



REGION 4

ATLANTA, GA 30303

April 27, 2024

Robert Fox
Mayor
City of Sevierville
120 Gary R Wade Blvd
Sevierville, TN 37862
RFox @Seviervilletn.org

Dear Robert Fox:

The U.S. Environmental Protection Agency, Region 4 conducted a Compliance Evaluation Inspection (CEI) on the City of Sevierville (McCroskey Island) Sewage Treatment Plant (STP) on March 7, 2024. The objective of the inspection was to assess the City of Sevierville's (Sevierville) compliance with the Clean Water Act and the National Pollutant Discharge Elimination System (NPDES) permit, and to evaluate the general condition of the STP. The inspection results have been summarized in the enclosed CEI Report.

The EPA appreciates Sevierville's cooperation and courtesy. If you have specific questions about the inspection report, please contact Mr. Andrew Gunderson at Gunderson.Andrew@EPA.gov. Please verify receipt of this letter and report by emailing Mr. Gunderson at the email address provided.

Sincerely,

JAIRO
CASTILLO

Jairo Castillo, P.E., Chief

Wastewater Enforcement Section

Water Enforcement Branch

Digitally signed by JAIRO
CASTILLO
Date: 2024.04.29
09:12:28 -04'00'

ENCLOSURES

Sevierville (McCroskey Island) STP CEI Report

cc: Jessica Murphy

Tennessee Department of Environment and Conservation

Jessica.Murphy@tn.gov

Keith Malone

City of Sevierville

Kmalone@seviervilletn.org

United States Environmental Protection Agency Region 4

Enforcement and Compliance Assurance Division

Water Enforcement Branch

61 Forsyth Street, SW

Atlanta, Georgia 30303



Compliance Evaluation Inspection Report

City of Sevierville (McCroskey Island) STP

2295 McCroskey Island Road,

Sevierville, TN 37876

NPDES Permit Number: TN0063959

Project No. CV-TN0063959-030724

Date of Inspection:

March 7, 2024

Inspectors:

Andrew Gunderson, EPA Region 4

Brad Ammons, EPA Region 4

Mel-Chilecee Taylor, EPA Region 4

Brad Antone, TDEC

Robert Ramsey, TDEC

Inspection Report Prepared by:

Andrew Gunderson

Title and Approval Sheet

Title: City of Sevierville (McCroskey Island) STP Compliance Evaluation Inspection Report
Project No. CV-TN0063959-030724

Approving Official:

JAIRO
CASTILLO

Digitally signed by JAIRO
CASTILLO
Date: 2024.04.29
09:10:22 -04'00'

Jairo Castillo, P.E., Chief
Wastewater Enforcement Section
Water Enforcement Branch

Enforcement Officer:

ANDREW
GUNDERSON

Digitally signed by
ANDREW GUNDERSON
Date: 2024.04.29
08:29:28 -04'00'

Andrew Gunderson, Environmental Scientist
Wastewater Enforcement Section
Water Enforcement Branch

COMPLIANCE EVALUATION INSPECTION REPORT
Sevierville (McCroskey Island) STP, Project # CV-TN0063959-030724

Table of Contents

1. Introduction..... 1

2. Participants..... 1

3. Facility Description 1

4. Inspection Procedures..... 3

5. Findings & Conclusions..... 3

A. Permit Review..... 3

B. Records and Reports..... 3

C. Flow Measurement..... 3

D. Sampling/Laboratory..... 4

E. Site Visit (Operation and Maintenance) 4

F. Sludge Handling..... 5

G. Effluent/Receiving Water..... 6

6. Discussion..... 6

COMPLIANCE EVALUATION INSPECTION REPORT
Sevierville (McCroskey Island) STP, Project # CV-TN0063959-030724

1. Introduction

On March 7, 2024, representatives of the United States Environmental Protection Agency, Region 4 and the Tennessee Department of Environment and Conservation (TDEC) conducted a Compliance Evaluation Inspection (CEI) on the City of Sevierville (McCroskey Island) Sewage Treatment Plant (STP), owned and operated by the City of Sevierville, Tennessee (Sevierville/The City). The inspection was conducted under the authority of Section 308 of the Clean Water Act (CWA), as amended. This report provides a summary of the inspection.

