

REPORT OF COMPLIANCE SAMPLING INSPECTION (CSI)

AT

City of Garnett South Wastewater Treatment Plant (WWTP)

24791 NE 1700 Road

Garnett, KS 66032

NPDES No: KS0096377

July 25-28, 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 Garnett South WWTP in Garnett, Kansas from July 25, 2022, through July 28, 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

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PROCEDURES

On July 25, 2022, I arrived at the WWTP at 10:00am. I introduced myself to Messrs. Trammell, DePriest, and Harvey, 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, effluent, and biosolids samples, and an exit meeting. Jason Schultz with KDHE attended the inspection on July 26, 2022.

From July 26, 2022, through July 28, 2022, I collected grab samples each day from the influent channel after the mechanical bar screen 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), and Nitrate+Nitrite (NO₂+NO₃), and Non-Filterable Solids (NFS). The NFS parameter reported in attachment 6 is equivalent to total suspended solids (TSS) parameter required in the National Pollutant Discharge Elimination System (NPDES) permit. I measured the pH and temperature using a field meter within 15 minutes of sample collection. I also gathered flow values daily from the operator.

From July 26, 2022, through July 28, 2022, I used a sample pole to collect grab samples each day of the effluent from the effluent channel after the ultraviolet (UV) disinfection system. 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.

On July 27, 2022, I collected grab samples from the belt press for the analysis of biosolids for the concentration of total metals, Ammonia, TP, TKN, and percent solids. Although the biosolids are disposed of in a landfill, a review of the analytical results did not show levels of concern. Results for the biosolids analyses are presented in attachment 6.

Each day I placed the samples I collected 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. Samples collected on July 28, 2022, were delivered to the STC by me, not shipped. 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. All samples arrived at the STC within proper holding times.

FACILITY DESCRIPTION

The Garnett South WWTP is owned by the City of Garnett, Kansas. The physical address for the WWTP is 24791 NE 1700 Road in Garnett, Kansas. The legal description is the SW $\frac{1}{4}$, SE $\frac{1}{4}$, SE $\frac{1}{4}$, Section 30, Township 20 South, Range 20 East within Anderson County. The mailing address for the City of Garnett is PO Box H, Garnett, KS 66032. The WWTP treats domestic wastewater from the City of Garnett; corn oil, process wastewater, and sanitary wastewater from East Kansas Agri Energy (EKAE); and hauled septage. The WWTP has also received wastewater from Southern Star Pipeline's hydrostatic pipeline testing. According to DePriest, the facility no longer accepts wastewater from hydrostatic pipeline testing as of July 21, 2022. Final effluent from the WWTP is discharged to a ditch at outfall 001 which is located approximately 100 feet south of the WWTP (photo 1).

The WWTP consists of a mechanical bar screen, grit removal, and an activated sludge treatment system consisting of two aeration/clarifier basins (referred to as plant #1 and plant #2). Each plant (aeration/clarifier basin) is operated similarly. Wastewater from the aeration zone (outer ring) flows to the clarification zone (inner ring). In 2002, wooden weirs, intended to be temporary, were installed at multiple points in the aeration zone to better target nutrient removal. Mr. Trammell stated it was his understanding that permanent concrete weirs were supposed to replace the temporary ones. There is currently no plan for permanent weir installation. From the aeration zone, the wastewater flows to the clarifier followed by a UV disinfection system. Biosolids from the clarifiers is regularly wasted to the aerobic digester based upon TSS process control sampling.

EKAE ethanol plant is located adjacent to the WWTP. EKAE has the ability to draw the WWTP's UV-disinfected discharge into its facility for use in its cooling towers. The effluent connection to EKAE is located prior to outfall 001 (photo 14). EKAE has a connection for sending sanitary wastewater, service wastewater, and filter backwash to the WWTP. Also, once or twice per year, waste corn oil is hauled by tanker truck from EKAE to the WWTP's aerobic digester. The city does not have a treatment agreement with EKAE nor does it charge a fee for treating the corn oil. The city also does not charge EKAE for the consumption of UV-disinfected discharge wastewater. It is recommended that the city have a treatment agreement with EKAE.

