

**TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION**

**Division of Water Resources**

Memphis Environmental Field Office  
8383 Wolf Lake Drive, Bartlett, TN 38133  
1-888-891-8332 (TDEC)

**Compliance Evaluation Inspection for Individual NPDES Permit**

<b>Facility Name:</b> Moscow Wastewater Lagoon	<b>NPDES Permit Number:</b> TN0021164
<b>Permit Effective Date:</b> October 1, 2023	<b>Permit Expiration Date:</b> September 30, 2028
<b>Date and Time of Inspection:</b> 12/27/2024	<b>Inspector Name (s):</b> Brittany Gibson & Ashli Bolden
<b>Official Contact Person Name:</b> Mr. Kristopher Tims, Mayor	
<b>Facility Address:</b> 14075 Highway 57 Moscow, TN 38057	<b>Phone Number:</b> (901) 877-3585
	<b>Email:</b> <a href="mailto:mayorofmoscowtn@gmail.com">mayorofmoscowtn@gmail.com</a>

**Summary of Findings and Comments**

On Friday, December 27, 2024, Ms. Brittany Gibson and Ms. Ashli Bolden with the Division of Water Resources, Memphis Environmental Field Office (DWR/MEFO), conducted a Compliance Evaluation Inspection (CEI) at the Moscow Wastewater Lagoon located in Fayette County, Tennessee. Upon arrival at the facility, Ms. Gibson and Ms. Bolden met with Mr. Christopher Luss, the Moscow Certified Wastewater Operator, and stated that the purpose of this inspection was to evaluate the City of Moscow's compliance with its National Pollutant Discharge Elimination System (NPDES) permit. This was accomplished by reviewing the facility's self-monitoring records and reports. Afterwards, Ms. Gibson and Ms. Bolden inspected the wastewater lagoon. The following is a summary of the findings and observations:

**I. Permit**

The NPDES permit for the Moscow Wastewater Lagoon with permit number TN0021164 expires on September 30, 2028. A current copy of the NPDES permit was available for review in the facility laboratory. Ms. Gibson reminded Mr. Luss to submit a permit renewal application to the Division at least 180 days prior to the current permit's expiration date.

The NPDES permit for the Moscow Wastewater Lagoon authorizes the discharge of treated municipal wastewater into the Wolf River at mile 57.3 via Outfall 001. During this inspection period, the Moscow Lagoon experienced ten (10) permit exceedances from January 2022 through December 2024. These exceedances were accompanied by explanations in NetDMR. The following diagram provides a picture of these exceedances:





The design capacity of the treatment system is 0.18 Million Gallons per Day (MGD). During the evaluation period of January 2022 through December 2024, the average effluent flow from the treatment system was 0.114 MGD, and the maximum daily flow was 0.812 MGD, recorded in February 2022.

The City of Moscow's discharge effluent limitations and monitoring requirements, as referenced in the table below from *Part 1* of the facility's NPDES permit, are as follows:

Description: External Outfall, Number: 001, Monitoring: Effluent Gross, Season: All Year							
Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00530	Total Suspended Solids (TSS)	<=	150	lb/d	Grab	Weekly	Monthly Average
00530	Total Suspended Solids (TSS)	<=	165	lb/d	Grab	Weekly	Weekly Average
00530	Total Suspended Solids (TSS)	<=	180	lb/d	Grab	Weekly	Daily Maximum
00530	Total Suspended Solids (TSS)	<=	100	mg/L	Grab	Weekly	Monthly Average
00530	Total Suspended Solids (TSS)	<=	110	mg/L	Grab	Weekly	Weekly Average
00530	Total Suspended Solids (TSS)	<=	120	mg/L	Grab	Weekly	Daily Maximum
00545	Settleable Solids	<=	1.0	mL/L	Grab	Two Per Week	Daily Maximum
00600	Nitrogen, total (as N)	Report	-	mg/L	Grab	Quarterly	Quarterly Average
00665	Phosphorus, total (as P)	Report	-	mg/L	Grab	Quarterly	Quarterly Average
50050	Flow	Report	-	MGD	Continuous	Five Per Week	Daily Maximum
50050	Flow	Report	-	MGD	Continuous	Five Per Week	Monthly Average
50060	Chlorine, total residual (TRC)	<=	2.0	mg/L	Grab	Five Per Week	Daily Maximum
51040	E. coli	<=	941	#/100mL	Grab	Weekly	Daily Maximum
51040	E. coli	<=	126	#/100mL	Grab	Weekly	Monthly Geometric Mean
T7P3B	IC25 Sub-Lethal Static Renewal 7 Day Chronic Ceriodaphnia dubia	>=	0.48	%	Composite	See Permit	Minimum
T7P6C	IC25 Sub-Lethal Static Renewal 7 Day Chronic Pimephales promelas	>=	0.48	%	Composite	See Permit	Minimum
Description: External Outfall, Number: 001, Monitoring: Percent Removal, Season: All Year							
Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
81010	BOD, 5-day, % removal	>=	65	%	Calculated	Weekly	Monthly Average Minimum
81011	TSS, % removal	>=	65	%	Calculated	Weekly	Monthly Average Minimum

