REPORT OF COMPLIANCE SAMPLING INSPECTION (CSI)

AT
Center Creek Wastewater Treatment (WWTF)
Webb City MO

NPDES NO: MO-0040185

December 12 - 15, 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 Center Creek WWTF in Webb City, Missouri from December 12, 2022, through December 15, 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

Center Creek WWTF
William Runkle, Wastewater Utilities Director, City of Webb City (417) 438-4140
Email: wrunkle@webbcity.org
Josh Farley, WWTF Superintendent, City of Webb City (417) 434-2015
Email: joshfarley25@yahoo.com
Joel Stephens, WWTF Operator
Tony Cantrell, Public Works Superintendent, City of Oronogo (417) 673-4541
Email: publicworks1@oronogomo.org
William Cline, City Administrator, City of Carterville (417) 673-1341 ext. 2616
Email: admin@cartervillemo.com

Missouri Department of Natural Resources (MDNR)
Joshua L. Grosvenor, Environmental Engineer (417) 891-4300
Email: josh.grosvenor@dnr.mo.gov

U. S. Environmental Protection Agency (EPA)
Joe Heafner, Life Scientist (913) 551-7091
Email: heafner.joseph@epa.gov

PROCEDURES

On December 12, 2022, I arrived at the Center Creek WWTF at 10:00 a.m. and introduced myself to Mr. Farley, presented my credentials, and explained the purpose and procedures of the inspection. These procedures included completing the Water Compliance Inspection Report (attachment 1), an EPA Region 7 Biosolids Checklist (attachment 2), a facility walk-through with photos (attachment 3), a check of the self-monitoring records, the collection of influent, effluent and biosolids samples, and an exit interview.

From December 12, 2022, through December 15, 2022, I used an ISCO model 3710 automatic composite sampler to collect a 24-hour composite sample of the influent after screening. I suspended a weighted length of new Tygon tubing into the influent channel after the screen, and I connected the other end to the sampler pump and programmed it to collect evenly spaced aliquots every 30 minutes into a clean Nalgene bottle, which was packed in ice. I returned each day to service the sampler. I removed the bottle, agitated its contents, and poured them into clean, pre-labeled containers for the analysis of Biochemical Oxygen Demand (BOD), Non-Filterable Solids (NFS), Ammonia, Total Kjeldahl Nitrogen (TKN), Nitrate+Nitrite, Total Nitrogen (by calculation), and Total Phosphorus (TP). I measured the pH and temperature in a separate grab sample using a field meter.

From December 12, 2022, through December 15, 2022, I used an ISCO model 3710 automatic composite sampler to collect a 24-hour composite sample of the effluent from the effluent manhole before effluent discharges through Outfall 001. I suspended a weighted length of new Tygon tubing into the channel and connected the other end to the sampler pump and programmed it to collect evenly spaced aliquots every 30 minutes into a clean Nalgene bottle, which was packed in ice. I returned each day to service the sampler. I removed the collection bottle, agitated its contents, and poured them into clean, pre-labeled containers for the analysis of BOD, NFS, Ammonia, TKN, Nitrate+Nitrite, Total Nitrogen (by calculation), and TP. I measured the pH and temperature in a separate grab sample using a field meter. On December 15, 2022, I also collected a sample from the effluent composite sampler for the analysis of Total Zinc.

On December 13 and 14, 2022, I took grab samples using clean, pre-labeled containers from Outfall 002 for the analysis of Zinc. I also measured the pH and temperature in a separate grab sample using a field meter.

On December 14, 2022, I took eight grab samples of each of the four windrowed biosolids from the biosolids storage area and composited the samples into one 32-ounce glass jar. I shipped the sample of biosolids with the other collected samples on December 14, 2022. The biosolids were analyzed for Metals, including Mercury, percent solids, Total Phosphorus and TKN.

On December 13, 2022, and December 14, 2022, 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 December 15, 2022, 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 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. All samples arrived at the STC within proper holding times.

FACILITY DESCRIPTION

The Center Creek WWTF is owned by the Center Creek 201 Wastewater Treatment Board and operated by the City of Webb City, Missouri. The legal description is the SE ¼, SE ¼, Section 1, Township 28 North, Range 33 West within Jasper County, Missouri (attachment 4). The physical address of the WWTF is 2100 North Madison, Webb City, MO 64870. The mailing address for the Center Creek 201 Wastewater Treatment Board is 200 South Main, Webb City, MO 64870. The WWTF treats domestic wastewater from Webb City, Oronogo, and Carterville. According to the NPDES permit and Mr. Farley, there are no significant industrial users that discharge to the WWTF. Final effluent from the WWTF is discharged to an unnamed tributary of Center Creek.

