

REPORT OF COMPLIANCE SAMPLING INSPECTION (CSI)

AT

**Bloomfield Wastewater Treatment Facility
800 Depot Road
Bloomfield, MO 63825**

NPDES NO: MO0050326

September 23-26, 2024

BY

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

INTRODUCTION

I performed a Compliance Sampling Inspection (CSI) at the Bloomfield Wastewater Treatment Facility (WWTF) in Bloomfield, Missouri, from September 23 through 26, 2024. 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 Bloomfield

Justin Bell, Public Works Supervisor, (513) 521-8670, publicworks@bloomfieldpd.org
Patrick Morlan, Operator

Missouri Department of Natural Resources

Trevor Carihfield, Environmental Specialist, trevor.carihfield@dnr.mo.gov

U. S. Environmental Protection Agency (EPA)

Brian D'Alfonso, Biologist, (913) 551-5095, dalfonso.brian@epa.gov

PROCEDURES

I arrived, unannounced, at the Bloomfield WWTF at 12:30 p.m. on September 23, 2024. I spoke with Justin Bell, Public Works Supervisor. I introduced myself, presented my credentials, and explained the purpose of my visit. I then discussed the general procedures for the inspection. These procedures included completing the Water Compliance Inspection Report (attachment 1); conducting a facility walk-through with photos (attachment 2); reviewing self-monitoring

records; collecting influent and effluent samples; and completing an exit interview. Patrick Morlan, the City's second certified operator, accompanied us throughout the inspection.

From September 23, 2024, through September 26, 2024, I used an ISCO model 3700 automatic composite sampler to collect 24-hour composite samples of the influent from the WWTF. I suspended a weighted length of new Tygon tubing into the influent channel. 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 polyethylene containers for the analysis of biochemical oxygen demand (BOD), non-filterable solids (NFS), ammonia (NH₃), nitrate plus nitrite (NO₃+NO₂), total kjeldahl nitrogen (TKN), total phosphorus (TP), total nitrogen (TP), oil and grease (O&G), metals, chloride (CL) and fluoride (FL). At the time of sampling, I preserved the NH₃, NO₃+NO₂, TKN and TP samples with 5 mL of sulfuric acid (H₂SO₄), the O&G samples with hydrochloric acid (HCL) to a pH of less than 2 and the metals samples with nitric acid (HNO₃) to a pH of less than 2. I collected a grab sample from the same location to measure the pH and temperature using a field meter. These analyses were conducted within 15 minutes of collecting the sample. Flow numbers were determined by collecting the facility's daily flow data during my inspection.

On the same days I used an ISCO model 3700 automatic composite sampler to collect a 24-hour composite sample of the effluent from the WWTF. I suspended a weighted length of new Tygon tubing into the effluent channel after the ultraviolet (UV) disinfection system. 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 polyethylene containers for the analysis of BOD, NFS, NH₃, NO₃+NO₂, TKN, TP, O&G, metals, CL, and FL. At the time of sampling, I preserved the NH₃, NO₃+NO₂, TKN and TP samples with 5 mL of (H₂SO₄), the O&G samples with (HCL) to a pH of less than 2 and the metals samples with (HNO₃) to a pH of less than 2. I also collected a grab sample from the same location to measure the pH and temperature using a field meter. These analyses were conducted within 15 minutes of collecting the sample. Flow numbers were collected from the facility's instantaneous read digital flow meter console.

For the first day of sampling, 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 the last two days of sampling, I placed the samples I collected on ice in an ice chest, sealed the container, and hand delivered it to the R7 STC. Electronic field sheets and electronic chain of custodies were emailed to the STC each day after samples were shipped or delivered. I followed Region 7 Laboratory Services and Applied Science Division (LSASD) standard operating procedures in the collection, packaging, transportation, and handling of the samples.

