STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
Division of Water Resources
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October 30, 2023

Mr. Jeffrey Uhler | Public Utilities Senior Manager
e-copy: Jeffrey.Uhler@cityofclarksville.com
Clarksville Gas & Water Dept.
15 Quarry Road
Clarksville, TN 37042

RE: Compliance Evaluation Inspection and Combined Sewer Overflow Inspection
Clarksville Sewer Treatment Plant
NPDES Permit # TN0020656
Montgomery County

Dear Mr. Uhler,

On July 25, 2023, Mr. Jordan Fey and myself from the Division of Water Resources (Division) began a Compliance Evaluation Inspection (CEI) in conjunction with a Combined Sewer Overflow (CSO) Inspection at the Clarksville Sewer Treatment Plant (STP) to determine compliance with NPDES Permit # TN0020656. However, the inspection could not be fully completed until August 22, 2023, because the Division was waiting on additional information from other Division staff. The inspections cover the period from September 2021 to June 2023. The permit became effective on February 1, 2021, and will expire on January 31, 2025. During the inspections, we were assisted by Mr. Jeff Uhler, Mr. Brian Shelton, Mr. Jodi Fields, Mr. Davis Stack, Mr. Tommy McClellan, Mr. Chris Stewart, and Mr. Christen Allen. I would like to thank you for the time, courtesy, and cooperation shown during the inspections.

Permits and Records Review

A current copy of the NPDES permit and records required by the permit were available on site. A violation summary report for the facility pulled from the EPA's Integrated Compliance Information Systems indicates that the following effluent violations were reported for the period of September 2021 to June 2023:

- 67 – Dry Weather Overflow Events
- 78 – Wet Weather Overflow Events
- 35 – Observed Discharge Events, annual average (CSO 004) – December 2021
- 1 – Carbonaceous Biological Oxygen Demand (CBOD) – April 2023
- 4 – Exceedances of Total Suspended Solids (TSS), daily max – March 2022, April 2023, May 2023, June 2023

The transfer of data from laboratory bench sheets to Monthly Operation Reports (MORs) to Discharge Monitoring Reports (DMRs) occurred without discrepancies. The transfer of data from laboratory bench sheets to (MORs) for monthly and weekly averages for TSS and CBOD are being recorded properly.

Facility Review

The treatment of municipal wastewater at the Clarksville STP is achieved by activated sludge followed by rotary screening, grit removal, primary clarification, final clarification, and chlorine disinfection. Sludge is dewatered and disposed of at Bi-County Landfill in Montgomery County. Clarksville STP is authorized to discharge treated municipal wastewater into the Barkley Reservoir of the Cumberland River from Outfall 001, treated combined wastewater through two permitted CSO points: Outfalls 002 (Gallows Hollow) and 006 (McClure Street), and limited untreated wastewater from Outfall 004 (Commerce Street).

The influent flow measurement and sampling were reviewed during this inspection. Influent flow is measured by three magnetic flow meters, which are calibrated annually. The last calibration was on May 2, 2023, by MR Systems. The influent sampler was in good condition with an internal temperature of 4.0 C° at the time of inspection. The tubing on the sampler was clean and is replaced monthly.

Effluent flow is measured using a hydrostatic meter in a rectangular channel with end contractions. A staff gauge is used for monthly flow meter validation checks. The flow meter is calibrated annually, with the most recent calibration conducted on May 2, 2023, by MR Systems. The tubing on the effluent sampler was clean and is replaced monthly. The sampler was in good condition with an internal temperature of 1.0 C° at the time of inspection.

Active construction of the facility's thermal dryer improvements was ongoing during the inspection. The flood control structures that contributed to the July 12, 2021, illicit discharge and Notice of Violation (NOV) were still locked, with equipment and procedures accessing the sluice gates were still inaccessible and effective, respectively. Two of the three primary clarifiers were in operation during the inspection. Mr. Fields informed the Division that all three primary clarifiers are only needed during high-flow events. One of the three aerobic basins was offline for diffuser improvements. Small amounts of solids were observed leaving the secondary clarifier weirs but did not appear to impact downstream treatment.

Outfall 001 is located about a mile from the facility in the adjacent Riverside Greenway. The effluent contributed fine bubbles to the surface of the receiving stream but did not appear to have any impact on the receiving waters. No odors, scum, or foam were discovered from the outfall during the inspection. The information displayed on the double-sided outfall sign is current and visible from the receiving waters and the land. The facility has implemented a monthly program checking all Outfalls for adverse conditions since the 2021 inspection. The Outfalls are inspected at a monthly frequency with the inspection date documented. The Division recommends including outfall and receiving stream conditions. Mr. Shelton agreed with the Division's recommendation and demonstrated how the City of Clarksville can potentially integrate outfall inspections into the recently acquired geographic information system (GIS).

