

REPORT OF COMPLIANCE SAMPLING INSPECTION (CSI)

AT
City of Elwood Wastewater Treatment Facility (WWTF)
P.O. Box 357
Elwood, Kansas 66024

NPDES NO: KS-66024

February 7-8, 2023

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

INTRODUCTION

I performed a Compliance Sampling Inspection (CSI) at the Elwood WWTF in Elwood, Kansas, from February 7, 2023, through February 8, 2022. The inspection was authorized by Section 308(a) of the Federal Water Pollution Control Act, as amended. This narrative report presents the findings of the inspection.

PARTICIPANTS

City of Elwood
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Wayne Hall, Operator

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PROCEDURES

On February 7, 2023, I arrived unannounced at Elwood City Hall and made contact with Mr. Bobby Hall and notified him that I will be conducting an inspection of the WWTF from February 7, 2023, through February 8, 2023. I introduced myself, presented my credentials, and explained the purpose and procedures of the inspection. These procedures included completing the Water Compliance Inspection Report (attachment 1), facility walk-through with photos (attachment 2), a check of the self-monitoring records, the collection of influent and effluent samples, and an exit interview.

On February 7, 2023, and February 8, 2023, I collected grab samples of the influent at the influent structure which is located along the east berm of cell #1. I collected the influent using a pre-cleaned bucket then poured the influent into clean, pre-labeled containers for the analysis of Biochemical Oxygen Demand (BOD), Non-Filterable Solids (NFS), Ammonia, Total Kjeldahl Nitrogen (TKN), and Total Phosphorus. I measured the pH and temperature in a using a field meter.

On February 7, 2023, and February 8, 2023, I collected grab samples of the effluent at the effluent structure that is located along the south berm of cell #3. I collected the effluent using a pre-cleaned bucket then poured the effluent into clean, pre-labeled containers for the analysis of Biochemical Oxygen Demand (BOD), Non-Filterable Solids (NFS), Ammonia, Total Kjeldahl Nitrogen (TKN), and Total Phosphorus. I measured the pH and temperature using a field meter.

On February 7, 2023, 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. On February 8, 2023, I placed the samples I collected on ice in an ice chest, sealed the container and hand delivered the samples to the EPA Region 7 Science and Technology Center (STC) on February 9, 2023. I followed Region 7 LSASD standard operating procedures in the collection, packaging, transportation and handling of the samples. All samples arrived at the STC within proper holding times.

FACILITY DESCRIPTION

The Elwood WWTF is owned and operated by the City of Elwood, Kansas. The legal description is the SE ¼, SW ¼, Section 11, Township 4 South, Range 22 West within Doniphan County. The mailing address for the City of Elwood, is P.O Box 357, Elwood, KS 66024. See attachment 3 for facility map and layout. The WWTF treats domestic wastewater from the City of Elwood. During the inspection, I asked about industries in town that contribute to the sanitary sewer. Mr. Hall stated that he does not keep track of all the industries, however he stated that he had concerns about a truck wash in town and what they were discharging to the sanitary sewer. I stated that I would look into the truck wash during the inspection. Final effluent from the WWTF is discharged on a continuous basis to an unnamed tributary that leads to the Missouri River.

The WWTF consists of the following:

Three Cell Wastewater Stabilization Lagoons

Total Surface area of 11.62 acres

Cell 1: 5.96 Acres

Cell 2: 3.70 Acres

Cell 3: 1.96 Acres

The facility has a design flow of 0.200 Million Gallons per Day (MGD). Using the facility's formula to determine flow, I determined that the average flow in 2022 was approximately was 0.144 MGD.

The WWTF's National Pollutant Discharge Elimination System (NPDES) Permit KS-0048526 was issued on April 1, 2018 (attachment 4). The permit expires on March 31, 2023. After the completion of the inspection, I did a search on the Kansas Environmental Information Management System (KEIMS) for a draft permit for the facility and found that the draft permit has been developed but a new permit has not been issued (attachment 5). I reviewed the draft permit and noted that there are no significant changes from the current permit to the draft permit. After the conclusion of the inspection, I emailed Ms. Sydney Hohn of KDHE (attachment 6) with my concerns that the draft permit should be reviewed before issuance to address the current conditions of the WWTF.