FACILITY DESCRIPTION

The Bloomfield WWTF is owned by the city of Bloomfield, Missouri and operated by the City. The WWTF is located on the northwest edge of town. The latitude and longitude of the plant are 36.898109°N and -89.940858°W, respectively, in Stoddard County, Missouri. The WWTF consists of (attachment 3) a pretreatment lagoon cell, a lift station, an influent channel with bar screens, four aerated, baffled covered lagoon cells, a two-cell nitrification reactor, and a UV disinfection system. Sludge is retained in the lagoon cells until removed and hauled off-site by a contractor. As described in the permit, effluent from the WWTF discharges through outfall 001 (photo 12) to a tributary of the Lick Creek Ditch (photo 13). The WWTF treats domestic wastewater from the city of Bloomfield. The WWTF also receives industrial wastewater from Allied Waste, the operator of a subtitle D landfill in the area.

The WWTF's National Pollutant Discharge Elimination System (NPDES) Permit MO0050326 was issued on July 1, 2024 (attachment 4). The permit expires on June 30, 2029. The permit includes concentration effluent limits at outfall 001 for BOD, total suspended solids (TSS), NH₃, *E. coli*, copper (CU), boron, CL, iron (FE), lead (PB) and pH. The permit requires that the facility monitor their effluent for TKN, NO₃+NO₂, TN, TP, multiple metals, fluoride, hardness, multiple volatile organic compounds, flow and temperature. The permit requires that the facility monitor their influent for BOD, TSS, NH₃, TP, TKN and NO₃+NO₂. The permit has a removal efficiency requirement, which requires a minimum 85% removal (65% in previous permit) of BOD and TSS. Lastly, the permit requires that the facility monitor sludge and maintain compliance with the sludge regulations in 40 CFR Part 503.

The facility was last inspected by MDNR on July 31, 2023 (attachment 5). The inspection found the facility to have two violations. The violations were failure to comply with effluent limits and failure to develop and implement a program for maintenance and repair of the collection system. The violations lead to the facility receiving a Letter of Warning (LOW) on September 6, 2023 (attachment 5). MDNR issued the facility two LOWs on January 26 and March 29, 2024, for failing to meet NH₃ and CU effluent limits (attachment 6)

FINDINGS AND OBSERVATIONS

The following findings were noted during the plant walk-through and records review. A summary is provided in the Water Compliance Inspection Report (attachment 1). These findings were discussed with Mr. Bell and Mr. Morlan during the exit meeting.

Self-Monitoring Data Review

Prior to the inspection, I obtained a spreadsheet of the discharge monitoring report (DMR) data for the Bloomfield WWTF from the EPA Region 7 data team. The spreadsheet containing the DMR reports included data from January 2021, through September 2024. Facility personnel provided me with copies of the facility's analytical reports that were used to submit the DMR values. All DMR data obtained for this report can be found on ECAD's electronic file management system.

My review of the WWTF's self-monitoring data showed 138 instances of DMR data not being received by MDNR. The review also showed that the facility failed to meet their effluent requirements 16 times for BOD, 5 times for cadmium, 34 times for CU, 6 times for *E. coli*, 9 times for NH3, one time for pH, and 11 times for TSS in the time frame listed above. In the same time period, the facility was unable to meet their removal efficiency requirements for BOD on 7 occasions and 10 occasions for TSS. These exceedances can be found in a spreadsheet included as attachment 7. This was noted as item #1 on the Notice of Preliminary Findings (NOPF) that was left on-site.

Sample Results

The analytical results from the inspection were received on October 4, 2024, from the R7 STC laboratory. This data was not discussed during the exit interview. The analytical results from influent sampling conducted during the inspection at the Bloomfield WWTF for BOD, TSS (identified as NFS, non-filterable solids, in EPA's laboratory sheets), NH3, TKN, NO3+NO2, TN, TP, temperature, pH, and flow are presented in Table 1 below. The analytical results from effluent sampling conducted during the inspection at the Bloomfield WWTF for BOD, TSS, NH3, TKN, NO3+NO2, TN, TP, temperature, pH, DO and flow are presented in Table 2 below. The removal rates for BOD and TSS are also included in Table 2. See attachment 8 for the complete analytical data packet including the analytical results from samples collected during the inspection.

As described in attachment 8, for results followed by a J, the analyte is acceptable; the reported value is an estimate. For results followed by a U, the analyte was not detected at or above the reporting limit.