2. Participants

Name	Organization	Contact Information
Andrew Gunderson	EPA Region 4 (Lead)	Gunderson.Andrew@epa.gov
Brad Ammons	EPA Region 4	Ammons.Brad@epa.gov
Melchilecee Taylor	EPA Region 4	Taylor.Melchilecee@epa.gov
Brad Antone	TDEC	Brad.Antone@tn.gov
Robert Ramsey	TDEC	Robert.Ramsey@tn.gov
Tim Murrell	City of Sevierville (Operator)	tmurrell@seviervilletn.org
J. Keith Malone	City of Sevierville (Director)	kmalone@seviervilletn.org
Travis Russell	City of Sevierville (Lab Supervisor)	trussell@seviervilletn.org
Brian Loveday	City of Sevierville (Pump Station Supervisor)	bloveday@seviervilletn.org
Tonya Townsend	City of Sevierville (Operator of Record)	ttownsend@seviervilletn.org
NOTE: Tonya Townsend was off-site during inspection.		

3. Facility Description

Sevierville (McCroskey Island) Sewage Treatment Plant is an activated sludge wastewater treatment plant which has been in operation at the 2295 McCroskey Island Road location since the early 1990's. The facility is currently permitted under NPDES permit number TN0063959 to discharge 4.8 million gallons per day (MGD) from outfall 001 to the French Broad River. Additional discharge allowance of 8.8 MGD and 12 MGD are noted within the NPDES permit, pending completion of facility upgrades and approval by Tennessee Department of Environment and Conservation's Division of Water Resources. Construction at the facility is currently underway to increase treatment capacity to 8.8 MGD, with a projected completion date of January 2026. The upgrade project was delayed in order to preserve archeological finds discovered during construction.

The STP consists of an influent pump station with two Andritz mechanical bar screens, a secondary manual course bar screen (last operated on February 21, 2024 during power outage), grit/grease removal (being bypassed during inspection due to two blowers being offline), oxidation ditch (one set of paddles offline due to bearing failure), two secondary clarifiers, return activated sludge pumps, chlorine contact chamber for disinfection, sludge thickeners (old aeration basin and clarifier utilized for additional wasting process),

COMPLIANCE EVALUATION INSPECTION REPORT
Sevierville (McCroskey Island) STP, Project # CV-TN0063959-030724

aerobic sludge digesters, one sludge belt filter press (not operational during inspection due to mechanical failure), and related appurtenances.



Figure 1: Aerial View of the Sevierville Sewage Treatment Plant

The STP shares some operational components with The City's water treatment plant. This includes a mechanical equipment/building for onsite chlorine production and a clarifier where sludge for the water treatment facility is stored. This water treatment sludge is then sent to the wastewater treatment facility's digester. The STP plans to switch to Ultraviolet (UV) disinfection system pending completion and TDEC's approval of the 8.8 MGD upgrade.

The facility is the only location within Sevier County accepting and treating septic system waste. Septic system waste is held in a storage tank prior to being pumped to the old aeration basin and clarifier now being utilized for plant wasting and sludge thickening processes. It is then combined with the STP's systems sludge. The combined sludge is then circulated to the oxidation ditch.

The facility's current wastewater plant operational staff are as follows:

- One Tennessee Wastewater Treatment Grade 4 Operator
- Three Tennessee Wastewater Treatment Grade 3 Operators
- One Tennessee Wastewater Treatment Trainee
- One Laboratory Member
- One Service Worker

Direct access to the site's offices is blocked by construction activity. Access is granted by utilizing an access road constructed around the headworks and lab building. Additional bypass pumps were in place to route

COMPLIANCE EVALUATION INSPECTION REPORT
Sevierville (McCroskey Island) STP, Project # CV-TN0063959-030724

flow to existing pump station during construction. Construction activity is underway for the 8.8 MGD upgrade, however construction on the 12 MGD upgrade has not yet begun.