The WWTP's National Pollutant Discharge Elimination System (NPDES) Permit KS0096377 was renewed as effective on September 1, 2019 (attachment 5). The permit expires on August 31, 2024. The most recent inspection of the facility was conducted by KDHE on June 25, 2021. The inspection report did not include any violations but did include recommendations to maintain logs of the lift station pump hours and initiate a program for maintaining the collection system.

FINDINGS AND OBSERVATIONS

The following findings were noted during the plant and record review. A complete summary is given in the NPDES Compliance Inspection Report (attachment 1). These findings were discussed with Messrs. DePriest, Trammell, and Harvey during the exit meeting.

Self-Monitoring Data Review:

I obtained a spreadsheet of the discharge monitoring report (DMR) data for the Garnett WWTP from January 2017 through April 2022 and reviewed the data. During the inspection, I obtained an electronic copy 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, E. coli, Ammonia, and TSS permit limits (NOPF 1). Most of the exceedances occurred from February 2021 through January

2022 with the most recent exceedance occurring in June 2022 for E. coli. Explanations for the exceedances in 2020, 2021, and 2022 were provided by the facility (attachment 9).

The permit requires the WWTP to achieve 85% removal of BOD and TSS. During the following monitoring periods, the WWTP did not achieve 85% removal for BOD or TSS: August, September, October, November, and December of 2021; January of 2022. During the October 2021 and November 2021 monitoring periods, the effluent TSS concentration was higher than the influent TSS concentration. The effluent BOD concentration was also higher than the influent concentration in October 2021.

The NPDES permit effluent limits are based, in part, on the daily design flow of the WWTP which is 0.625 MGD according to KDHE's Fact Sheet for the Garnett South WWTP. According to the facility's daily influent flow logs, the total flow reported each day from January 1, 2022 through July 25, 2022 exceeded the 0.625 MGD design capacity on 61 days. From January 2021 through June 2022, the monthly average flow reported was greater than the 0.625 MGD design capacity during 7 of 18 months. This information indicates that the WWTP has inflow and/or infiltration sources.

Laboratory

The facility personnel analyze permit-required samples for pH, Dissolved Oxygen, and temperature within 15 minutes of sample collection. The facility is certified by KDHE to conduct these analyses. The pH buffer solutions present during the inspection appeared to be of good quality with a future expiration date.

For the remaining permit-required monitoring, a contract laboratory (Pace Analytical) is utilized. All samples are transferred to a courier and transported to Pace's laboratory in Lenexa, KS. After arriving at Pace's Lenexa location, the E. coli sample is then sent to Pace's laboratory in Frontenac, KS for analysis. During the inspection, I reviewed laboratory records to ensure that all analyses complied with requirements of 40 CFR part 136. I noted that holding times were not met for E. coli samples (NOPF 2).

While reviewing historical chain of custody documents included with the analytical results, I noticed the sampler and the courier do not sign the chain of custody showing release or receipt of the samples. WWTP personnel sign as the sampler, but there are no entries showing when the samples were released to the courier nor are there entries between the sample collection time and when the laboratory signs receiving the samples. These details should be reported on the chain of custody to properly document custody transfer.

Sample Results

The analytical results from the inspection were received on August 24, 2022, 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. See attachment 6 for the analytical data packet.

Table 1: Analytical Results for Influent

Parameter	July 23	July 24	July 25
BOD ₅ (mg/L) ¹	181	122	265
NFS (mg/L) ¹	240	187	330
Ammonia	36	24.20	31.3
Total Phosphorus (mg/L) ¹	6.28	4.60	7.80
TKN (mg/L) ¹	52.40	32.1	51.2
NO ₂ +NO ₃ (mg/L) ¹	0.181	0.244	0.174
pH ²	6.98	6.86	6.92
Flow in gpm ⁵	131.94	216.838	173.61

¹mg/L = milligrams per liter

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

³Although the analyte in question has been positively identified in the sample, the quantitation is an estimate (J-coded) due to poor precision obtained for this analyte in the laboratory duplicate sample.