Table 1: Analytical Results for Influent Samples Collected During Inspection

Parameter	September 24, 2024	September 25, 2024	September 26, 2024
BOD5 (mg/L) ¹	114	126 J	146
TSS (mg/L) ¹	149	142	162
NH3 (mg/L) ¹	22.8	22.8	26.6
TKN (mg/L) ¹	28.6	17.8	51.3
NO3+NO2 (mg/L) ¹	0.0766	0.0762	0.0785
TN (mg/L) ¹	28.7	17.9	51.4
TP (mg/L) ¹	3.34	4.27	7.72
O&G (mg/L) ¹	18.1	29.4	16.2
AG (mg/L) ¹	ND	ND	ND
CU (mg/L) ¹	109	102	112
PB (mg/L) ¹	NDU	NDU	NDU
FL (mg/L) ¹	0.116	0.190	0.159
CL (mg/L) ¹	26.3	30.0	113

Temperature (°C) ²	24.6	22.3	21.6
pH ²	7.12	7.11	7.21
Flow (GPD)	0.252	0.151	0.124

¹ mg/L = milligrams per liter.

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

Table 2: Analytical Results for Effluent Samples Collected During Inspection

Parameter	September 24, 2024	September 25, 2024	September 26, 2024	Permit Limits
cBOD5 (mg/L) ¹	ND	NDUJ	ND	30/45 ³
TSS (mg/L) ¹	8.83	7.42	8.12	30/45 ³
NH3 (mg/L) ¹	ND	ND	ND	1.9/12.1 ³
TKN (mg/L) ¹	1.19	1.24	1.08	Monitor
NO3+NO2 (mg/L) ¹	19.0	17.8	18.5	Monitor
TN (mg/L) ¹	20.2	19.0	19.5	Monitor
TP (mg/L) ¹	3.27	2.85	2.83	Monitor
O&G (mg/L) ¹	ND	ND	ND	Monitor
AG (mg/L) ¹	ND	ND	ND	Monitor
CU (mg/L) ¹	11.3	9.54	11.0	4.2/13.1 ³
PB (mg/L) ¹	ND	ND	ND	2.2/5.2
FL (mg/L) ¹	0.156	0.155	0.156	Monitor
CL (mg/L) ¹	53.5	53.0	53.3	182.4/393.5
pH ²	7.87	7.48	7.55	6.5/9.0
Temperature (°C)²	25.6	24.3	23.9	Monitor
Flow (GPD)	0.252	0.151	0.124	Monitor
TSS Removal (%)	94	95	95	>85
BOD Removal (%)	100	100	100	>85

¹ mg/L = milligrams per liter.

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

³ Permit limits for CBOD & TSS are Monthly followed by Weekly Averages. Permit limits for other constituents are monthly average followed by daily maximum.

⁴ ND = Not detected

EPA sample results from the inspection showed a monthly average permit exceedance for CU at outfall 001 on all three days. These values can be found in Table 2 in red.

Laboratory

The facility collects all samples and uses a contract laboratory to analyze all samples except pH and temperature. I reviewed laboratory records to ensure that all analyses complied with requirements of 40 CFR part 136. I noted that all holding times observed were met and all methods appeared to meet requirements of 40 CFR part 136. The analytical results I reviewed were consistent with the DMR data that was submitted by the facility. During the inspection, I asked the facility personnel about their calibration practices for their on-site analyses. Mr. Bell

stated that they calibrate their pH and dissolved oxygen (DO) meters every couple weeks. Mr. Bell stated they do not maintain a calibration log. I explained to Mr. Bell that the facility should be calibrating their pH meter every time they take a sample, specifically a regulatory sample, and be logging each calibration. This was noted as item #4 on the NOPF that was left on-site. The facility is not required to sample DO by their permit, so calibrations and records of the DO meter were discussed as verbal recommendations.

Collection System

Mr. Bell explained that the entire system is a gravity fed collection system except for one lift station that pumps wastewater from one side of a creek to the other side. I observed this lift station (North Lift Station) and observed it to be in good working condition (photo 7). Mr. Bell stated that the City had all of the mechanical portions of the lift station replaced in 2022.