Description: Influent Structure, Number: INF1, Monitoring: Raw Sewage Influent, Season: All Year							
Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00310	BOD, 5-day, 20 C	Report	-	mg/L	Grab	Weekly	Daily Maximum
00310	BOD, 5-day, 20 C	Report	-	mg/L	Grab	Weekly	Monthly Average
00530	Total Suspended Solids (TSS)	Report	-	mg/L	Grab	Weekly	Daily Maximum
00530	Total Suspended Solids (TSS)	Report	-	mg/L	Grab	Weekly	Monthly Average
50050	Flow	Report	-	MGD	Continuous	Five Per Week	Daily Maximum
50050	Flow	Report	-	MGD	Continuous	Five Per Week	Monthly Average

Description: External Outfall, Number: 001, Monitoring: Effluent Gross, Season: All Year							
Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00300	Oxygen, dissolved (DO)	>=	1.0	mg/L	Grab	Five Per Week	Instantaneous Minimum
00310	BOD, 5-day, 20 C	<=	45	mg/L	Grab	Weekly	Monthly Average
00310	BOD, 5-day, 20 C	<=	50	mg/L	Grab	Weekly	Weekly Average
00310	BOD, 5-day, 20 C	<=	65	mg/L	Grab	Weekly	Daily Maximum
00310	BOD, 5-day, 20 C	<=	68	lb/d	Grab	Weekly	Monthly Average
00310	BOD, 5-day, 20 C	<=	75	lb/d	Grab	Weekly	Weekly Average
00310	BOD, 5-day, 20 C	<=	98	lb/d	Grab	Weekly	Daily Maximum
00400	pH	>=	6.0	SU	Grab	Two Per Week	Minimum
00400	pH	<=	9.0	SU	Grab	Two Per Week	Maximum



## II. Records/Reports

The Moscow Wastewater Lagoon is enrolled in NetDMR, an electronic mechanism used to submit DMRs to the Division of Water Resources and Environmental Protection Agency. According to DWR records, the facility has been reporting through NetDMR successfully since October 2016. Site records and reports (flow, BOD, TSS, pH, etc.) appeared to be maintained as required by the NPDES permit. Data for January 2022 through December 2024 has been submitted through NetDMR in a timely manner.

## III. Facility Site Review

The Moscow wastewater treatment system consists of a multi-celled, aerated lagoon (photo 7); this lagoon consists of a complete mix cell, a partial mix cell, and a polishing cell. Three aeration motors are assigned to the complete mix cell, and one is assigned to the partial mix cell. One motor in the complete mix cell was not operating at the time of the inspection. Ms. Gibson advised Mr. Luss to repair the motor so that there would be no hindrance/interference to the biological treatment process of the cell.

The facility's effluent is chlorinated by the utilization of liquid bleach (photo 2) before discharging into the river.

The Moscow Lagoon had ten (10) exceedances of its NPDES permit limits for the period from January 2022 through December 2024. An explanation of the exceedances accompanied the MORs, as required by the permit.

## IV. Effluent/Receiving Waters

The Moscow Lagoon outfall was under water at the time of the inspection due to the high-water level in the Wolf River (photo 5). However, the effluent in the chlorine contact wet-well sampling point prior to treatment discharge at the outfall was clear at the time of the inspection.