Lab Review

Analysis for CBOD, ammonia, TSS, total chlorine residual, *E. coli*, settleable solids (SS), and dissolved oxygen (DO) are performed in house. Total nitrogen, total phosphorus, and IC25 are contracted out to Pace Analytical. Standard Operating Procedures (SOPs) were readily available for review and appeared

organized and easy to navigate. The SOPs have been updated to reflect the currently approved methods of analyses. The facility had a copy of the 23rd edition Standard Methods on hand. SOPs are reviewed and updated annually.

Lab bench sheets and daily records for analysis were readily available for review and contained the appropriate information, including the analysis method number, lab technician's initials, date, time of analysis and calibration, and sample collection locations. Overwriting and crossing out typographical errors without initials were observed on the March 2022bench sheets. Mr. Uhler informed the Division the facility is aware a single strikethrough with initials is the accepted method for correcting such errors. No additional documents reviewed by the Division contained similar errors.

All ovens and incubators have thermometers inside and are checked daily with the temperatures recorded in a log. The ovens and incubators were within the appropriate temperature ranges during the inspection. The thermometers and lab equipment are calibrated annually by LabtronX, with the last calibration occurring on May 2, 2023. Glassware is washed in a lab glass washer. The facility is using a detergent that contains sodium triphosphate. The facility followed the Division's recommendation to switch to a phosphate-free detergent, from the 2021 inspection. However, the lab discovered consistent BOD blank depletions during its use. Lab personnel reviewed the approved manufacturer's method and determined the phosphate-free detergent as the contribution for the blank depletions. BOD blank depletions ceased once the lab switched to its previous detergent brand. Clarksville STP's lab facility was in excellent condition and well-organized. All primary and secondary standards were within their effective dates and adequately documented.

CSO and Collection System Review

A Combined Sewer Overflow inspection (CSO) was performed on the Clarksville Combined Sewer System on July 26, 2023, by Mr. Jordan Fey and myself. We were assisted by Mr. Brian Shelton, Tim Roby, and Mr. Davis Stack. Mr. Shelton provided the Division with electronic copies of the Sewer Overflow Response Plan (SORP), Long Term Control Plan (LTCP), and Capacity Management, Operation and Maintenance (CMOM) during and prior to the inspection. The monitoring plan for CSO discharges submitted to the Division in June 2021 was implemented in the fourth quarter of 2021 and is anticipated to be completed by the third quarter of 2023.

Clarksville currently has three CSO discharge points within the collection system that discharge into the Barkley Reservoir of the Cumberland River. Two of these points discharge limited untreated combined wastewater; a third point discharges untreated storm and wastewater. The current permit requires the collection of composite samples during the first 4 hours of a discharge event. The composite samplers were available but could not adequately cool the samples to the required temperatures. The Division recommended the sample jugs be placed on ice, which should be an adequate solution given the duration of the sample event required by the current permit.

Electronic reporting of sanitary sewer overflows (SSO) and releases to the Division have been implemented and required since the previous 2021 inspection. The Division's review of the City of Clarksville's SSO reporting noted inconsistent data regarding component identification names, locations, and lift station names. The Division informed Mr. Shelton this concern was strictly from a data management standpoint. Mr. Shelton agreed to assess the feasibility for the Division's request of a standardized reporting format moving forward.

Gallows Hollow (Outfall 002), McClure Street (Outfall 006) and Commerce Street (Outfall 004) regulators and permitted CSO outfalls were inspected. The regulators for outfalls 002 and 006 included settling channels, bar racks, and vortex separators for the removal of settleable and floatable solids. The Commerce Street regulator consisted of a vault with a weir to maximize the transmission of sewage to the treatment plant, prevent stormwater from entering the sewer, and flow monitoring for events when the combined portion exceeded the capacity of the collection system and discharge of combined sewage occurred. Flow meters for all three outfalls are calibrated annually. Outfalls 002 and 006 are inspected weekly, and outfall 004 is monitored via telemetry. The city contracts a security company to monitor all three sites to assist in preventing unauthorized access.

Clarksville has reported the following discharges from each outfall from September 2021 to June 2023:

- 002 – 3
- 004 – 31
- 006 – 48

The 3.0 million-gallon equalization tank at the Gallows Hollow site was brought online in 2022. Similar to the 2.5 million-gallon equalization tank at the McClure Street site, both facilities have automated controls and regulators to divert untreated waste and store it until it can be returned to the collection system for treatment. All three outfalls have significantly reduced their frequency of discharges since the 2021 inspection.