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 Mr. Bargman during the exit meeting.

Self-Monitoring Data Review:

I obtained a spreadsheet of the NetDMR data for the Elwood WWTF from January 2019 through February 2022 and reviewed the data. During the inspection, I also obtained an electronic copy of the facility's Discharge Monitoring Reports for the years 2019 – 2022. I also requested the laboratory sheets and chain of custody forms from the facility's contract laboratory from 2019 through 2022. After the completion of the inspection, I placed all data obtained from the facility during the inspection and the NetDMR spreadsheet received into the ECAD electronic file system for the facility.

While reviewing the data, I noted that the facility reported effluent violations for BOD in the years 2019 through 2022. Table 1 below, is a summary of the effluent violations noted during my review.

Table 1: Effluent violations from January 2019 – February 2022

	BOD	Monthly Avg.Limit (mg/L)	Weekly Avg. Limit (mg/L)	Influent	% Removal	% Removal Requirement
Mar-19	111	30	45	136	18%	85%
Jun-19	36.3	30	45	464	92%	85%
Dec-19	30.9	30	45	230	87%	85%
Mar-21	121	30	45	1170	90%	85%
Dec-21	135	30	45	31.2	-332%	85%
Mar-22	91.9	30	45	145	37%	85%
Jun-22	128	30	45	90.3	-41.74%	85%
Sep-22	41	30	45	77.1	47%	85%
Dec-22	56.7	30	45	570	90%	85%

While reviewing the DMR data and the effluent violations reported, I noted that during December 2021 and June 2022, the reported influent and effluent numbers appeared to be opposite of what they normally have been. Mr. Hall stated that city personnel does not collect the quarterly samples, instead a representative of the contract laboratory collects the samples then couriers the samples to the laboratory for analysis. I informed Mr. Hall that it is the responsibility of the facility to insure that proper techniques are used to collect the samples. I informed Mr. Hall that proper labeling of the samples would ensure that influent and effluent samples are not mixed up.

I noted during the inspection, that the holding time for pH was not being followed. 40 CFR Part 136 Table II requires that pH analysis is conducted within 15 minutes of the sample being collected. I reviewed the permit and noted that Part D. Supplemental Conditions 3 (NPDES permit page 3 of 7) states that “the pH test must be done by a KDHE-certified laboratory but need not meet the 40 CFR Part 136 requirements for the sampling to test time limit of 15 minutes.” The Kansas Department of Health and Environment (KDHE) requires that all regulatory analysis be performed by a certified laboratory including any field analysis such as pH or temperature. I spoke with Mr. Hall about being certified by KDHE for pH and temperature to ensure that proper holding times were adhered to. He stated that he would work with KDHE to become certified in the field measurements.

At the conclusion of the inspection a Notice of Preliminary Findings (NOPF) was issued to the facility for the effluent violations that occurred between the years 2019 and 2022 (attachment 7). A NOPF was also issued for the pH holding times.

Sample Results

The analytical results from the inspection were received on March 10, 2023, from the Region 7 STC laboratory. This data was not discussed during the exit interview. The analytical results for BOD, NFS, TKN, Ammonia, Total Phosphorus, pH, and temperature of the samples I collected are presented in Tables 1 and 2 below. See attachment 8 for the analytical data packet.

Table 2: Analytical Results for Influent

Parameter	(Feb. 7) Sample # 2300049-1	(February 8) Sample # 2300050-1
BOD₅ (mg/L)¹	165	110
NFS (mg/L)	153	72.8
TKN (mg/L)	47.2	28.6
Total Phosphorus (mg/L)	5.80	3.85
Nitrate + Nitrite (mg/L)	0.0582	ND
Ammonia (mg/L)	35.4	19.2
Temperature (°C)²	11.1	10.1
pH³	7.09	7.16

¹mg/L = milligrams per liter

²°C = degrees Celsius, Temperature was measured in the field.

