

United States Environmental Protection Agency Region 4
Enforcement and Compliance Assurance Division
Water Enforcement Branch
61 Forsyth Street, SW
Atlanta, Georgia 30303



Compliance Evaluation Inspection Report

Greenville POTW
City of Greenville, Mississippi
NPDES Permit: MS0020184
Project No. CV-MS0020184-092121

Facility Address:
Highland Plantation Road
Greenville, Mississippi 38127

Inspection Date:
September 21, 2021

Inspectors:
Dennis Sayre, EPA Region 4
Brad Ammons, EPA Region 4
William Joyner, EPA Region 4
Jacob Lunn, EPA Headquarters

Inspection Report Prepared by:
Dennis Sayre

November 30, 2021

Title and Approval Sheet

Title: Compliance Evaluation Inspection City of Greenville

Approving Official:

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Date

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Date

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I. Introduction

Representatives of the United States Environmental Protection Agency conducted a Compliance Evaluation Inspection (CEI) on the Greenville Wastewater Treatment Plant (WWTP) owned by the City of Greenville (the City). The inspection was conducted under the authority of Section 308 of the Clean Water Act (CWA), as amended. This narrative report and attachments present summary results of the inspection.

An opening conference was held on September 21, 2021, at the WWTP followed by a walk-through of the facility. A summary of findings is detailed below. Participants in the inspection included:

<u>Name</u>	<u>Position</u>	<u>Phone Number</u>
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Darrell Martinek	WL Burle Engineering	662-332-2619
Joshua Corrao	WWTP Operator	318-658-4741
Ronnie Washington	City of Greenville	662-822-7004

Manchac Consulting Group, Inc. (Manchac) was hired by the City to operate the WWTP and participate in certain aspects of the WWTP rehabilitation. WL Burle Engineering was hired by the City for engineering design and project management for the WWTP rehabilitation among other contractual duties.

II. Background

The City of Greenville (City) entered into a judicial Partial Consent Decree (PCD) with the US Department of Justice and the EPA on April 4, 2016, that requires the City to comply with the discharge requirements of the Clean Water Act. Specifically, the PCD requires the City to eliminate Sanitary Sewer Overflows experienced by the City's wastewater transmission and collection system during wet weather events. The PCD also requires the City to develop and implement certain Capacity, Management, Operations, and Maintenance programs.

The EPA conducted a CEI of the City's WWTP on November 6, 2019 (the 2019 Inspection). During the 2019 Inspection, EPA inspectors discovered that the WWTP was in a severe state of disrepair, with numerous operation and maintenance issues. An Administrative Order (AO) was issued to the City on December 6, 2019, that requires expeditious compliance with interim measures that includes rehabilitation of the WWTP to allow for full treatment of average daily dry weather flow. At the date of this CEI, the City and the EPA were discussing amendments to the AO to reflect changing conditions. A new Administrative Order on Consent (AOC) was issued to the City on October 06, 2021.

III. Facility Description

The WWTP is an activated sludge treatment plant with a design flow of 20 million gallons per day (MGD). The WWTP is currently operating in an impaired condition while emergency repairs are being made. Influent flow is bypassing the main headworks and is being diverted to one aeration basin for grit management while contractors are installing a new bar screen and grit removal system. Flow is diverted

to one aeration basin (Aeration Basin No. 8) which is used as a temporary grit removal system, then to one of four clarifiers. From the clarifier, flow is sent through the Ultra-violet (UV) contact channel and dosed with Sodium Hypochlorite (NaClO) before entering the outfall pipe to the Mississippi River. The UV disinfection system is not in use due to high solids content in the effluent.

When fully operational, solids management will be achieved through a new bar screen and grit removal system. The activated sludge treatment section of the WWTP consists of eight aeration basins, four clarifiers, four digester basins, six aeration blowers, three return activated sludge (RAS) pumps, and other related appurtenances. Sludge management will consist of three waste activated sludge (WAS) pumps, three sludge lagoons that will be used as sludge drying beds, and one belt press for sludge dewatering. Disinfection will be achieved using a UV disinfection system once the activated sludge treatment section of the WWTP is online. Flow through the UV system is regulated by a Three-Finger Weir to maintain water depth on the UV bulbs. A Siemens HydroRanger ultrasonic depth sensor system will be used to measure the flow level in the UV channel to calculate the UV dosage rate. An ISCO Signature Flow Meter is used to measure the effluent flow rate and provide flow totalizer readings. Figures 1 and 2 are aerial displays of the WWTP.

The WWTP was originally designed with a series of ground water (GW) management wells. The GW management system originally designed with the WWTP was intended to allow critical maintenance activities of the clarifiers during high GW levels. The GW management system is currently non-operational. The City is currently exploring alternatives to GW management, to include rehabilitation of the GW wells. Piezometers are used to monitor the water table levels.