The Division inspected the following lift stations:

- Ringgold Road
- Turner Lane
- Hayes Street

All three lift stations met the permit's criteria for chronic overflows in 2022. Ringgold Road was in fair condition with inflow and infiltration (I/I) projects to reduce undue demands to the basin further. Turner Lane was in operable condition, with corrosion observed on pipes and the vault's base. Mr. Roby informed the Division the City of Clarksville has a project to replace the current lift station. Hayes Street was in fair condition with fats, oils, and grease (FOG) observed in the wetwell. Mr. Roby informed the Division the city uses a FOG rating from one to five, with one being the lowest impact and five being heavily impacted. Hayes Street is typically rated as three or moderately impacted for FOG. All three lift stations have documented inspections weekly by assigned personnel and are monitored via telemetry. All three facilities have visible untreated wastewater discharge point signs and contain the appropriate information required by the permit.

The permit requires Clarksville's CSO system to comply with the following Nine Minimum Controls (NMC):

1. **Proper operation and regular maintenance programs for the sewer system and CSO outfalls.**
   - **a.** Major pump stations and all CSO sensors have telemetry to Clarksville's main control room allowing continuous monitoring.

b. CSOs are appropriately maintained as evidenced by physical inspection; see the "Combined Sewer Overflow Outfall Review" portion of this letter.
c. Clarksville has an extensive rehabilitation program for monitoring and preventative maintenance of manholes, gravity lines, and force mains.
d. Clarksville cleans approximately 6% of its sewer system annually.
e. A Blockage Abatement program is in place, which identifies physical defects that could cause debris to accumulate and block the flow of sewage; Clarksville cleans the line or makes point repairs to minimize the potential for blockage formation.

2. Maximum use of the collection system for storage.
a. The new weir structure at the Commerce Street regulator allows Clarksville to maximize storage within the collection system prior to discharge.

3. Review and modification of pretreatment requirements to ensure that CSO impacts are minimized.
b. Clarksville maintains an active pretreatment program.
c. The previous three inspections have found the Industrial Pretreatment Program to be in compliance.

4. **Maximization of flow to the treatment facility for treatment.**
a. The addition of equalization has increased the flow that can be treated at the plant.
b. The STP has excess treatment capacity to address peak flows during rain events, mostly in the form of additional oxidation basins and clarifiers.

5. Elimination of CSOs during dry weather.
a. Discharges from the CSOs during dry weather have been eliminated.

6. Control of solid and floatable materials in CSOs
a. The two largest regulators have settling basins, bar racks, and vortex treatment structures to remove solids.

7. Pollution prevention programs to reduce contaminants in the CSOs.
a. Clarksville carries out routine street cleaning within the service area.
b. Clarksville has a FOG program to reduce the need for overflows or repairs caused by FOG. The FOG program includes public outreach to customers to encourage proper disposal of fats, oils, and grease.

8. Clarksville carries out routine street cleaning within the service area.
a. All active CSO points have visible signage.

9. Monitoring to characterize CSO impacts and the efficacy of CSO controls.
a. Clarksville has an extensive flow monitoring system, both at the CSO outfalls and within the collection system.
b. A plan to begin sampling the receiving stream to monitor CSO impacts has been submitted and approved.

The Long Term Control Plan (LTCP) and Capacity, Management, Operations and Maintenance (CMOM) documents were also reviewed. A Sewer Overflow Response Plan (SORP) was updated in January 2023. These programs are vital to the effective operation of a Combined Sewer System. All three appeared to be thorough and complete. Mr. Uhler informed the Division these documents are being updated as the city has several ongoing projects and major overhauls. The Division will be informed when the updates are completed.

Conclusions

Clarksville STP is well operated and maintained. No major concerns were noted during the inspection, and the facility appears to be operating in a manner that is compliant with the terms of its NPDES Permit; and continued system upgrades are having a meaningful impact in reducing overflows in the system. Though some transcription errors were found, plans to prevent a reoccurrence was acknowledged before the conclusion of the inspection. Clarksville is carrying out the Nine Minimum Controls for reducing the impact of CSO discharges and continues to work to improve its operation and the capability of the Clarksville STP.

Action Items and Recommendations

- Provide an assessment of the feasibility of standardizing overflow structures and their location when electronically submitting SSOs and releases to the Division.
- Include the conditions of outfalls and receiving stream conditions when checking outfalls.
- Please inform the Division of the progress on the city's monitoring plan for CSO discharges.
- Provide a timeline for when the city expects to replace the Turner Lane lift station.

Please provide a written response to the action items and recommendations listed above within 30 days of receiving this letter. I would like to again thank all of the Clarksville Gas and Water personnel for their courtesy and assistance during the inspection. If you have any questions or concerns regarding this letter, feel free to contact me at (615) 970-1222 or via e-mail at daniel.pleasant@tn.gov.

Sincerely,

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