Mr. Bell also explained that the City was currently working with a third-party contractor on inflow and infiltration (I&I) issues within the collection system. Mr. Bell stated that the system had been smoke tested, and they were waiting for a final design plan that could be submitted for funding. I noted this as item #5 on the NOPF that was left on-site.

Operation and Maintenance

During the inspection, I observed the treatment facility and the facility outfall. The treatment facility consists of a pretreatment lagoon cell (photos 10-11), a lift station (photo 5), an influent channel with a bar screen (photo 6), four aerated, baffled covered lagoon cells (photos 8-9), a two-cell nitrification reactor (photo 4), and a UV disinfection system (photos 1-3). From the UV disinfection system, water flows to and is discharged from outfall 001 (photos 12-14).

Mr. Bell explained that the WWTF had been redesigned and rebuilt fairly recently. Mr. Bell explained that some of the old lagoon cells were removed, and the new aerated cells were installed along with the nitrification reactor. Mr. Bell stated that the new system started up in 2022. At the time of inspection, no issues were observed with the physical portions of the WWTF.

While discussing the new facility, I asked facility personnel about their operator certification status. Mr. Bell explained that he and Mr. Morlan were both Level D wastewater operators, but MDNR changed the certification requirements in the latest permit due to the new WWTF. The facility's new certification requirements are Level C. Mr. Bell stated that he was planning to take the class and test for the Level C certification but has had trouble finding training in the area. The facility's permit requires a properly certified operator within six months of the effective date of the permit. At the time of inspection, it had not been six months since the permit became effective. This was noted as item #2 on the NOPF that was left on-site.

While reviewing records, facility personnel were unable to provide me with an up-to-date operations plan. Mr. Bell provided me the books that were provided to him after the new WWTF was built. These books included manuals for each device that was installed at the new WWTF,

but did not include a manual on how to operate or maintain the new facility. This was noted as item #3 on the NOPF that was left on-site.

Sludge/Biosolids

Sludge at the facility is stored in the lagoon cells. The facility had the sludge removed prior to the upgrades made to the facility. Sludge was removed and land applied by a third-party contractor. Mr. Bell provided me with the sludge report (attachment 9) that was provided to him by the contractor. The sludge report includes a report submitted to EPA, sample analyses and agronomic rate calculations. The report did not include where the sludge was land applied or how much sludge was applied to each location. This is noted in the summary of this report as item #6.

Summary

On September 26, 2024, I conducted an exit briefing with Mr. Bell and Mr. Morlan. I went over the facility's rights to claim confidential business information. The facility did not make any claims of confidentiality (Attachment 10). I explained the preliminary findings that I observed during the inspection. A NOPF was left on site with the following findings (Attachment 11):

1. Failure to meet effluent limits.
2. Ensure operators receive proper certification described by permit.
3. Ensure system has an adequate operations plan.
4. Calibrate pH meter each day analysis is performed.
5. Continue to work on I&I. Submit final plan.

After the inspection, the following findings were determined:

6. Failure to record location of land application and amount applied of wastewater treatment sludge.

No response to the findings was received from facility personnel after the inspection.

**BRIAN
D'ALFONSO**
Brian D'Alfonso
Biologist, WB/DWIS

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**JOSEPH
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Joseph Heafner
Acting Section Manager, WB/DWIS

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Attachments:

1. Water Compliance Inspection Report 3560-3 (4 pages)
2. Digital Photographs with Photo Log (16 pages)
3. Site Aerial Map and Layout (1 page)
4. NPDES Permit MO0050326 issued on July 1, 2024 (72 pages)
5. July 31, 2023, MDNR Inspection (19 pages)
6. January 26 and March 29, 2024, MDNR LOWs (4 pages)
7. Spreadsheet of removal efficiencies and effluent exceedances (2 pages)
8. Laboratory Analytical Report for BPD2413 (30 pages)
9. Bloomfield Sludge Report (18 Pages)
10. September 26, 2024, CBI (4 pages)
11. September 26, 2024, Notice of Preliminary Findings (1 pages)