4. Inspection Procedures.

The overall objective of this CEI was to evaluate the condition and operational performance of the STP and Sevierville's self-monitoring program and to offer compliance assistance as needed. Specific tasks included conducting an opening conference, interviewing STP staff, reviewing STP laboratory records, conducting a site visit throughout the existing STP, and a closing conference.

5. Findings & Conclusions

A. Permit Review

Sevierville's NPDES permit for the STP has an effective date of May 1, 2020, and expires on April 30, 2025. The NPDES permit lists and describes the outfall as Outfall 001 (Municipal Wastewater) to the French Broad River mile 26.75.

The NPDES permit contains Effluent Limitations and Monitoring Requirements table for Outfall 001 at the STP's current capacity of 4.8 MGD. Additional Effluent Limitations and Monitoring Requirements tables are noted in the permit for facility future STP upgrades to 8.8 MGD and 12 MGD.

B. Records and Reports

The EPA's Enforcement Compliance History Online (ECHO) shows that the STP was in Non-Compliance (NC) or Significant Non-Compliance (SNC) for effluent limit exceedances as listed:

- Chlorine Total Residual (TRC) – exceeded 3 of the last 13 quarters.
- E. coli – exceeded 6 the last 13 quarters.
- Nitrogen Ammonia Total - exceeded 8 the last 13 quarters.
- Sanitary Sewer Overflow dry weather (SSO dry weather) - exceeded 10 the last 13 quarters.
- Sanitary Sewer Overflow wet weather (SSO wet weather) - exceeded 2 the last 13 quarters.
- Solids Settleable - exceeded 4 the last 13 quarters.
- Total Suspended Solids Percent Removal - exceeded 3 the last 13 quarters.

These effluent limit violations are most heavily influenced by the increased flows coming into the STP beyond that of the permitted flow of 4.8 MGD. Normal operating flows exceed the 4.8 MGD design flow and flows during moderate rain events are as high as 12 MGD. This demonstrates the high demand placed on the system during normal operations and shows the treatment system is heavily impacted by inflow/infiltration from rainwater/snow melt intrusion. Recent Discharge Monitoring Reports (DMRs) were reviewed onsite and confirmed the effluent limit exceedances. All reviewed paperwork, including the analytical results for the January 2024 Discharge Monitoring Report (DMR) met permit required retention times and was well organized.

C. Flow Measurement

The influent pump station contains one flow meter, which read a flow of 10.7 MGD at the time of entry to the STP (8:48 AM). The effluent flow meter appeared in good condition and was displaying a flow rate of

COMPLIANCE EVALUATION INSPECTION REPORT
Sevierville (McCroskey Island) STP, Project # CV-TN0063959-030724

7.50 MGD at 11:11am. The City contracts with Custom Controls Unlimited Incorporated for calibration of influent and effluent ultrasonic flow meters. The effluent flow meter was noted to have a sticker recording the last calibration date of 04/14/22. The City subsequently supplied documentation showing a recent effluent flow meter calibration had been completed by Custom Controls Unlimited Incorporated on 9/13/23 with the next service due on 3/11/24.

