



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

ATLANTA FEDERAL CENTER  
61 FORSYTH STREET  
ATLANTA, GEORGIA 30303-8960

MAR 30 2020

CERTIFIED MAIL

RETURN RECEIPT REQUESTED

The Honorable Chokwe A. Lumumba  
Mayor of City of Jackson  
219 South President Street  
Jackson, Mississippi 39205

Re: Safe Drinking Water Act Compliance Investigation  
Public Water System: City of Jackson Public Water System  
PWS ID Number: MS0250008

Dear Mayor Lumumba:

On February 3-7, 2020, the U.S. Environmental Protection Agency's National Enforcement Investigations Center conducted a Safe Drinking Water Act (SDWA) compliance inspection of the City of Jackson Public Water System. Enclosed you will find the report prepared by inspectors from the NEIC. Attachments to the report are available upon request.

The EPA would like to thank the City of Jackson and its staff for their time and assistance in completing the inspection. We encourage you to continue to meet regularly with all members of your system and work cooperatively to address important drinking water issues that affect all served by this public water system.

Please continue to comply with Emergency Administrative Order SDWA-02-2020-2300. If you have any questions or need assistance, you may contact Amanda Driskell at (404) 562-9735 or [driskell.amanda@epa.gov](mailto:driskell.amanda@epa.gov).

Sincerely,

**JAIRO  
CASTILLO**

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Jairo Castillo  
Chief, Drinking Water and Wastewater Section  
Water Enforcement Branch

Enclosure

cc: Robert K Miller, Director, City of Jackson Department of Public Works  
Lester Herrington, Director of Office of Environmental Health, MSDH





United States Environmental Protection Agency  
Office of Enforcement and Compliance Assurance  
Office of Criminal Enforcement, Forensics and Training

National Enforcement Investigations Center

NEIC

**NEICVP1369E01**

**NEIC CIVIL INVESTIGATION REPORT**  
**City of Jackson Water System**  
Jackson, Mississippi 39201

**Investigation Dates:**  
February 3-7, 2020

**TRENT  
RAINEY**

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Trent Rainey, Project Manager, NEIC

**Authorized for Release by:**

**REBECCA  
CONNELL**

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ou=Environmental Protection Agency,  
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Rebecca Connell, Field Branch Chief, NEIC

**Report Prepared for:**

EPA Region 4  
Sam Nunn Atlanta Federal Center  
61 Forsyth Street SW  
Atlanta, Georgia 30303

NATIONAL ENFORCEMENT INVESTIGATIONS CENTER

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## CONTENTS

INVESTIGATION OVERVIEW .....	3
PROJECT OBJECTIVE .....	3
FACILITY CONTACT INFORMATION .....	3
FACILITY OVERVIEW .....	3
FACILITY OPERATIONS SUMMARY .....	4
FIELD ACTIVITIES SUMMARY .....	5
INVESTIGATION OBSERVATIONS.....	7

## TABLES

Table 1. PROJECT TEAM MEMBERS .....	3
Table 2. FACILITY CONTACT INFORMATION .....	3

## APPENDICES

A	NEIC Inspection Photographs (36 pages)
B	Attendance Lists from Meetings with the City of Jackson (2 pages)
C	February 12, 2016, Compliance Plan Issued by MSDH (2 pages)
D	Lead and Copper Monitoring Results from 2015-2019 (901 pages)
E	City of Jackson Customer Sampling Procedure Documents (1 page)
F-1	2016 Monthly Operating Reports (221 pages)
F-2	2017 Monthly Operating Reports (223 pages)
F-3	2018 Monthly Operating Reports (225 pages)
F-4	2019 Monthly Operating Reports (273 pages)
F-5	January and February 2020 Monthly Operating Reports (52 pages)
G	January 29, 2020, Treatment Technique Violation Issued by MSDH (11 pages)
H	Consumer Notices Provided by the City of Jackson (4 pages)
I	January 24, 2020, MSDH Priority Review Final Report (56 pages)
J	City of Jackson Consumer Confidence Reports 2016-2019 (14 pages)
K	2017 and 2019 Sanitary Surveys for the City of Jackson (20 pages)
L	Groundwater Treatment Technique Violation Letter from MSDH, May 12, 2017 (1 page)

**This Contents page shows all the sections contained in this report  
and provides a clear indication of the end of this report.**