Figure 1. Aerial display of the WWTP.



Figure 2. Aerial display of the WWTP.

IV. Inspection Procedures

The overall objective of this CEI was to evaluate the City's progress with corrective actions associated with the AO and offer compliance assistance as needed. Specific tasks included conducting interviews with contract staff from Manchac Consulting Group, Inc. (Manchac) and WL Burle Engineering, conducting a site visit of the WWTP, and a closing conference.

V. Permit Review

The City maintains and operates the WWTP under the National Pollutant Discharge Elimination System (NPDES) permit number MS0020184 which has an effective date of September 1, 2016, an expiration date of August 31, 2021, and has been Administratively Continued pending the Mississippi Department of Environmental Quality (MDEQ) review. The WWTP is authorized to discharge treated wastewater into the Mississippi River.

Pollutants of concern include pH, fecal coliform, biochemical oxygen demand-five-day test (BOD₅) and total suspended solids (TSS). All other pollutants listed on the NPDES permit have no discharge limits and are recorded as report only, which includes phosphorous, nitrogen, dissolved oxygen "in the aeration unit", and sludge settleability. Flow is also monitored continuously and reported monthly.

VI. Records Review

The City is required to send the EPA and MDEQ weekly reports under the AO. The weekly report includes: A list of permit effluent limit exceedances that occurred during the month, and a summary of all actions taken, and progress made in achieving the goals of the Interim Corrective Action Plan.

Records were not reviewed onsite other than those listed under the Findings and Conclusions, Laboratory and Sampling sub-section below.

VII. Findings and Conclusions

WWTP Site Visit (refer to Attachment 1 for all photographic references)

1. The Influent Pump Station had two operational pumps; one pump is scheduled for replacement (Photo 1).
2. New magnetic flow meters were installed on the influent pipes located in the Influent Metering Vault (Photo 2).
3. A new bar screen and grit removal system (grit chamber) is under construction (Photos 3, 4 and 5).
4. A newly installed bar screen at the aeration basins is being utilized prior to discharging into Digester Basin No. 8 for objects (rags, wipes, etc.) removal (Photo 6).
5. There were originally three cyclone-type grit removal units in the original grit removal system. This system was placed out of commission shortly after installation and is no longer in use (Photo 7).
6. Seven aeration basins were observed to have new air diffusers installed.
7. New air diffusers were installed in Aeration Basin No. 1. The Bypass Channel under the grates between the handrails have been cleared of grit and sand (previously full during the 2019 Inspection) (Photo 8).
8. Aeration Basin 6 and Sludge Digester Basin 7 were observed empty. New air diffusers have been installed (Photo 9).
9. Digester Basin 8 is currently being used for grit removal. The basin will need to be cleaned once the new grit removal system is online (Photo 10).
10. Digester Basins 9 through 12 are still full of solids. The City plans to use City owned property at the Mid-Delta Regional Airport as a biosolids land application site for solids to be removed from Basins 9 through 12 and Lagoon No. 3, pending the Federal Aviation Administration approval.
11. New sludge pumps were installed in the Return Activated Sludge (RAS) Pump Room. One RAS pump is missing and will be installed under Contract No. 9 with WL Burle Engineering (Photos 11 and 12).
12. Clarifier No. 1 is reportedly ready and operational, not yet online (Photo 13).
13. Clarifier No. 3's rake arm support column is twisted and will require extensive structural and mechanical repair (Photo 14).
14. New check valves will be installed on the effluent pump station (Photo 15).
15. Sludge Lagoon No. 2 is currently being excavated for future sludge processing and will be used as the primary/permanent sludge dewatering system (Photo 16).
16. The pre-existing sludge processing tank located outside of the Sludge Processing Building will be used for initial sludge processing (Photo 17). At least one sludge belt press will be used as an interim sludge processing system while the Sludge Lagoons are being prepared.
17. One of two original 2-meter sludge belt presses is still on-site. One of the sludge belt presses was deemed unrepairable and it was removed. The City is exploring adding a trailer mounted belt press, if needed, for temporary sludge processing while preparing the sludge lagoons (Photo 18).
18. New polymer pumps have been installed for sludge processing (Photo 19).
19. The City is utilizing NaClO as interim disinfection while bypassing under emergency repair conditions. UV disinfection would be ineffectual with high solids content in the effluent while construction is underway at the WWTP (Photo 20). NaClO is injected into the effluent well prior to entering the outfall pipe (Photo 21).