A discharge sign was not in place at the point of discharge to the river (photo 5). A sign must be added to the location. **Section 3.5** of the NPDES permit states:

*The permittee shall place and maintain a sign at each outfall and any overflow/release point in the collection system or the nearest publicly accessible location. For the purposes of this requirement, any point that has had a total of 5 or more overflows plus releases in the previous 12 months must be so posted. Signs at locations that are posted at the permit effective date must be maintained. Signs for locations identified during the permit term must be placed within 60 days of the event triggering the requirement.*

*The sign(s) should be clearly visible to the public from the bank and the receiving stream. The minimum sign size should be two feet by two feet (2' x 2') with one inch (1") letters. The sign should be made of durable material and have a white background with black letters.*

*The sign(s) are to provide notice to the public as to the nature of the discharge and, in the case of the permitted outfalls, that the discharge is regulated by the Tennessee Department of Environment and Conservation, Division of Water Resources. The following are given as examples of the minimal amount of information that must be included on the signs:*

### NPDES Permitted Municipal/Sanitary Outfall:

TREATED MUNICIPAL/SANITARY WASTEWATER City of Moscow Moscow Wastewater Lagoon (901) 877-3585 NPDES Permit NO. TN0021164 TENNESSEE DIVISION OF WATER RESOURCES 1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Memphis
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## V. Flow Measurement

The Moscow Lagoon has digital flow meters at the influent and effluent (photo 3), and both meters were operational during the time of the evaluation. At the time of inspection, no calibration documentation for the flow meters could be produced. During the personnel change from the previous operator to the current operator, several records were lost or misplaced during the transition. Since the date of the inspection, both flow meters have been calibrated by LabtronX. These calibrations were performed by LabtronX on January 22, 2025. Following the inspection, photo documentation of the meters' calibration was sent to Ms. Gibson via text.

## VI. Self-Compliance Program

According to Mr. Luss, he collects the grab samples as required by the permit. All analytical work is conducted at the Waypoint Analytical Laboratory in Memphis, TN. A review of the chain-of-custodies revealed that the samples shipped to Waypoint via cooler were maintained below the 6°C as required by 40 CFR, Part 136.

Dissolved oxygen (DO), chlorine residual, and pH are field parameters measured at the time of sample collection as mandated by Section 1.2.4 of the NPDES permit.

## VII. Compliance Schedule

The facility is not under any compliance schedule at this time, with the exception of the permit requirements.

## VIII. Laboratory

All analytical work is being conducted at the Waypoint Analytical Laboratory in Memphis, TN.

A Standard Operating Procedure (SOP) for field parameter measurement was available for review at the STP. The facility's SOP encompasses instructions on proper calibration of field equipment and QC procedures for equipment calibration.


Calibration of the pH and DO meters was observed. The calibration logs were also inspected, and the calibrations were properly documented. Three pH buffers (4, 7 and 10) are utilized in the calibration of the pH meter. At the time of inspection, the pH buffers were expired. Per Mr. Luss, this was due to an unintentional oversight during the transition period between the previous and current Certified Operator in Charge. *Since the date of this report, the facility has produced documentation of current/valid pH buffers.* The DO meter was calibrated according to the instructions noted in the manufacturer's manual.


## IX. Operations and Maintenance

During the inspection period from January 2022 through December 2024, the Moscow Wastewater Lagoon reported two (2) Sanitary Sewer Overflows (SSOs), Wet Weather events. There were no Sanitary Sewer Releases (SSRs) during this inspection period. The facility did report the SSO events appropriately via MyTDEC Forms as required by their NPDES permit.



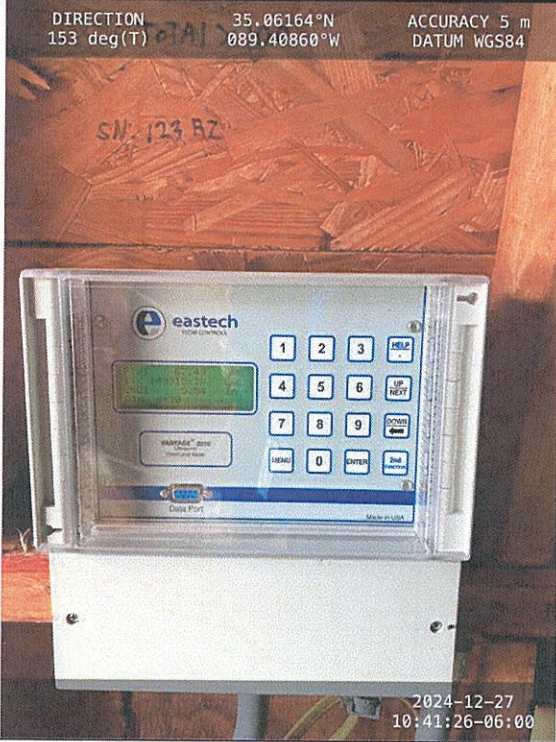
# Photographic Log


<b>Facility Name:</b> Moscow Wastewater Lagoon		<b>Site Location:</b> Fayette County	<b>Tracking No.:</b> TN0021164
<b>Photo No.</b> 1	<b>Date</b> 12-27-2024		
<b>Description</b> View of the facility laboratory. At the time of inspection, the pH buffers were expired. Per Mr. Luss, this was due to an unintentional oversight during the transition period between the previous and current Certified Operator in Charge. <i>Since the date of this report, the facility has produced documentation of current/valid pH buffers.</i>		<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">           ACCURACY 4 m            DATUM WGS84            35.06081°N            089.39519°W            DIRECTION            159 deg(T)         </div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">           2024-12-27            10:29:23-06:00         </div> </div>	