## INVESTIGATION OVERVIEW

### PROJECT OBJECTIVE

At the request of U.S. Environmental Protection Agency (EPA) Region 4 (Region), EPA's National Enforcement Investigations Center (NEIC) conducted a Safe Drinking Water Act (SDWA) compliance investigation of the city of Jackson, Mississippi, public water system (PWS). The investigation assessed the PWS's compliance with the Lead and Copper Rule (LCR) found in 40 Code of Federal Regulations (CFR) Part 141, Subpart I, §141.80 – 91. This investigation was also conducted as part of EPA's National Compliance Initiative to Reduce Noncompliance with Drinking Water Standards at Community Water Systems.

NEIC accomplished the investigation objective by conducting a review of historical compliance data and conducting an on-site inspection of the PWS. The on-site inspection focused on a technical evaluation of the current operational status of the systems, including capital improvements and operational changes that had been implemented as a result of the system's violations of the LCR. The violations began in 2015.

The project team members are listed in **Table 1**.

Table 1. PROJECT TEAM MEMBERS		
Team Member	Organization	Project Role
Trent Rainey	NEIC	Project manager (PM)
Hannah Branning	NEIC	Field team member
David Parker	NEIC	Field team member
Daren Vanlerberghe	NEIC	Field team member
Kara Sinon	EPA Region 2	Field team member, under direction of Trent Rainey

### FACILITY CONTACT INFORMATION

**Table 2** lists the primary facility contacts.

Table 2. FACILITY CONTACT INFORMATION		
Name, Title	Phone No.	Email Address
Robert K. Miller, Director of Public Works	(601) 960-0290	rmiller@jacksonms.gov
Charles Williams Jr., City Engineer	(601) 960-1651	cwilliams@jacksonms.gov
Mary D. Carter, Deputy Director of Public Works	(601) 960-2090	mdcarter@jacksonms.gov
Terence Byrd, Operations Supervisor	(601) 213-8572	tbyrd@jacksonms.gov

### FACILITY OVERVIEW

The city of Jackson is the capital of the state of Mississippi and is located on the Pearl River. The city has a population of 164,422, according to the most recent United States census estimates. The PWS operates under North American Industry Classification System (NAICS)

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code 221310 (drinking water treatment). The city's public works department operates the PWS and provides water and wastewater services for its citizens. The Mississippi State Department of Health (MSDH) administers the Public Water Supply Supervision Program in Mississippi and has been granted primary enforcement responsibility (i.e., primacy) for the LCR.

## **FACILITY OPERATIONS SUMMARY**

The PWS operates two surface water treatment plants (WTPs). The WTPs serve designated portions of the overall distribution systems but can service a portion of each other's systems if necessary.

The O.B. Curtis WTP, located at 100 O B Curtis Drive, Ridgeland, Mississippi, is a 50 million gallon per day (mgd), two-train system. Half of the WTP's treatment capacity is provided by a conventional treatment plant and the other half by a membrane filtration treatment system. Raw water is sourced from the Ross Barnett Reservoir, which is fed by the Pearl River. The intake structure draws water from the reservoir through steel bar screens. Intake water may be dosed with potassium permanganate as needed to reduce manganese. Water from the intake structure travels approximately 0.8 miles through two parallel 60-inch lines to the plant headworks.

At the headworks, the raw water is discharged into a wet well. Water from the wet well passes through two travelling 1-millimeter sieve screens. Screened water is discharged into two wet wells. Potassium permanganate is continuously fed into the wet wells for manganese reduction. Screened water from the wet wells is pumped to two parallel pre-oxidation tanks, which mark the separation of the treatment system into two trains (or systems). The pre-oxidation tank serving the conventional treatment system is uncovered, while the tank serving the membrane system is covered.

Water entering the conventional pre-oxidation system is dosed with aluminum chlorohydrate (ACH) and a polymer in a flash mix tank. Two soda ash tanks were constructed in late 2019 to inject soda ash into the flash tank. The flash mix tank discharges, in turn, to a three-stage flocculation tank (fast, medium, and slow speeds on the mixers). From the slow mix flocculation stage, the water discharges to three rectangular sedimentation tanks (or basins). Solids from the sedimentation basins are designed to be removed by an automatic sludge removal system. Effluent from the sedimentation tanks is further treated in 12 rapid sand filters to reduce turbidity and solids. Backwash of the filters is manually controlled, and performed on an elapsed-time basis, rather than on a head-loss basis. The duration of the back-wash cycle is based on effluent turbidity but is typically 20 minutes. The filtered water is disinfected with ultra-violet (UV) lamps and discharged from the UV reactors to a clear well.

