

REPORT OF COMPLIANCE SAMPLING INSPECTION (CSI)

at
City of Meriden Wastewater Treatment Facility (WWTF)
39.1899, -95.5756
Meriden, KS
NPDES No: KS0046434

December 5-7, 2022

BY
U. S. ENVIRONMENTAL PROTECTION AGENCY
Region 7
Enforcement and Compliance Assurance Division (ECAD)

INTRODUCTION

I performed a Compliance Sampling Inspection (CSI) at the Meriden WWTF in Meriden, Kansas from December 5, 2022, through December 7, 2022. The inspection was authorized by Section 308(a) of the Federal Water Pollution Control Act, as amended. This inspection was conducted in accordance with the procedures described herein and followed all applicable EPA Region 7 Standard Operating Procedures. This narrative report presents the findings and observations of the inspection.

PARTICIPANTS

City of Meriden

Matt Williams, Maintenance Supervisor/Operator (785) 845-3271

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U. S. Environmental Protection Agency (EPA)

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PROCEDURES

On December 5, 2022, I arrived unannounced at the Meriden City Hall at 1:00pm. I introduced myself to Mr. Williams, presented my credentials, and explained the purpose and procedures of the inspection. These procedures included completing the Water Compliance Inspection Report (attachment 1); a facility walk-through with photos (attachment 2); a check of the self-monitoring records; the collection of influent and effluent samples; and an exit meeting. A Notice of Preliminary Findings (NOPF) was given to Mr. Williams during the exit meeting.

On December 6 and December 7, I collected grab samples each day at the influent splitter box using a sample pole. The samples were poured into clean, pre-labeled containers for the analysis

of Biological Oxygen Demand (BOD), Ammonia, Total Phosphorus (TP), Total Kjeldahl Nitrogen (TKN), Nitrate+Nitrite (NO₂+NO₃), and Non-Filterable Solids (NFS). The NFS parameter reported in attachment 5 is equivalent to total suspended solids (TSS) parameter required in the National Pollutant Discharge Elimination System (NPDES) permit. I gathered flow values daily from the operator.

On December 6, 2022 and December 7, 2022, I collected grab samples each day of the effluent from the effluent pipe at Outfall 001. The samples were poured into clean, pre-labeled containers for the analysis of BOD, NFS, Ammonia, TKN, NO₃+NO₂, and TP. I measured the pH and temperature using a field meter within 15 minutes of sample collection.

I placed the samples I collected each day on ice in an ice chest, sealed the container, and shipped it overnight to the EPA Region 7 Science and Technology Center (STC) for analysis. I followed Region 7 LSASD standard operating procedures in the collection, packaging, transportation, and handling of the samples. Field Sheets and Chain of Custody forms were electronically submitted each day following Region 7 procedures. Shipping of the samples collected on December 6 were delayed causing the BOD parameter to exceed the maximum hold time.

FACILITY DESCRIPTION

The Meriden WWTF is owned by the City of Meriden, Kansas. The latitude and longitude location for the WWTF is 39.1899, -95.5756. The legal description is the NE ¼, SW ¼, SE ¼, Section 12, Township 10 South, Range 16 East within Jefferson County. The mailing address for the City of Meriden is PO Box 262, Meriden, KS 66512. The WWTF treats domestic wastewater from the City of Meriden, a meat locker, and Ernest-Spencer Metal (metal finisher). Final effluent from the WWTF is discharged to an unnamed tributary at Outfall 001 which discharges to Muddy Creek (photo 9).

In 2007, the lagoon system was changed from a 3-cell to a 4-cell by adding cell #1. During the addition of cell #1, cells #2 through #4 were dredged. At the time of the inspection, the lagoon was being operated in series utilizing all four cells. Water depth gauges were maintained throughout the lagoon. The water depths appeared to be at appropriate depths for maintaining biological treatment and reducing sunlight to the cell floor.

Sludge depth evaluations of cells #1 and #2 were conducted by the Kansas Rural Water Association on July 8, 2022. Mr. Williams provided a copy of the report which shows an average depth of 10.65" and 8.71", respectively. Desludging was not recommended until the average sludge depth of both cells is 16". The report points out a higher accumulation of sludge near the inlet to each cell. Mr. Williams stated that the wastewater lines for cells #1 and #2 were pigged that same summer flushing out any debris.

The facility's NPDES Permit KS0046434 was renewed as effective on July 1, 2021 (attachment 4). The permit expires on June 20, 2026. The most recent inspection of the facility was conducted by KDHE on March 3, 2022. The inspection report mentions effluent limit

exceedances for BOD and Ammonia within the last 3 years.

FINDINGS AND OBSERVATIONS

The following findings were noted during the facility and record review. A complete summary is given in the NPDES Compliance Inspection Report (attachment 1). These findings were discussed with Mr. Williams during the exit meeting.

Self-Monitoring Data Review

I obtained a spreadsheet of the discharge monitoring report (DMR) data for the Meriden WWTF from January 2018 through June 2022 and reviewed the data. During the inspection, I obtained electronic copies of the laboratory analytical results for the years 2020 – 2022. The collected data also includes laboratory sheets and chain of custody forms from the contract laboratory. After the completion of the inspection, all data obtained from the facility has been stored as electronic records on EPA's secure server.

While reviewing the data, I noted the facility had exceeded the BOD and Ammonia effluent permit limits (NOPF 1). BOD limits were exceeded during the second quarters of 2019, 2020, and 2021. BOD and Ammonia limits were exceeded during the third quarter of 2021. Effluent permit limit exceedances have not occurred since the third quarter of 2021.

