were observed to be functioning normally with no visible floating solids on their respective effluent ends.

Image 6: PST #1, new troughs and actuators installed.

High Purity Oxygen Aeration Reactors and Liquid Oxygen Plant (LOX Plant):

The LOX Plant converts air to 95% liquid oxygen. Liquid oxygen is used for the pure oxygen reactors for BOD removal. The main system at the LOX Plant is currently running. The High Purity Oxygen Aeration facility has six (6) pure oxygen reactors. The reactors are enclosed, rectangular tanks where the inside cannot be observed.

Kevin McFadden reported that reactors #2, #3, #5, and #6 were in service at the time of the inspection. Reactor #1 is in standby as a backup reactor and reactor #4 is down for repairs.

Between the High Purity Oxygen Aeration Reactors and Secondary Treatment Clarifier #3, adsorbent material is still present on an asphalt-paved drive originating at a United Rental temporary pump and continuing south down the drive for approximately 60 feet. During the last site inspection, the adsorbent material was reportedly the result of a spill of one (1) gallon of diesel fuel from a United Rental technician while the technician was replacing the pump with another temporary pump. Kevin McFadden stated that he would have the absorbent material swept up right away.

Image 7: Temporary United Rental Pump, adsorbent material.

Secondary Treatment:

The facility is equipped with eight (8) secondary clarifiers. Inspection of all eight (8) clarifiers (#1-4, 5A, 5B, 6A, and 6B) was conducted on this day.

The scum trough for secondary clarifier #1 overflows to a sunken concrete-lined overflow pit adjacent to the clarifier. On this day, the overflow pit was observed as containing a small volume of water – no BAF media was observed in the pit. BAF filter media was observed on the ground around the entrance stairs to the clarifier access walkway. The scum trough for secondary clarifier #1 was clogged.

Image 8: Secondary Clarifier #1, clogged scum trough.

Secondary clarifier #3 is not operational and is being used as a mudwell to contain backwash water from the denitrification filters and biological aeration filters (BAF). Wastewater from secondary clarifier #3 is pumped back to the PST influent via the temporary pump from United Rental.

Secondary clarifier #2 is back in service and was reportedly back in service for a week. The skimmer arms are operational and functioning as designed. The scum trough on secondary clarifier #2 was observed to be clogged with material.

Secondary clarifier #4 was in service and the surface was being sprayed with water to breakup scum. The scum trough for secondary clarifier #4 was observed to be clogged and not functional. One of the skimmer arms of clarifier #4 is missing a section of the metal frame which is allowing surface scum to pass the skimmer. During the last site inspection, these same conditions were present on secondary clarifier #4.

Secondary clarifier #5a was observed in operation with water being applied to the surface to breakup surface scum. A large amount of duckweed was observed at the surface covering nearly half of the clarifier water surface. One arm of the skimmer for clarifier #5a was observed to be bent and nearly below the surface near the end. It does not appear to reach to the outside edge leaving an area open where surface scum is able to pass through and not be collected. The scum trough was observed to be clogged and not functional.

Secondary clarifier #5b was observed in operation with water being applied to the surface to breakup surface scum. One arm of the skimmer for clarifier #5b appears to be bent near the middle causing the top edge to drift below the surface allowing scum to pass over. The scum trough was observed to be clear. A large amount of debris was observed floating between the inner weir and outer edge of the clarifier. Kevin McFadden reported that this was the result of stopping the clarifier to repair one side of the skimmer arm. He stated he would have the debris removed.

Image 9: Debris observed in Clarifier #5b.

Secondary clarifier #6b was observed in operation with water being applied to the surface to breakup surface scum. One arm of the skimmer for clarifier #6b was observed to be bent near the end causing the end to dip below the surface and allow scum to pass over and not be collected. The scum trough was observed to be clear and functional.

Secondary clarifier #6a was observed to be in operation with water being applied to the surface to breakup surface scum. Both arms of the skimmer on clarifier #6a appear to be functional. The scum trough for clarifier #6a was observed to be clear. The trash and debris noted during the previous inspection were not present during this inspection and appear to have been removed.

<u>BAFs and Mud Wells:</u>

Inside the Biological Aeration Filter (BAF) facility there are 22 filter cells and associated blowers. Fourteen (14) filter cells are necessary for design average daily flow. All BAF cells were active at the time of the site inspection. No issues

were reported with the BAF filter system. The effluent monitoring device was observed as having an ammonia concentration of 0.62 mg/L and a phosphate concentration of 0.12 mg/L. Effluent pH monitoring indicated a pH of 6.47.

Mud wells #1 and #2 were inspected. No foam was observed in either mud well. Solids were observed on the surface of both mud wells and appeared to consist primarily of BAF media. The walls and internal structure of the mud wells appears to have dried BAF media stuck to the surface in some areas.

Denitrification Filters:

The denitrification filter (DNF) facility contains 34 gravity filters and support systems such as backwash pumps and blowers. 25 filters are in service while filters #20, #34, and #1 are out of service for mechanical repairs. Filters #7, #8, #23, #24, #32, and #33 were out of service and drained in order to allow for the algae buildup to bake in the sun for ease of removal. 24 filters are necessary for design average daily flow. The DNF filters are automatically backwashed every four hours for approximately 46 minutes.

Chlorine Contact Chambers:

The wastewater treatment plant has four (4) chlorine contact chambers with scum troughs and mixers. All four (4) chlorine contact chambers were operating at the time of the site inspection. Contact chambers #2 and #3 have a mixer out of service which is causing excessive foam to develop on the surface. The foam is being collected by the scum troughs in each chamber. The broken and floating booms and baffles that were installed in the chlorine contact chambers have been removed for safety reasons.