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The disinfection residual is maintained with chloramines, and the water is fluorinated before it is discharged to the distribution system.

Water from the pre-oxidation membrane system is dosed with ACH in a flash mix tank, mixed in a flocculation tank, and then passed into the ultrafiltration tank, where the water is filtered through submerged ultrafiltration membranes. An air sparging system is used to keep the filters clear of attached solids and floc. Air sparging is activated approximately every 30 seconds. Filtered water is disinfected with in-line UV lamps, and the chlorine residual is maintained with chloramines. The ultrafiltration water is stored in a clear well separate from the conventional treatment train. Water from both clear wells is combined into a common header before it is discharged to the distribution system. Membrane integrity tests are conducted routinely; chemical cleaning of the membranes occurs as needed to remove fouling that is not controlled by air sparging.

The J.H. Fewell WTP is located at 2303 Laurel Street, Jackson, Mississippi. It is a 25 mgd conventional treatment plant that began operations in 1914. Significant portions of the original plant have been decommissioned but are still present on-site. Raw water is sourced at an intake structure on the Pearl River. Chemical addition at two flash mixers consists of aluminum sulfate (alum), a polymer for flocculation, and hydrated lime for pH adjustment. The flow is then divided between two separate treatment trains. Each train consists of a slow mix flocculator, then solids are settled in a rectangular sedimentation tank. The sedimentation tanks are designed with an automated solids removal system. Filtration is accomplished through 18 rapid sand filters that are manually backwashed on a set schedule. Filtered water is disinfected with in-line UV lamps and stored in two on-site clear well storage tanks. Chlorine dioxide is generated on-site and applied as needed for manganese reduction and taste and odor control. Flouride and chloramines are injected into the water before it reaches the clear wells.

In addition to the WTPs, Jackson operates a system of groundwater wells that predominantly serve the southern portion of the city. Nine wells are listed as part of the system. Three of the wells are listed as inactive. Each well uses gaseous chlorine injection for disinfection and sodium flouride for fluoridation. The well system was removed from service in 2014 in order to provide treated surface water to the southern portion of Jackson. However, the wells were brought back online in July 2015 as a result of distribution systems issues.

## **FIELD ACTIVITIES SUMMARY**

NEIC conducted the on-site inspection from February 3-7, 2020. The NEIC inspection team consisted of Trent Rainey, Hannah Branning, David Parker, and Daren Vanlerberghe. Amanda Driskell, Araceli Chavez, and Rebecca Quinones from EPA Region 4, and Kara Sinon from EPA Region 2 also participated in the inspection. Les Harrington, William Moody, Karen Walters,

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Amy McLeod, Hunter Ladner, Jeffrey Estridge, Charles Schultz, and Thomas Long from MSDH were also present during the inspection. Photographs taken by NEIC during the inspection are found in **Appendix A**.

On February 3, 2020, NEIC inspectors conducted an opening meeting and presented credentials to Mr. Robert Miller, director of public works for the city of Jackson. On February 7, 2020, NEIC inspectors conducted a closing meeting with the PWS and MSDH. Lists of the meeting attendees are found in **Appendix B**.

NEIC assessed the city of Jackson's compliance with the LCR. The assessment included detailed discussions and field observations of the intakes, WTPs, wells, storage facilities, and the distribution system. The assessment also included a review of records, including system maps, monitoring records (both process control and compliance monitoring), engineering evaluations, and steps that the facility has taken and plans to take to comply with the LCR.

NEIC review of compliance monitoring data and discussions with MSDH officials and city of Jackson representatives revealed that lead action level exceedances (ALE) of the LCR had occurred in in three consecutive monitoring periods in 2015 and 2016. Since that time, treatment technique violations of the LCR also have occurred as the city failed to comply with its optimal water quality parameters.

In response to these LCR violations, MSDH issued a compliance plan to the city of Jackson on February 12, 2016, requiring improvements to be completed by December 29, 2019, to address the LCR violations. The compliance plan is found in **Appendix C**.