⁴BOD = biological oxygen demand (five-day).

⁵gpm = gallons per minute.

Table 2: Analytical Results for Effluent Samples Collected During Inspection

Parameter	July 23 (2200226)	July 24 (2200227)	July 25 (2200228)	Concentration Permit Limits ³
BOD ₅ (mg/L) ¹	ND	2.18	ND	20/35
NFS (mg/L) ¹	ND	ND UJ ⁴	ND	30/45
Ammonia (mg/L) ¹	0.236	6.73	1.51	Vary monthly 1.0/2.8 for July
TKN (mg/L) ¹	1.67	8.00	2.81 J ⁵	N/A
NO ₂ +NO ₃ (mg/L) ¹	9.11	0.182	3.49	N/A
Total Phosphorus (mg/L) ¹	4.26	5.92	0.458	N/A
Temperature (°C) ²	24.6	26.0	25.3	N/A
pH ²	7.02	7.28	7.09	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.

⁴UJ = analyte was not found in the sample at or above the reporting limit.

⁵J = analyte has been positively identified in the sample, but the quantitation is an estimate due to poor precision in the laboratory duplicate sample.

⁶BOD = biological oxygen demand (five-day).

Results from sampling conducted during the inspection indicate that the facility was out of compliance on July 24 due to exceeding the daily maximum concentration limit for ammonia.

Biosolids

As mentioned above, the facility utilizes an aerobic digester to further treat biosolids (Photo 16). Biosolids is sent through a belt press before being hauled to a landfill (Photo 23). According to Mr. Trammell, the vacuum drying beds on site have not been utilized in over three years. I collected a biosolids sample from the belt press. Analytical results of the biosolids are included in attachment 6.

Collection System

During the inspection, I discussed the city's sanitary sewer collection system with Messrs. DePriest, Trammell, and Harvey. Facility personnel stated the average age of the collection system is 50 years old with 50% of the system being comprised of clay tile. There are approximately 22 miles of sanitary sewer lines leading to the WWTP. One bypass was reported in 2022, but none were reported in 2021 or 2020. Flowmeter values at the WWTP increase during rain events indicating inflow and infiltration issues. The city has not cleaned or inspected the collection system in years past. Mr. DePriest stated that he plans to allocate \$200,000 per year for collection system maintenance beginning in fiscal year 2023.

I visited four lift stations in the collection system: Golden Prairie, Prairie Plaza, Swimming Pool, and North Lift Station. The wet wells appeared to have minor debris accumulations and maintained floats (Photos 18-21). The old wastewater plant is repurposed as the North Lift Station which receives flow from three smaller lift stations. The lift stations are checked twice per week. Four power substations supply power to the lift stations. The city operates a diesel power plant as needed and owns a portable generator. Mr. DePriest stated that mutual municipal aid would be utilized for emergencies where the power plant and portable generator are not enough support.

Operational Issues and Observations

I observed all areas of the WWTP during the inspection (photos 1-23). I noted that the paddle mixer within the grit chamber was not in operation at the time of the inspection. Mr. Trammell stated the motor had malfunctioned over the weekend and parts had been ordered. The remainder of the treatment units were in operation.

From February 2021 through January 2022, permit limits were exceeded in every month except

one. Documents were provided by the facility staff to explain these exceedances (attachment 9). According to these documents, Mr. Trammell explains the ammonia exceedances in February and April of 2021 are due to hauled waste from a porta-john company which overloaded the WWTP.

KDHE's DMR entry software (KEAP) does not flag TSS or BOD percent removal exceedances; thus, no explanation was given by the facility for not meeting the TSS percent removal in May of 2021.

The explanation provided by Mr. Trammell for exceedances in June of 2021 includes EKAE discharging sour tank wastewater in early June through their sewer connection to the EKAE lift station which enters the WWTP at the headworks. This discharge caused a die-off of bacteria in plant #1. WWTP personnel were not notified in advance of the sour tank wastewater discharge to the WWTP.