While discussing the potential causes of the permit limit exceedances, Mr. Williams stated that he became the operator approximately three months prior to the inspection and could not be sure what the causes were. He did explain that jetting of the lagoon's infrastructure was conducted in the past to relieve blockages, such as turtles. Mr. Williams stated he thought the line jetting could be the cause of the exceedances.

Laboratory

The City of Meriden has contracted the collection of influent and effluent samples to GSI Engineering. Analyses of the samples are contracted to Pace Analytical. Samples are first transported to Pace's Salina, Kansas location for analysis of BOD and E. coli. Then, samples designated for the analysis of TSS, TP, and Ammonia are transported to Pace's Lenexa, Kansas location. During the inspection, I reviewed laboratory records to ensure that all analyses complied with requirements of 40 CFR part 136. I noted that hold times were not met for E. coli and pH samples during all four quarters of 2020 and the first quarter of 2021. Since then, samples have been collected earlier in the day preventing hold time exceedances, and pH has been analyzed at the time of sample collection.

Sample Results

The analytical results from the inspection were received on January 9, 2023, from the Region 7 STC laboratory. This data was not discussed during the exit meeting. The analytical results for

BOD, NFS, TKN, NO₂+NO₃, ammonia, TP, pH, and temperature of the samples I collected are presented in Tables 1 and 2 below. As mentioned previously, the BOD samples collected on December 6, 2022 were delayed in shipping and did not meet the 48-hour hold time. See attachment 6 for the analytical data packet. For data marked with a “J” in Tables 1 and 2 below, the analyte in question has been positively identified in the sample, but the quantitation is an estimate due to poor precision in the laboratory. The actual concentrations may be higher than the reported results marked with a “J.”

Table 1: Analytical Results for Influent Samples Collected During the Inspection

Parameter	Dec 6 (2200475-01)	Dec 7 (2200477-01)
BOD ₅ (mg/L) ¹	92.3 J	266 J
NFS (mg/L) ¹	48.5	379
Ammonia	25.7	52.3
Total Phosphorus (mg/L) ¹	5.64	9.12
TKN (mg/L) ¹	32.2	80.4 J
NO ₂ +NO ₃ (mg/L) ¹	0.056	0.080
pH ²	7.17	7.65
Flow in gpm ⁴	19.3	33.3

¹mg/L = milligrams per liter

² pH is not to be averaged; pH was measured in the field.

³BOD = biological oxygen demand (five-day).

⁴gpm = gallons per minute.

Table 2: Analytical Results for Effluent Samples Collected During the Inspection

Parameter	Dec 6 (2200475-02)	Dec 7 (2200477-02)	Concentration Permit Limits ³
BOD ₅ (mg/L) ¹	12.2 J	13.1 J	30/45
NFS (mg/L) ¹	22.7	21.6	80/120
Ammonia (mg/L) ¹	2.46	2.41	4.2
TKN (mg/L) ¹	7.22	7.05	N/A
NO ₂ +NO ₃ (mg/L) ¹	0.377	0.379	N/A
Total Phosphorus (mg/L) ¹	2.58	2.51	N/A
Temperature (°C) ²	4.9	4.7	N/A
pH ²	7.56	7.32	6.0-9.0

¹mg/L = milligrams per liter.

² °C = degrees Celsius, pH is not to be averaged, pH was measured in the field.

³Permit limits for BOD and NFS are Monthly followed by 7-day Averages. Permit limits for Ammonia are

Monthly averages followed by Daily Maximum.
⁴BOD = biological oxygen demand (five-day).

Results from sampling conducted during the inspection indicate that the facility was in compliance with the NPDES permit.

Collection System

During the inspection, I discussed the city's sanitary sewer collection system with Mr. Williams. He stated the average age of the collection system is 40 years old. There are approximately 5.5 miles of sanitary sewer lines leading to the WWTF. The city did not report any bypasses from 2019-2022. The city does not have an annual budget item allocated towards the maintenance and repair of the collection system. Collection lines are cleaned on an as-needed basis. Mr. Williams mentioned that the lagoon receives increased influent flows during heavy rain events. Mr. Williams stated that he will be lowering the lagoon water levels this winter in preparation for the spring rains.

I visited the two lift stations: pond station and east station (photos 7, 8, 10). Each station has an auto dialer and generator. The pond station is located within the lagoon facility, while the east station is located at the city's eastern limit. Both stations appeared well maintained with minimal debris accumulations.

Operational Observations

I observed all areas of the WWTF during the inspection (photos 1-10). The lagoon system appeared to be well maintained with rip-rap inner berms, well-manicured grounds, secure perimeter, operational weirs, no foul odors, no indications of bypass, and no floating debris. The system appeared to have adequate detention time to treat the designed flow and no evidence of short-circuiting.

Summary

The WWTF has exceeded the permit effluent limits, but Mr. Williams is unsure what caused these exceedances. The city should continue consulting with the Kansas Rural Water Association and an engineer, if needed, on appropriate actions to prevent future exceedances.

Increased influent flows during rain events suggest inflow and infiltration issues. The city should investigate and address the causes of the increased flows. Addressing the inflow and infiltration sources could increase the life span of the lagoon system.

Cells #1 and #2 do not need sludge accumulations removed at this time, but the city should prepare in advance by allocating funds for these future expenses.

During the exit meeting, a NOPF was given to Mr. Williams with the following finding (attachment 6). A response to the NOPF has not been received.

1. Effluent limit exceedances – NPDES permit Part A

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LEWIS

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Attachments:

1. Water Compliance Inspection Report, Form 3560-3 (4 pages)
2. Digital Photos with Photo Log (6 pages)
3. Facility Satellite Map (1 page)
4. NPDES permit effective on July 1, 2021 (8 pages)
5. Laboratory Analytical Report for Project HML2304 (17 pages)
6. NOPF (1 page)