## INVESTIGATION OBSERVATIONS

NEIC made the following observations during the SDWA compliance inspection of the city of Jackson, Mississippi, PWS. NEIC field team members discussed all observations with facility representatives during the closeout meeting, unless otherwise noted in the observation description below.

These observations are not final compliance determinations. EPA Region 4 will make the final compliance determinations based on its review of this inspection report and other technical, regulatory, and facility information.

### **Observation: 1**

**Observation Summary:** The city of Jackson failed to fully implement lead and copper tap water monitoring requirements, including materials evaluation conditions and sample collection procedures.

#### **Citation:**

#### **40 CFR § 141.86(a) – Monitoring requirements for lead and copper in tap water**

*(a) Sample site location. (1) By the applicable date for commencement of monitoring under paragraph (d)(1) of this section, each water system shall complete a materials evaluation of its distribution system in order to identify a pool of targeted sampling sites that meets the requirements of this section, and which is sufficiently large to ensure that the water system can collect the number of lead and copper tap samples required in paragraph (c) of this section. All sites from which first draw samples are collected shall be selected from this pool of targeted sampling sites. Sampling sites may not include faucets that have point-of-use or point-of-entry treatment devices designed to remove inorganic contaminants.*

*(2) A water system shall use the information on lead, copper, and galvanized steel that it is required to collect under § 141.42(d) of this part [special monitoring for corrosivity characteristics] when conducting a materials evaluation. When an evaluation of the information collected pursuant to § 141.42(d) is insufficient to locate the requisite number of lead and copper sampling sites that meet the targeting criteria in paragraph (a) of this section, the water system shall review the sources of information listed below in order to identify a sufficient number of sampling sites. In addition, the system shall seek to collect such information where possible in the course of its normal operations (e.g., checking service line materials when reading water meters or performing maintenance activities):*

*(i) All plumbing codes, permits, and records in the files of the building department(s) which indicate the plumbing materials that are installed within publicly and privately-owned structures connected to the distribution system;*

*(ii) All inspections and records of the distribution system that indicate the material composition of the service connections that connect a structure to the distribution system; and*

*(iii) All existing water quality information, which includes the results of all prior analyses of the system or individual structures connected to the system, indicating locations that may be particularly susceptible to high lead or copper concentrations.*

**Observation: 1**

*(b) Sample collection methods. (1) All tap samples for lead and copper collected in accordance with this subpart, with the exception of lead service line samples collected under § 141.84(c) and samples collected under paragraph (b)(5) of this section, shall be first-draw samples.*

*(2) Each first-draw tap sample for lead and copper shall be one liter in volume and have stood motionless in the plumbing system of each sampling site for at least six hours. First-draw samples from residential housing shall be collected from the cold-water kitchen tap or bathroom sink tap. First-draw samples from a nonresidential building shall be one liter in volume and shall be collected at an interior tap from which water is typically drawn for consumption. Non-first-draw samples collected in lieu of first-draw samples pursuant to paragraph (b)(5) of this section shall be one liter in volume and shall be collected at an interior tap from which water is typically drawn for consumption. First-draw samples may be collected by the system or the system may allow residents to collect first-draw samples after instructing the residents of the sampling procedures specified in this paragraph. To avoid problems of residents handling nitric acid, acidification of first-draw samples may be done up to 14 days after the sample is collected. After acidification to resolubilize the metals, the sample must stand in the original container for the time specified in the approved EPA method before the sample can be analyzed. If a system allows residents to perform sampling, the system may not challenge, based on alleged errors in sample collection, the accuracy of sampling results.*

*(c) Number of samples. Water systems shall collect at least one sample during each monitoring period specified in paragraph (d) of this section from the number of sites listed in the first column ("standard monitoring") of the table in this paragraph. A system conducting reduced monitoring under paragraph (d)(4) of this section shall collect at least one sample from the number of sites specified in the second column ("reduced monitoring") of the table in this paragraph during each monitoring period specified in paragraph (d)(4) of this section. Such reduced monitoring sites shall be representative of the sites required for standard monitoring. A public water system that has fewer than five drinking water taps, that can be used for human consumption meeting the sample site criteria of paragraph (a) of this section to reach the required number of sample sites listed in paragraph (c) of this section, must collect at least one sample from each tap and then must collect additional samples from those taps on different days during the monitoring period to meet the required number of sites. Alternatively the State may allow these public water systems to collect a number of samples less than the number of sites specified in paragraph (c) of this section, provided that 100 percent of all taps that can be used for human consumption are sampled. The State must approve this reduction of the minimum number of samples in writing based on a request from the system or onsite verification by the State. States may specify sampling locations when a system is conducting reduced monitoring. The table is as follows:*