D. Sampling/Laboratory

The laboratory at this facility analyzes samples for the following parameters: Flow, pH, Carbonaceous Biochemical Oxygen Demand 5-day (CBOD₅), Dissolved Oxygen (DO), E. coli, Ammonia Total, Total Suspended Solids (TSS), Chlorine Total Residual (TCR), and Settleable solids. The City contracts with Pace Analytical to analyze Total Nitrogen, IC25 Static Renewal 7 Day Chronic Ceriodaphnia (Whole Effluent Toxicity), and Total Phosphorus. The City also contracts with LabtronX Incorporated to service and calibrate onsite laboratory equipment. The following observations were made in the laboratory:

- All pH buffers were noted to be in date.
- Composite sampler was operational and set up to sample. Composite sampler was observed retrieving an effluent sample at 11:14am.
- Composite sampler was set to flow proportional and was connected to mounted ultrasonic flow meter.
- Composite sampler displayed a digital temperature reading of the attached refrigerator at 3.9° Celsius. The secondary thermometer located within the composite sampler refrigerator was observed to be 10° Celsius and was due for calibration on 03/11/2024.
- Chlorine buffers were noted to be in date and were appropriate for wastewater sampling usage.
- Black light bulbs utilized for E. coli measurements appeared to be clean and functioning properly.
- Lab supervisor's demonstration of standard laboratory method utilizing Quanti-Tray System to measure E. coli appeared appropriate.
- All equipment and glassware appeared clean.
- The following laboratory/sampling equipment was observed:
 - Hach DR3900
 - Hach HQ40d
 - Hach HQ series DO 1000
 - Quanti-Tray Sealer Plus
 - ISCO 5800 Composite Sampler

E. Site Visit (Operation and Maintenance)

A STP site visit started at the headworks and then to the oxidation ditch. The site visit continued from the oxidation ditch, through the secondary clarifiers and ended at the discharge point from the chlorine contact chamber. The STP was receiving a substantial amount of flow, with a high level of flow being noted within the oxidation ditch. The following components were observed:

- Two Andritz mechanical bar screens we noted at the headworks to be clean and operational.
- Manual secondary bar screen was noted to contain a sizable amount of debris from previous usage during a power outage that occurred 3 weeks prior (photo #1). Manual secondary bar screen was cleaned during inspection (photo #2).
- The grit and grease removal treatment unit was offline due to two blower units being inoperable.

- Oxidation ditch was noted to contain high flow levels. One paddle set was inoperable due to a bearing malfunction (photo #3). Repair to bearing had been completed but paddle was unable to be installed due to high flows within the oxidation ditch.
- Four floating aerators were noted in the oxidation ditch and had been installed to address reported ammonia violations (photo #4). These floating aerators were installed in pairs. The first set in 2020 and the second set in 2021.
- Two clarifiers were observed receiving heavy flows. Both clarifiers appeared to have heavy solids buildup within the center wells (photo #8).
- Clarifier #1 and #2 both have heavy solids and grease on surface due to high flows and the grit and grease removal treatment unit being out of service (photo #7).
- Solids from previous clarifier maintenance were noted on ground against walls of clarifiers and outside of containment (photo #5).
- Clarifier #1 was designed with a floating weir. The weir is unlevel and results in uneven discharge from clarifier #1 (photo #6).
- The chlorine contact chamber was observed with floating solids/foam on the first six cells (photo #9 and #10).
- One ISCO Signature Series ultrasonic flow meter located at the effluent discharge read 7.5 MGD at the time of observation (photo #11).
- The effluent ultrasonic flow meter's calibration sticker, located on unit, was observed to be out of date (photo #12). Updated calibration records were subsequently provided by Tonya Townsend, demonstrating calibration records were up to date. Next calibration date for effluent flow meter is 3/11/24.
- The chlorine production building appeared clean and well maintained.
- The de-chlorination building appeared well maintained. Two additional heaters were noted to ensure continued flow during lower temperatures.
- The Parshall flume appeared free of defects, however the staff gauge had considerable debris and staining (Photo #13). This debris and staining resulted in poor visibility of gauge values.
- One septic truck was observed discharging into a holding tank during the inspection. Two septic trucks total were observed entering the facility during the inspection.
- The sludge digester appeared to be well maintained. Due to facility undergoing a process of sludge thickening, aeration within digester could not be evaluated during inspection.
- The Ashbrook belt filter press was not operational due to mechanical malfunction (photo #15). The press had been offline for approximately 6 weeks, with sludge remaining under belt feed, but within containment (photo #16).
- The old aeration basin onsite was being utilized for sludge thickening (photo #14).