<b>Facility Name:</b> Moscow Wastewater Lagoon		<b>Site Location:</b> Fayette County	<b>Tracking No.:</b> TN0021164
<b>Photo No.</b> 2	<b>Date</b> 12-27-2024		
<b>Description</b> View of the liquid bleach used to disinfect the effluent.		<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">           DIRECTION            253 deg(T)         </div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">           35.06171°N            089.40861°W         </div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">           ACCURACY 5 m            DATUM WGS84         </div> </div> <div style="text-align: right;">           2024-12-27            10:40:32-06:00         </div>	




# Photographic Log

<b>Facility Name:</b> Moscow Wastewater Lagoon		<b>Site Location:</b> Fayette County	<b>Tracking No.:</b> TN0021164
<b>Photo No.</b> 3	<b>Date</b> 12-27-2024	<div> <div> DIRECTION 153 deg(T) </div> <div> 35.06164°N 089.40860°W </div> <div> ACCURACY 5 m DATUM WGS84 </div> </div> 	
<b>Description</b> View of the effluent flow meter.			


<b>Facility Name:</b> Moscow Wastewater Lagoon		<b>Site Location:</b> Fayette County	<b>Tracking No.:</b> TN0021164
<b>Photo No.</b> 4	<b>Date</b> 12-27-2024	<div> <div> DIRECTION 254 deg(T) </div> <div> 35.06174°N 089.40870°W </div> <div> ACCURACY 5 m DATUM WGS84 </div> </div> 	
<b>Description</b> View of the effluent wet well/discharge and sampling point.			



# Photographic Log

Facility Name:		Site Location:	Tracking No.:
Moscow Wastewater Lagoon		Fayette County	TN0021164
Photo No.	Date		
5	12-27-2024		
<b>Description</b> View of the discharge point at the Wolf River. No discharge sign was present. <i>Section 3.5</i> of the facility's NPDES requires that a sign be "placed and maintained at each outfall and any overflow/release point in the collection system or the nearest publicly accessible location."		ACCURACY 5 m DATUM WGS84 35.06181°N 089.40877°W DIRECTION 234 deg(T)	


2024-12-27  
10:42:46-06:00


Facility Name:		Site Location:	Tracking No.:
Moscow Wastewater Lagoon		Fayette County	TN0021164
Photo No.	Date		
6	12-27-2024		
<b>Description</b> View of cell 1 of the treatment lagoon.		ACCURACY 4 m DATUM WGS84 35.06173°N 089.40861°W DIRECTION 359 deg(T)	

2024-12-27  
10:44:24-06:00




# Photographic Log


<b>Facility Name:</b> Moscow Wastewater Lagoon		<b>Site Location:</b> Fayette County	<b>Tracking No.:</b> TN0021164
<b>Photo No.</b> 7	<b>Date</b> 12-27-2024		
<b>Description</b> View of the treatment lagoon.			

<b>Facility Name:</b> Moscow Wastewater Lagoon		<b>Site Location:</b> Fayette County	<b>Tracking No.:</b> TN0021164
<b>Photo No.</b> 8	<b>Date</b> 12-27-2024		
<b>Description</b> View of cells 1 and 2.			



# Photographic Log

Facility Name:		Site Location:	Tracking No.:
Moscow Wastewater Lagoon		Fayette County	TN0021164
Photo No.	Date	<div> <div> DIRECTION 29 deg(T) 35.06152°N 089.40805°W ACCURACY 5 m DATUM WGS84 </div>  <div> 2024-12-27 10:48:00-06:00 </div> </div>	
9	12-27-2024		
<b>Description</b> View of cell 3.			

Facility Name:		Site Location:	Tracking No.:
Moscow Wastewater Lagoon		Fayette County	TN0021164
Photo No.	Date		
10	12-27-2024		
<b>Description</b> Aerial view of the treatment lagoon.			