20. The UV Light disinfection contact chamber appears ready for use, less UV bulbs, apart from additional channel cleaning prior to placing the system online (Photo 22).
21. Groundwater levels are believed to be negatively affected by a slough located north- northeast of the WWTP (Photos 23 and 24).
22. A piezometer is located between Clarifier Nos. 3 and 4, installed on a GW well to measure GW levels (Photo 25).
23. GW drawdown wells next to Clarifier Nos. 2 and 4 are currently non-operational (Photo 26).
24. Additional GW drawdown wells are located next to the clarifiers and around the perimeter and are non-operational (Photos 27 and 28).
25. Each clarifier is equipped with flap gate style cast iron blowout valves at the base of the clarifiers which are intended to prevent clarifier “floating” if high GW levels overcome the buoyancy of the clarifiers (Photo 29).

Laboratory and Sampling Review:

1. The flow meter in the Administrative Building indicated an effluent flow of 4.37 MGD at the time of inspection. Weather conditions were dry, and the GW table was relatively low.
2. Sampling conducted at the WWTP laboratory includes pH, fecal coliform, BOD₅, TSS, and chlorine while disinfecting with NaClO.
3. Inspectors reviewed the TSS, BOD₅, and fecal coliform logs. No discrepancies were noted.
4. The thermometer in the refrigerator where samples are stored was properly buffered. The refrigerator temperature was acceptable for storing samples.
5. DO and pH meters are calibrated before use and all other laboratory equipment is calibrated annually.
6. Buffers to calibrate pH probes were within their expiration date.

VIII. Discussion

During the time of inspection, there were three active construction contracts where work was being implemented and two pending (work not yet started) contracts for work at the WWTP. The following contract descriptions summarized below only include major milestones and may not reflect the full scope of work assigned to the contract.

Active WL Burle Engineering Contracts:

1. Contract No. 2 – WWTP Grit Chamber Project – Hemphill Construction Company is rebuilding the grit chamber and cleaning out the sludge from Clarifier No. 3. Work is on-going and should be completed in November 2021, assuming the groundwater table remains at a manageable level.
2. Contract No. 4 – WWTP Sludge Lagoon No. 2 Cleaning Project – Synagro is removing the sludge from the lagoon and transporting it to either the Republic Big River Landfill or the Synagro land application site for final disposal. This work is on-going.
3. Contract No. 6 – WWTP Effluent Pump Station Project – Hemphill Construction Company is rebuilding the effluent pump station and replacing the valving along the north side of Aeration Basin Nos. 1 through 8. This work is on-going.

Pending WL Burle Engineering Contracts:

1. Contract No. 9 will rebuild the WWTP influent pump station, install emergency diesel-powered back-up pumps for the WWTP influent & effluent pump stations, and install a third RAS pump.

2. Contract No. 12 will clean out Aeration Basins 9 through 12, replace the valves on the four clarifiers drain lines and replace six valves (four on the north side and two on the south side) for Aeration Basins 9 through 12.

The City has also completed Contract 1 which included the Hancock Pump Station Force Main Project which was a 2.5 mile long 20" force main replacement project along Theobald Street in Greenville. It was finalized in September 2021.

WL Burle Engineering is preparing to conduct GW drawdown testing from 6-inch water wells as part of the City's GW Control Plan feasibility study.

ATTACHMENTS

1. Photographs

END OF REPORT



Photo 1. Influent pump station.



Photo 2: Influent Metering Vault.



Photo 3: Headworks, bar screen and grit removal System.



Photo 4: Bar screen and grit removal system under Construction.



Photo 5: New headworks and grit removal control panels.



Photo 6: Bar screen for inflow to Digester Basin 8.



Photo 7: Original cyclone-type grit removal system.



Photo 8: Aeration Basin 1. New air diffusers installed. Bypass channel is located under grates between the handrails.



Photo 9: Aeration Basin 6 and Digester Basin 7 (left).



Photo 10: Digester Basin 8. Currently used for grit removal.



Photo 11: Return Activated Sludge (RAS) (brown pipes) and sludge pumps (blue piping)



Photo 12: RAS pipes and pumps.



Photo 13: Clarifier No. 1.



Photo 14: Clarifier No. 3



Photo 15: Effluent pump (gray pipes in background) and new check valves (blue).



Photo 16: Sludge Lagoon 2 excavation work.



Photo 17: Tank outside sludge processing building planned for sludge processing.



Photo 18: Sludge processing building. 2-meter belt press (aft) and slab for second belt press.



Photo 19: New polymer pumps for sludge processing.



Photo 20: Interim NaClO disinfection tank.



Photo 21: Effluent well.



Photo 22: Ultra-violet light bulb fixtures and contact Chamber.



Photo 23: Slough located approximately 200 feet from Clarifiers.



Photo 24: Google Earth screenshot of slough, clarifiers and Aerator/Digester Basins.



Photo 25: Piezometer located between Clarifier Nos. 3 and 4.



Photo 26: Ground water drawdown wells next to Clarifier Nos. 2 and 4. (red arrows)



Photo 27: Ground water drawdown well on access road to Sludge Lagoons.



Photo 28: Ground water drawdown well in front of UV building.



Photo 29: Clarifier GW relief valves (yellow circles).