³ pH is not to be averaged; pH was measured in the field.

Table 3: Analytical Results for Effluent Samples Collected During Inspection

Parameter	Feb. 7 Sample # 2300049-2	February 8 Sample # 2300050-2	Concentration Permit Limits ⁴
BOD₅ (mg/L)¹	90.8	114	30/45
% Removal	45%	-3.6%	85%
NFS (mg/L)	11.3	13.4	80/120
Ammonia (mg/L)	37.8	38.9	NA
TKN (mg/L)	58.8	55.0	NA
Nitrate +Nitrite (mg/L)	ND	ND	NA
Total Phosphorus (mg/L)	24.6	21.9	NA
Temperature (°C)³	6.0	4.6	NA
pH³	7.31	7.36	Monitoring Only

¹mg/L = milligrams per liter.

³°C = degrees Celsius, pH is not to be averaged, pH was measured in the field.

⁴Permit limits for BOD and NFS are Monthly Averages followed by 7-day Averages. Permit limits for Ammonia are monthly averages.

Results from sampling conducted during the inspection indicate that the facility violated the weekly average effluent limit for BOD set in the permit. Sampling also indicated that the facility violated the removal percentage requirement of 85% or more for both days of sampling.

Laboratory

The facility utilizes a contract laboratory (Meridian Laboratories, Wichita, Kansas) for all required regulatory analysis. During the inspection, I reviewed laboratory records to ensure that all analysis complied with requirements of 40 CFR part 136. As previously mentioned, I noted that the holding times for both pH were not being met.

Collection System

During the inspection, I discussed the city's collection system with Mr. Hall. Mr. Hall stated that due to excessive flooding in 1993, the facility switched from a gravity sewer system to a mostly force main system. To accomplish this, Mr. Hall stated that every connection to the sanitary sewer system has a low pressure grinder pump that the city maintains. Mr. Hall stated that there are approximately 600 connections with pumps that the city maintains. He stated that the low pressure grinder pumps, pump wastewater to 1 of 3 lift stations within the city. The main lift station on 8th Street, pumps all wastewater to the WWTF. Mr. Hall stated that the city has approximately 11 to 12 backup grinder pumps available when needed (photo 16).

Mr. Hall and I observed all three lift stations (photos 1-3). Mr. Hall stated that two lift stations pump wastewater to the main lift station, then the main lift station pumps to the WWTF. Mr. Hall stated that the lift stations are checked each day. He stated that all the lift stations had both audible alarms and visual alarms to inform city personnel of problems at the lift stations.

Biosolids

Mr. Hall explained that in the summer of 2022, the city decided to remove sludge from the 1st cell of the WWTF. He stated that this was thought to help the effluent violations that the city has had over the past few years by increasing the operating depth of the lagoon. Mr. Hall stated that the 1st cell was drained into the 2nd cell then they bypassed treatment in the 1st cell by diverting influent around the 1st cell and directed it to the 2nd cell. Mr. Hall stated that they used a local contractor to remove the sludge. According to Mr. Hall the sludge was pushed to the west side of the cell then excavated and deposited in the grass area west of the 1st cell (photos 10-14). Mr. Hall stated that the grass area used to contain the sludge was the old lagoon WWTF before the city expanded the system. Mr. Hall stated that his intention was to allow the sludge to dry out, spread it over the old lagoon area then seed the area. I informed Mr. Hall if the city was going to dispose of the sludge in this manner it would have to follow either the rules for land application of biosolids or the surface disposal rules found within 40 CFR 503. At the completion of the inspection, I issued the facility a NOPF for not properly disposing of the biosolids.

Industrial Users

According to Mr. Hall, the facility does have some industrial users that discharge process wastewater to the sanitary sewer system. Snorkel Industries manufactures scissor and other types of lifts for a variety of industries. Snorkel is covered under an Industrial User permit issued by KDHE. Mr. Hall also stated that there are a few tank and tote washes in town that he has concerns with. During our observations at the Fed-ex lift station, Mr. Hall pointed out the discharge from Trailer Cleaning Service (TCS). Mr. Hall stated that Trailer Cleaning Service cleans out tank trucks and totes. He stated that the wash water is pumped to the lift station via a grinder pump that the company maintains.