The following are components of the WWTF:

Headworks which includes mechanical screening
Oxidation Ditch (2), Only the South Oxidation Ditch is in operation
Final Clarifiers (4), Only Clarifiers 1 and 3 were in operation during the inspection
UV Disinfection (not in operation during the inspection)
Peak Flow Equalization Basin

Biosolids are handled by the following sequence:

Biosolids Holding Basin
Aerobic Sludge Digestion (1)
Centrifuge for dewatering
Biosolids Storage Building
Biosolids are bulked with woodchips and or manure, then the windrow is composted.

According to Mr. Farley, bulk biosolids have been recently used as a soil amendment during land applications at local mine tailings' remediation sites. He also stated during the inspection that this contract has expired, and that the facility is looking at the feasibility of producing Class A biosolids.

The facility has a design flow of 4.8 MGD with an actual flow average during the inspection of 4.92 MGD. It was noted that the area received approximately 2 inches of rain during the inspection time frame. I also noted that the peak flow basin was used during the inspection.

The WWTF's National Pollutant Discharge Elimination System (NPDES) Permit (MO-0040185) was issued on February 1, 2020 (attachment 5**)**. The permit expires on March 31, 2023. The MDNR last inspected the facility on May 12, 2022, and found that the facility was in noncompliance (attachment 6).

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 Checklist (attachment 1). These findings were discussed with Mr. Farley during the exit meeting.

Self-Monitoring Data Review:

I obtained a spreadsheet of the NetDMR data for the Center Creek WWTF from January 2020, through November 2022, and reviewed the data. During the inspection, I also obtained an electronic copy of the facility's Discharge Monitoring Reports for the years 2020 – 2022.

While reviewing the data, I noted effluent violations for E. coli at Outfall 001 and Zinc at Outfall 002. Tables 1A and 1B below represent the effluent violations noted during the review.

Table 1A: Effluent violations at Outfall 001 reported from January 2020 – November 2022

Outfall 001	E.coli	Limit (#/100mL)
Sep-21	3255	630
Apr-22	207	126
May-22	2020	630
Jun-22	3255	630

E.coli limits are Weekly Average for September, May, and June. Limit is Monthly Average for April.

Table 1B: Effluent violations at Outfall 002 reported from January 2020 – Novemeber 2022

Outfall 002	Zinc (Zn)	Limit (lbs/day)	Zinc (Zn)	Limit (ug/L)
Feb-20	23.5	7.52	579	98.9/188.2
Mar-20	28.5	7.52	544/900	98.9/188.2
Apr-20	9.78	7.52	279/410	98.9/188.2
May-20	16.5	7.52	368/670	98.9/188.2
Jun-20			173/280	98.9/188.2
Jul-20			163/350	98.9/188.2
Aug-20			151/300	98.9/188.2
Oct-20			350	98.9/188.2
Nov-20			159/260	98.9/188.2
Dec-20			198/270	98.9/188.2
Jan-21	12.5	7.52	388/520	98.9/188.2
Feb-21	22.44	7.52	407/540	98.9/188.2
Mar-21	14.47	7.52	410/800	98.9/188.2
Apr-21			115	98.9/188.2
May-21			115	98.9/188.2
Jun-21			162/300	98.9/188.2
Jul-21	8.97	7.52	193/300	98.9/188.2
Aug-21			162/250	98.9/188.2
Sep-21			212/470	98.9/188.2
Oct-21	7.98	7.52	356/510	98.9/188.2
Nov-21			231/290	98.9/188.2
Dec-21			260/500	98.9/188.2
Jan-22			219/280	98.9/188.2
Feb-22	11.85	7.52	420/560	98.9/188.2
Mar-22	9.7	7.52	324/500	98.9/188.2
Apr-22	16.15	7.52	468/1000	98.9/188.2
May-22	16.23	7.52	345/350	98.9/188.2
Jun-22	14.8	7.52	655/820	98.9/188.2
Oct-22			185/320	98.9/188.2

Mass Limits (lbs/day) are Daily Maximum: Concentration Limits(ug/L) are Monthly Average followed by Daily Maximum.

At the conclusion of the inspection, during the exit conference, I issued a Notice of Preliminary Findings (NOPF) (attachment 7) to the facility for the continued effluent violations.