Image 10: Final pass of Contact Chamber #1.

Foam was observed on the surface of the final discharge channel which appeared to disperse rapidly. BAF media and FOGs were not observed to be leaving the site via the effluent channel.

Image 11: Final Effluent from Chlorine Contact Chambers.

Self-Monitoring / In-House Lab:

The following records were reviewed:

- Daily pH calibration records from 7/27/23 to 8/29/23.
- Daily zero oxygen verification / dissolved oxygen (DO) calibration from 7/27/23 to 8/29/23.
- Daily composite samplers' temperatures from 7/27/23 to 8/29/23.
- Total residual chlorine standards reading / verification for 7/27/23 to 8/29/23.

Hard copies of the daily pH calibration records, DO calibration records, daily composite samplers' temperatures records, and total residual chlorine standards verification from 7/27/23 to 8/29/23 were provided for review. pH calibrations are conducted 5 times per shift per day. No violations were observed with the pH calibration records. A zero-oxygen standard is used each time for DO calibrations. No violations were observed with the DO calibration records.

The facility's operator lab for the outfall has two composite samplers. The temperatures of the composite samplers #1 and #2 were 5°C and 6°C, respectively. The composite samplers were less than or equal to 6°C which is within the temperature requirement for sample holding / preservation, according to Table II in CFR 136.3. I brought the composite sampler temperature of 6°C to the attention of the operator so they may investigate and monitor the temperature to keep it from increasing any higher.

The facility changed from the Lamotte 1200 CL2 Colorimeter for residual chlorine to a HACH DR300 CL2 Colorimeter. The change in device occurred in the beginning of July. The facility only uses the HACH DR300 CL2 since the change in device. The calibration records for the HACH DR300 CL2 Colorimeter were reviewed for the period from 7/27/23 to 8/29/23 and no violations were observed.

Lab Reports, MORs, and DMRs:

Lab reports and MORs for June 2023 were provided via email by Mr. Robert Lombardi (Wastewater Division Operations Engineer of Patapsco WWTP). Lab reports for 5-day biological oxygen demand (BOD), total suspended solids (TSS), ammonia, nitrate plus nitrite, total phosphorous (TP), ortho-phosphate, Enterococci, cyanide, and metals were reviewed. Calculation discrepancies / reporting for nutrients, metals, Enterococci, TSS, BOD, pH, total residual chlorine, cyanides, and flow were not observed on the netDMR submission for June 2023. A note was included in the DMR stating that the BOD parameter reporting is missing one week due to an issue with the contract laboratory. Details are discussed in the following paragraph.

A non-compliance notice was provided by Robert Lombardi on 7/27/2023 for the BOD parameter. The contract laboratory for Patapsco WWTP, ALS Environmental, exceeded the incubation temperature for seven (7) samples which effectively removed one week from the average monthly and weekly calculations. In a letter from ALS Environmental, the cause of the temperature exceedance was a mechanical failure of the HVAC system. The letter states that the HVAC system has been replaced.

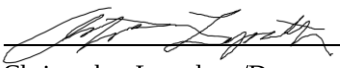
With respect to the above MDE authorization, the following violations of Environment Article 9 by the Patapsco WWTP were observed on this date, with corrections (in bold text) needed immediately:

1) BAF media and greasy rags were observed inside the IPI building in and around bar screen #2. **Remove all BAF media and greasy rags from the side and floor around bar screen #2 and dispose of them accordingly.**
2) The GSTs are overloaded with sludge and solids and are not able to function as designed. Both skimmer arms in GST #1 and GST #2 are in need of repair. The function of the GST is to allow for most of the biosolids to settle at the bottom and for a relatively solids-free supernatant to rise to the top. The high concentration of biosolids in GST effluent can negatively impact the pure oxygen reactors' ability to remove BOD and can cause nitrification issues within the plant. **Operate and process sludge in a manner consistent with the function and design of the equipment.**
3) BAF media was observed on the ground by the access walkway stairs at Secondary Clarifier #1. **Remove all BAF media from the ground by the access walkway stairs at Secondary Clarifier #1 and dispose of it accordingly.**
4) The secondary clarifiers are not being maintained in a condition to operate effectively. One of the two skimmer arms in Secondary Clarifiers #4, #5a, #5b, and #6b are not functioning as designed. Vegetation was observed growing in Secondary Clarifier #5a. A large amount of debris was observed floating in Secondary Clarifier #5b. The scum trough in Secondary Clarifiers #1, #2, #4, and #5a were clogged and not functional. **Repair and maintain the secondary clarifiers to ensure that they are functioning per design. The skimmer arms should be fixed to ensure that the entire length of the skimmer arm is on the water surface and extending to the baffles, allowing for solids on the water surface to be skimmed into the scum troughs. Remove all vegetation and trash from the clarifiers. Implement routine maintenance to prevent the excessive building of sludge and solids in the scum troughs.**

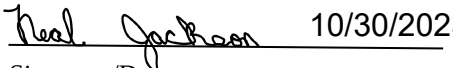
Monthly inspections will continue.

Contact this Inspector upon implementation of the requested corrective actions, reasonably necessary to bring this site into compliance. If the corrective actions cannot be completed within the prescribed time frame above, you should continue to advise the Inspector, at least every 30 days, of the status of the measures taken to complete the corrective actions. If you have any questions, need assistance, or to request a re-inspection, please contact this Inspector by phone, 410-537-3521, or email, christopher.lepadatu@maryland.gov.

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.

Inspector:  9/13/23

Christopher Lepadatu /Date
christopher.lepadatu@maryland.gov
410-537-3521

Received by:  10/30/2023

Signature/Date

Neal Jackson

Print Name