System size (number of people served)	Number of sites (standard monitoring)	Number of sites (reduced monitoring)
> 100,000	100	50
10,001 to 100,000	60	30
3,301 to 10,000	40	20
501 to 3,300	20	10
101 to 500	10	5
≤ 100	5	5

**Observation: 1****(d) Timing of monitoring -**

*(1) Initial tap sampling. The first six-month monitoring period for small, medium-size and large systems shall begin on the following dates:*

System size (No. people served)	First six-month monitoring period begins on
>50,000	January 1, 1992.
3,301 to 50,000	July 1, 1992.
≤3,300	July 1, 1993.

*(i) All large systems shall monitor during two consecutive six-month periods.*

*(ii) All small and medium-size systems shall monitor during each six-month monitoring period until:*

*(A) The system exceeds the lead or copper action level and is therefore required to implement the corrosion control treatment requirements under § 141.81, in which case the system shall continue monitoring in accordance with paragraph (d)(2) of this section, or*

*(B) The system meets the lead and copper action levels during two consecutive six-month monitoring periods, in which case the system may reduce monitoring in accordance with paragraph (d)(4) of this section.*

**Evidence:**

Lead and copper monitoring results from 2015-2019 (**Appendix D**)

Inspector observations of files provided by the city of Jackson

Interviews with city of Jackson staff

City of Jackson customer sampling procedure documents (**Appendix E**)

**Description of Observation:**

- The city of Jackson did not complete a materials evaluation of its distribution system by January 1, 1992, in order to identify a pool of targeted sampling sites. This evaluation, which was required to have been submitted 28 years ago, should have been used to identify lead and copper regulatory compliance monitoring sites.
- The city of Jackson does not maintain a current inventory of distribution system materials and does not collect or document materials information in the course of normal operations. Inspectors were not able to verify tiering information utilized in the lead and copper sampling plan.
- The city of Jackson failed to provide evidence that samples sat motionless for at least 6 hours. Customer sampling procedure forms document this finding. In addition, several customer sampling procedure documents could not be linked to sample sites (i.e., they did not have an address or sample identification number).
- Duplicate samples were collected from the same site in the same compliance period and used to meet the required minimum number of samples. EPA inspectors observed this in monitoring data collected in October 2017, October 2018, April 2019, and October 2019. The city of Jackson is required to collect 100 samples every 6 months. Per the sampling plan, the city of Jackson had identified over 300 sampling sites.

**Observation: 1**

- Not all sample results provided by the city of Jackson and reviewed by EPA inspectors were from sites or locations listed on the approved lead and copper sampling plan. EPA inspectors observed this in monitoring data collected in May 2017, October 2017, April 2018, October 2018, April 2019, and October 2019. Sample sites change from monitoring period to monitoring period with no documentation. There was evidence that some records may have been kept that explained these changes, but not all records were available and no system is in place to document this information.
- At times, city of Jackson staff filled in missing information on customer sample collection forms (e.g., added a.m. or p.m. to the time). EPA inspectors observed this on the "Site 181 Homeowner Lead/Copper Sample Collection" form from April 2018.
- During the April 2019 compliance monitoring period, some samples were not taken to the state laboratory for analysis. EPA inspectors documented that sample collection forms were retained for sites 12 and 181 and that no corresponding laboratory results were reported for these sites.
- Sample result forms contain data errors such as incorrect sample collection date, incorrect site numbers, and incorrect addresses. This observation was determined by MSDH to be data entry error by MSDH staff as they received sample results from the state laboratory. EPA inspectors observed this in the October 2018 sampling data. EPA inspectors discussed this observation with MSDH staff while on-site, and MSDH invalidated two compliance samples from this monitoring period, issued corrections to the sampling data, and recalculated the 90<sup>th</sup> percentiles for lead and copper.

**Observation: 2**

**Observation Summary:** The city of Jackson failed to provide documentation regarding the change in source from groundwater to surface water, and associated disinfection differences, in October 2014.