Sample Results

The analytical results from the sampling conducted during the inspection were received on January 13, 2022, from the Region 7 STC laboratory. This data was not discussed during the exit interview. The analytical results for BOD, NFS, TKN, Ammonia, Nitrates+Nitrites, Total Nitrogen, Total Phosphorus, Zinc, pH, and temperature of the samples I collected are presented in Tables 2 and 3 below. See attachment 8 for the analytical data packet.

Table 2A: Analytical Results for Influent

Parameter	(December 13) 2200469-01	(December 14) 2200470-01	(December 15) 2200471-01
BOD_5 (mg/L)[1]	55.9	27.9	46.5
NFS (mg/L)	82.9	43.9	49.5
TKN (mg/L)	15.2	7.04	8.86
Nitrate+Nitrate (mg/L)	2.57	6.49	0.160
Total Nitrogen	17.8	13.5	13.6
Ammonia (mg/L)	9.01	3.88	5.79
Total Phosphorus (mg/L)	1.82	0.975	1.16
Temperature (°C)[2]	14.9	14.6	14.5
pH[3]	6.73	6.76	6.97
Flow	3.451	6.537	4.751

[1]mg/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 2B: Analytical Results for Effluent Samples Collected During Inspection

Parameter	(December 13) Sample # 2200469-02	(December 14) Sample 2200470-02	(December 15) Sample 2200471-02	Concentration Permit Limits[3]
BOD5 (mg/L)[1]	6.51	7.05	9.80	20/30
NFS (mg/L)	7.88	15.6	9.28	30/45
Ammonia (mg/L)	ND	ND	ND	For December 21.6/4.1
TKN (mg/L)	1.10	1.17	1.01	N/A
Nitrate+Nitrite (mg/L)	9.23	8.78	10.2	N/A
Total Nitrogen (lbs/day)	10.3	9.95	11.2	N/A
Total Phosphorus (mg/L)	0.610	0.770	0.615	N/A
Oil and Grease (mg/L)	ND	ND	ND	15/10
Zinc (ug/L)	573	609	531*	188.2/98.9
Temperature (°C)[2]	15.0	13.4	12.4	N/A
pH[2]	6.62	6.71	6.79	6.0-9.0
Flow in MGD	NA	NA	NA	N/A

[1]mg/L = milligrams per liter.
[2] °C = degrees Celsius, pH is not to be averaged, pH was measured in the field.
[3]Permit limits for BOD and NFS are Monthly followed by 7-day Averages. Limits for Ammonia are Daily Maximum followed by 30-day average. Zinc limits are for Outfall 002 and are Daily Maximum followed by Monthly Average.
*Sample was taken from Outfall 001 (no zinc limits for Outfall 001)

Table 3: Analytical Results for Biosolids Sample Collected During Inspection reported as Milligrams per Kilograms (mg/kg)

Parameter	December 14 2200470-04
Aluminum	12800
Antimony	6.57
Arsenic*	5.86
Barium	74.4
Beryllium	ND
Cadmium*	80.9
Calcium	46300
Chromium	70.8
Cobalt	8.66
Copper*	255
Iron	13800
Lead*	316
Magnesium	2370
Manganese	716
Molybdenum*	4.25
Nickel*	26.2
Potassium	3100
Selenium	ND
Silver*	3.11
Sodium	188
Thallium	ND
Vanadium	18.4
Zinc*	9950 (503 Ceiling for Zinc 7,500)
Mercury*	0.304
% Solids	42.8
TKN	103
Total Phosphorus	255

*40 CFR Part 503 Metals

Results from sampling conducted during the inspection indicate that the facility violated the daily maximum effluent limit for Zinc at Outfall 002 on December 13 and December 14. On December 15, the Zinc sample was taken from Outfall 001 which does not currently have effluent limits for Zinc, however, the results would have violated the daily limit at Outfall 002.

Biosolids (sludge)

As mentioned above, the facility utilizes a biosolids holding basin to store biosolids wasted from the oxidation ditch. According to Mr. Farley, the facility dredges the stored biosolids from the basin during the warmer months of the year. The dredged biosolids are treated in an open aerobic digester then fed to the centrifuge, where the biosolids are dewatered. Dewatered biosolids are then stored on a covered concrete pad until moved to the composting operation. Mr. Farley stated that biosolids are bulked with woodchips and or manure to meet the ceiling concentration limits of 40 CFR part 503. During the inspection, I observed the storage area (photos 15-16) and the windrowed bulk biosolids (photos 17-18). I also took a composite sample from the bulked biosolids and noted that the analysis showed the level of Zinc in the sample was above the ceiling concentration limit. Mr. Farley explained that the facility had a contract to use the bulk biosolids on historical mine waste in the surrounding area. Mr. Farley then also indicated that the contract has ended and the facility was in the process of determining how to dispose of the bulk biosolids. He stated that the ultimate plan of the facility was to be able to produce Class A biosolids so that it could be sold or given away with no land application site restrictions.