To explain the July 2021 exceedances, Mr. Trammell emailed stating that he believes corn oil residue remained in EKAE's lift station from the June sour tank discharge. When the EKAE lift station operated in late June, the residue once again entered that WWTP causing the ammonia exceedance in July of 2021.

In August, the WWTP again accepted waste corn oil from EKAE. The combination of receiving corn oil from EKAE while plant #2 was inoperable due to malfunctioning return activated sludge (RAS) pumps and malfunctioning variable frequency drives (VFD) caused plant #1 to be overloaded in August 2021.

In September of 2021, the WWTP was operating at half capacity while troubleshooting a solution on plant #2 malfunctioning pumps and VFDs.

In October of 2021, Mr. Trammell's explanation states that the VFD replacements are anticipated to arrive in January and the pumps are at a repair shop, thus plant #2 is still inoperable. Mr. DePriest's explanation states that the WWTP "received a slug of corn oil from a local facility" in early October. If the WWTP received corn oil waste while only operating at half capacity, this could overload the treatment system causing limit exceedances.

Mr. Trammell's explanation for exceedances in November of 2021 included information that plant #2 remained inoperable, VFDs were to arrive in January, and new pumps were expected to be shipped out on December 20, 2021.

After an inspection by KDHE on December 10, 2021, the city contacted Kansas Rural Water Association (KRWA) for assistance in operating the WWTP. As a result of KRWA's assistance, plant #2 was operable with a temporary solution until the new pumps arrived for installation in January of 2022. The WWTP personnel, pump vendor, and pump manufacturer personnel worked through technical difficulties in January and February before the pumps were fully operational without failure.

In June of 2022, the ammonia monthly average and E. coli limits were exceeded. Mr. DePriest and Mr. Trammell explained that the WWTP accepted hydrostatic pipeline testing wastewater from Southern Star Pipeline during June. The wastewater properties were detrimental to the bacteria in the plant causing a die-off and limit exceedances. The WWTP no longer accepts wastewater from hydrostatic pipeline testing.

Summary

Historically, the WWTP has had trouble meeting effluent permit limits when waste is introduced to the WWTP from external sources. Prolonged periods of inoperable equipment also caused consistent permit limit exceedances in 2021. As seen in Table 2 above, samples collected on July 24 exceeded the maximum daily concentration limit for ammonia.

During the exit meeting, a Notice of Preliminary Findings was given to Mr. Trammell with the following findings (attachment 7). Mr. DePriest and Mr. Harvey were also present. Mr. DePriest provided a response to the NOPF (attachment 8).

1. Effluent limit exceedances – NPDES permit Part A
2. E. coli samples exceeding hold time – NPDES permit Standard Condition 4

Additional findings not included in the NOPF:

1. Based on the WWTP staff statements and DMR submittals, it appears the WWTP is experiencing interference (40 CFR 403.5(a)) correlated to waste corn oil and process wastewater from EKAE.
2. The grit removal treatment system was not operating as designed at the time of the inspection. Standard Condition #6 of the NPDES permit states that the permittee shall always operate and maintain all systems of treatment to achieve compliance with the requirements of the permit.
3. The city should have a treatment agreement with EKAE.
4. The city should increase efforts to maintain the collection system with high priority placed on reducing inflow and infiltration.
5. The city should implement a program for analyzing hauled waste prior to introducing the waste into the WWTP.

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Hannah Lewis
Life Scientist

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Attachments:

1. Water Compliance Inspection Report, Form 3560-3 (4 pages)
2. Digital Photos with Photo Log (12 pages)

3. Facility Satellite Map (1 page)
4. Effluent Limit Exceedances Table (2 pages)
5. NPDES permit effective on September 1, 2019 (9 pages)
6. Laboratory Analytical Report for Project HML2204 (31 pages)
7. NOPF dated July 28, 2022 (1 page)
8. NOPF response (3 pages)
9. Permit Limit Exceedance Explanations (16 pages)