F. Sludge Handling

At the time of inspection, sludge was being anaerobically digested and thickened within a previously utilized aeration basin. This aeration basin and old secondary clarifiers had been replaced with a facility upgrade to the current oxidation ditch and new larger secondary clarifiers. No air was being pumped into the digester or thickening basin (old aeration basin). After thickening is completed, City of Sevierville staff haul the sludge to Sevier Solid Waste Incorporated, where it is composted. Due to the composting process, Sevier Solid Waste Incorporated will only accept one load of sludge from the STP daily. Additional loads are sent to GFL Environmental Landfill located in Morristown for disposal. The STP generally hauls two loads a day for disposal.

According to the Operator, the standard sludge disposal process is to aerobically digest it and dewater it by the Ashbrook belt filter press and then landfill it. At the time of inspection, the belt filter press was nonoperational. The Operator stated the belt filter press had been nonoperational for approximately six weeks.

G. Effluent/Receiving Water

The effluent from Outfall 001 appeared to be clear and void of solids. The receiving waterbody (French Broad River) was not readily accessible and not observed. This was due to Outfall 001 being positioned within the center of the river through a diffuser.

6. Discussion

The Sevierville (McCroskey Island) STP is operating under tremendous stress from flows exceeding the permitted design of 4.8 MGD. This stress is compounded by nonoperational equipment units and appears to be limiting equipment repair due to safety concerns of high flows within treatment areas. It is noted that the City has a construction project underway to increase the facility's current capacity to 8.8 MGD as well as a sewer rehab project on the main interceptor to the STP to eliminate an estimated 700,000 to 1 million gallons of infiltration. However current levels of flow could render the 8.8 MGD facility outside of design capacity even after completion of the current upgrades and sewer rehabilitation.

END OF REPORT

Appendix A: Photographic Log

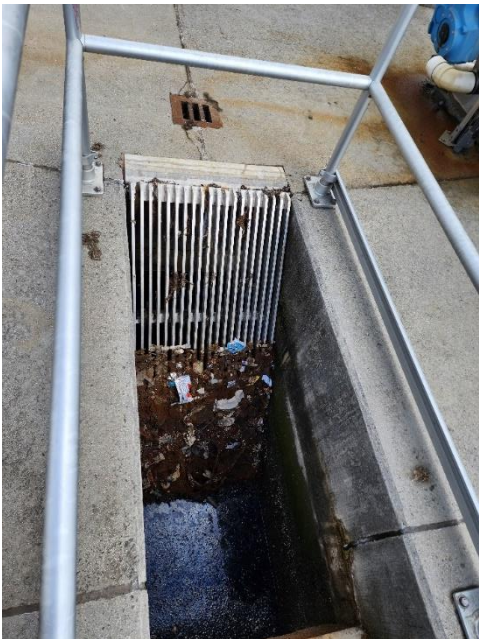


Photo 1: Secondary manual bar screen.



Photo 2: Secondary manual bar screen after cleaning.



Photo 3: Oxidation ditch paddles missing/out of service. Photo 4: Floating aerators in oxidation ditch.



Photo 5: Solids on ground between clarifiers.



Photo 6: Unlevel floating weir in clarifier #1.



Photo 7: Floating grease and duckweed on clarifier #1.



Photo 8: Center well of clarifier #1 full of solids.



Photo 9: Floating sludge/foam in chlorine contact chamber front section.



Photo 10: chlorine contact chamber full view.



Photo 11: Effluent flow meter reading 7.5MGD.



Photo 12: Effluent flow meter calibration sticker.



Photo 13: 3-foot parshall flume staff gauge.



Photo 14: Sludge thickening in old aeration basin.



Photo 15: Belt press out of service.



Photo 16: Sludge under belt press.