During the inspection, I requested electronic copies of the 2020 and 2021 annual biosolids reports. Mr. Farley provided the 2021 annual report submitted to the EPA and the 2020 and 2021 annual reports that were submitted to the MDNR. I reviewed the received documents and noted that they appeared to follow the requirements of 40 CFR Part 503. After my review, I placed the reports into the ECAD electronic file system. The 2020 annual report states that the facility produced approximately 550 dry metric tons of biosolids and land applied approximately 485 dry metric tons of biosolids to approximately 6.5 acres. The 2021 report submitted to EPA indicated that the facility produced 338 dry metric tons of biosolids and land applied approximately 3,718 dry metric tons to approximately 27.3 acres. While discussing with Mr. Farley the difference in the amount of biosolids produced in 2021 versus the amount land applied in 2021, he stated that due to the high amount of heavy metals in the biosolids (namely Zinc) the facility is required to bulk the biosolids with wood chips and or manure.

According to the 2020 and 2021 annual reports, the facility meets the Pathogen Reduction requirements for producing “Class B” biosolids by having less than 2,000,000 MPU/CFU of fecal coliform bacteria. According to the 2020 and 2021 annual reports, the vector attraction reduction (VAR) requirement was achieved by utilizing the Specific Oxygen Uptake Reduction (SOUR) test.

While observing the biosolids storage area during the inspection, I noted that biosolids were outside of the roofline on the west side of the storage area (photo 16). Although, biosolids were noted to be outside of the roof line, I noted that the concrete pad is sloped to the south and stormwater in the area is directed into a stormwater conveyance system that leads to the biosolids storage basin.

Laboratory

The facility contracts with Pace Analytical Laboratories in Lenexa, Kansas for all of its regulatory analysis. During the inspection, I requested the laboratory records to ensure that all analysis complied with requirements of 40 CFR part 136. My review indicated that all holding times were being met and that all analytical methods appeared to be in compliance with 40 CFR Part 136.

Collection System

As mentioned above, Center Creek WWTF accepts wastewater from the Webb City, Oronogo, and Carterville. Each municipality is responsible for the maintenance of its own collection system. During the inspection, I discussed the separate collection systems with each municipality. Below is a discussion of each municipality.

Webb City

Webb City is the main contributor to the Center Creek WWTF making up approximately 85% of all flow to the WWTF. During the inspection, I spoke with William Runkle, the Wastewater Utilities Director for the City of Webb City, about the collection system. He stated that Webb City has approximately 83 miles of sanitary sewer line and 9 lift stations. He stated that there is a line item in the budget for the sewer collection system of approximately $50,000 dollars per year. He also stated that the city has budgeted approximately $350,000 for improvements to the collection system to combat Inflow and Infiltration (I&I) in the system. Mr. Runkle stated that the city does own and operate a vac truck and has its own sewer camera for maintenance. He stated that the city tries to clean the sewer mains on a 5-year rotation. He also stated that they log any overflows from the sewer system. I asked if these overflows are reported to MDNR as required and he stated that they are not on a regular basis. I stated that they are required to contact MDNR within 24 hours of the bypass and follow up in writing within 5 days. During the exit conference, I issued a NOPF during the inspection for not reporting bypasses of the collection system as required.

Oronogo

During the inspection I spoke with Anthony Cantrell, the Public Works Superintendent for the City of Oronogo, about the city's collection system. He stated that the city has approximately 29 miles of sanitary sewer, and the system was constructed in 1995. He stated that the city operates and maintains 8 lift stations. He stated that they were in the process of replacing the main lift station as it was undersized for the amount of flow received. He stated that they do experience sanitary sewer overflows (SSOs) from time to time and that they are all reported to MDNR as required. He also stated that the city is in the process of purchasing a vac/jet truck to help maintain the sanitary sewer system.

Carterville

During the inspection I spoke with William Cline, the City Administrator for the City of Carterville, about the city's collection system. He stated that the city has approximately 8.3 miles of sanitary sewer. He stated that the city operates and maintains 1 lift station. He stated that they do experience sanitary sewer overflows (SSOs) from time to time, and that they are all reported to MDNR as required. He also stated that the city borrows equipment from Webb City, if needed, to help maintain the sanitary sewer system.