After the completion of the inspection, I spoke with Dave Wilkerson of TCS and asked about the processes that they are using. Mr. Wilkerson stated that TCS washes out the inside of tanks used to transport agri-chemicals and also plastic totes that hold and store agri-chemicals. He stated that the contents of the tanks and totes are captured then pumped to a tank (photo 17), where the wastewater is pH balanced and solids are allowed to flock and settle out of the wastewater. He stated the treated wastewater then flows through a grated trough to a concrete pit located west of the wash building (photos 20-21 & 24-26). The concrete pit acts as a secondary settling basin while process wastewater flows to the grinder pump then is pumped to the city's Fed-ex lift station located north of the property.

Mr. Wilkerson stated that the outside of the tanker and truck are also washed as a courtesy to the hauler. He stated that all wash water from the outside of the tanker and truck also flows into the grated trough then into the concrete pit. Mr. Hall stated that he had concerns of what the facility was really pumping to the WWTF. I explained to Mr. Hall that it is the responsibility of the facility to understand the nature of the wastewater within the sanitary sewer system and the WWTF. I informed Mr. Hall, that Standard Condition 6 of the NPDES permit does require that the city properly maintain and operate the facility to achieve compliance with the conditions of the permit. This also includes the collection system. The standard condition also states that "when necessary to maintain compliance with the permit requirements, the permittee shall halt or reduce those activities under its control which generate wastewater routed to this facility." I explained to Mr. Hall that it is the responsibility of the city to know what is being discharged to the sanitary sewer. I also explained that if the city concerned with the pollutants being discharged from TCS, they had the obligation to inform TCS that they have to take measures to insure that their discharge does not adversely affect the WWTF.

Operational Issues and Observations

1. I observed all areas of the WWTF during the inspection (photos 4-15). During the observations I noted that the 1st cell appeared to be a dark green to black in color. I also noted an odor from the 1st cell indicating that the wastewater in the cell was in a septic condition. Mr. Hall stated that this appearance was not normal. He also indicated that they had starting to refill the 1st cell in the late fall and this might be

contributing to the current condition of the cell. Mr. Hall stated that he hopes that the warmer conditions in the spring and summer will allow the right type of algae to grow in the lagoon and the lagoon will return to a normal operating condition.

2. The current NPDES permit does not require the facility to monitor for flow either on the influent or effluent. Mr. Hall stated that they use an estimate based on the amount of water that is distributed through the city's drinking water system. He stated that they will take 90% of sold water and use that number as an estimate on how much wastewater is sent to the WWTF on a monthly basis. This method is not an accurate way of estimating flows to the facility. Flow monitoring is important to determine if the facility is underloaded or overloaded.

Summary

The facility has had effluent violations for BOD and % removal during 2019-2022. Improvements to the operation of the WWTF might be needed in order for the facility to come into compliance with the permit limits.

The facility must ensure that all discharges to the WWTF do not adversely effect the overall operation of the WWTF. This includes understanding what industrial users are discharging to the sanitary sewer.

The facility must dispose of the biosolids that were removed from cell 1 in accordance with 40 CFR part 503.

The facility is not meeting the holding time requirements of 40 CFR Part 136 Table II for pH. The NPDES permit currently states that the facility does not have to meet the holding times for pH.

**JOSEPH
HEAFNER**

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Section Chief

Attachments:

1. Water Compliance Inspection Report, Form 3560-3 (4 pages)
2. Digital Photographs with Photo Log (18 pages)
3. Facility Satellite Photos/Maps (1 page)
4. NPDES permit issued on April 1, 2018 (7 pages)
5. Draft NPDES permit (8 pages)
6. Email to KDHE (2 pages)
7. NOPF (2 pages)
8. Laboratory Analytical Report for Activity JAH2307 (18 pages)