Wetlands

Due to the elevated levels of Zinc in the area and the facility not being able to meet effluent limits set in the permit, the Center Creek Wastewater Board along with MDNR and EPA Superfund contractors constructed a four-cell wetland system to help with the removal of Zinc from the effluent. During the inspection, Mr. Farley stated that they were only operating cells one and four. He stated that they believed that cell 2 was allowing groundwater to infiltrate the system, and that this was allowing elevated amounts of Zinc to enter the wetland. During the inspection, I observed the operation of the wetland system and noted that it appears the system is "short circuiting" as effluent from Outfall 001 flows into cell one in the southeast corner of the cell and flows into cell four in the northeast corner of the cell.

MDNR permitted the wetland system as a demonstration pilot and set both interim effluent limits and final effluent limits. Final effluent limits went into effect for the system in February 2022. Section C. of the NPDES permit (attachment 5 page 11 of 13) requires that an engineering report be submitted to the MDNR on the effectiveness of the wetland system. Mr. Farley provided a copy of the engineering report (attachment 9). The goal of the demonstration project was to show that the wetlands can provide sufficient treatment to the effluent from the treatment plant to meet the current limits on a regular basis, but any reduction of zinc in the effluent, moving the effluent concentration closer to the final effluent limits on a full time or part time basis, would be beneficial (attachment 9 page 14 of 41). As noted previously, the facility has not been able to meet the effluent limits at Outfall 002 regardless of the how much Zinc is reduced in the effluent by utilizing the wetlands. During the inspection, I noted that the wetlands were sparsely vegetated in cells 1 and 4. The wetland project was designed to allow aquatic plants for the uptake of Zinc. By not allowing the wetlands to work as designed, the wetlands project appears to have little to no effect on removing Zinc from the effluent.

Operational Issues and Observations

1. I observed all areas of the WWTF during the inspection (photos 1-27). I noted that not all the units were operating at the time of the inspection. Mr. Farley explained that the north oxidation ditch was built to act as a backup to the south oxidation ditch. Mr. Farley stated that the north ditch will not be used. He stated that the mechanical equipment in the ditch would need to be upgraded and or replaced before it can be used on a regular basis. Mr. Farley also stated that during normal flows, only one

clarifier of the four is needed. Mr. Farley stated that during high flows, the facility will utilize Clarifer 3 and 4. At the time of the inspection, clarifier 3 was turned on due to the high flows that the facility was experiencing.

2. Federal regulations at 40 CFR 122.26(b)(14)(xi) requires that treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 mgd or more to obtain a stormwater discharge permit to cover this type of industrial activity. As part of the stormwater permit, a facility is required to develop and implement a Stormwater Pollution Prevention Plan (SWPPP). Special Condition 15 of the NPDES permit requires that a SWPPP must be developed and implemented. This was also mentioned to the facility during the last MDNR inspection on May 12, 2022. Mr. Farley noted that a SWPPP still has not been developed for the facility. During the exit conference with the facility, I issued a NOPF for not developing and implementing the SWPPP as required by the permit.

Summary

The Center Creek WWTF continues to have difficulty meeting effluent limits for Zinc at Outfall 002. The Center Creek WWTF Board will need to explore all options to come into compliance with the established effluent limits.

The Center Creek WWTF Board must ensure that all municipalities that contribute wastewater to the system report bypasses of the treatment system including sanitary sewer lines to the MDNR as required by the permit.

The Center Creek WWTF must comply with all conditions of the NPDES permit including the development and implementation of a SWPPP.

JOSEPH HEAFNER
Digitally signed by JOSEPH HEAFNER
Date: 2023.02.06 16:40:03 -06'00'

Joe Heafner
Life Scientist

NICOLE MORAN
Digitally signed by NICOLE MORAN
Date: 2023.02.07 10:46:53 -06'00'

Nicole Moran
Section Chief

Attachments:

1. Water Compliance Inspection Report, Form 3560-3 (4 pages)
2. EPA Region 7 Biosolids Checklist (3 pages)
3. Digital Photographs with Photo Log (20 pages)
4. Facility Satellite Photos/Maps (2 pages)
5. NPDES permit issued on February 1, 2020 (13 pages)
6. MDNR Inspection Report from May 12, 2022 (19 pages)
7. NOPF (1 page)
8. Laboratory Analytical Report for Activity JAH2305 (34 pages)
9. Wetland Engineering Report (41 pages)