The city of Jackson has not been able to consistently meet optimal water quality parameters for the water exiting the O.B. Curtis or J.H. Fewell WTPs.

**Citation:****40 CFR § 141.90(a)(3) – Reporting Requirements**

*At a time specified by the State, or if no specific time is designated by the State, then as early as possible prior to the addition of a new source or any long-term change in water treatment, a water system deemed to have optimized corrosion control under § 141.81(b)(3), a water system subject to reduced monitoring pursuant to § 141.86(d)(4), or a water system subject to a monitoring waiver pursuant to § 141.86(g), shall submit written documentation to the State describing the change or addition. The State must review and approve the addition of a new source or long-term change in treatment before it is implemented by the water system. Examples of long-term treatment changes include the addition of a new treatment process or modification of an existing treatment process. Examples of modifications include switching secondary disinfectants, switching coagulants (e.g., alum to ferric chloride), and switching corrosion inhibitor products (e.g., orthophosphate to blended phosphate). Long-term changes can include dose changes to existing chemicals if the system is planning long-term changes to its finished water pH or residual inhibitor concentration.*

**Observation: 2**

*Long-term treatment changes would not include chemical dose fluctuations associated with daily raw water quality changes.*

**40 CFR § 141.82(g) Continued operation and monitoring** – all systems optimizing corrosion control shall continue to operate and maintain optimal corrosion control treatment, including maintaining water quality parameters at or above minimum values or within ranges designated by the State under paragraph (f) of this section, in accordance with this paragraph for all samples collected under § 141.87(d) through (f). Compliance with the requirements of this paragraph shall be determined every six months, as specified under § 141.87(d). A water system is out of compliance with the requirements of this paragraph for a six-month period if it has excursions for any State-specified parameter on more than nine days during the period. An excursion occurs whenever the daily value for one or more of the water quality parameters measured at a sampling location is below the minimum value or outside the range designated by the State. Daily values are calculated as follows. States have discretion to delete results of obvious sampling errors from this calculation.

**Evidence:**

Inspector observations of files provided by the city of Jackson

Interview with MSDH staff

City of Jackson monthly operating reports (MORs) for 2016 through 2019 (**Appendices F-1 to F-4**)

February 12, 2016, compliance plan issued by MSDH (**Appendix C**)

January 29, 2020, treatment technique violation issued by MSDH (**Appendix G**)

**Description of Observation:**

In October 2014, the city of Jackson's water source and treatment changed. The city replaced the groundwater system water with surface water from the O.B. Curtis WTP, following the completion of the 5 million-gallon (MG) booster station on TV Road. The groundwater system used gaseous chlorine to disinfect the water; the surface water system used chloramines. This was anticipated to be a long-term change. EPA inspectors observed that, prior to the source and treatment change, no evidence was provided by the city of Jackson or MSDH that a corrosion control treatment (CCT) study or water quality evaluation had been completed. The city of Jackson did not make a formal request to MSDH to change its source from groundwater to surface water.

In June 2015, the city of Jackson exceeded the lead action level. MSDH did not notify the city of Jackson of the exceedance until January 2016. The lead ALE no longer allowed the city of Jackson to be on reduced monitoring for lead and copper. The city of Jackson was now required to sample at 100 sites every 6 months, as required under standard lead and copper monitoring.

In July 2015, due to some water treatment plant and distribution issues, the 5 MG tank at the TV Road booster station was not able to fill and provide water to the area previously served by the groundwater wells. To keep all residents supplied with water, the city, via an email to MSDH, requested to turn its wells back on. The TV Road booster station and tank have not been used since groundwater production resumed in July 2015.

In February 2016, the city of Jackson exceeded the lead action level.

**Observation: 2**

On February 12, 2016, MSDH issued a compliance plan to the city of Jackson. Among other things, the compliance plan stated that, "until such time as a completed plan for the optimization of water treatment for the City of Jackson can be developed... must ensure functional treatment of water in the current system to maintain a constant pH of at least 8.5 and alkalinity between 50 mg/L and 70 mg/L." MSDH did not enter the water quality parameter violation that occurred during the January-June 2016 monitoring period into the Safe Drinking Water Information System (SDWIS) until November 2018. EPA inspectors observed that the city of Jackson did not meet the required water quality parameters at both the O.B. Curtis and J.H. Fewell WTPs for three consecutive 6-month monitoring periods (July-December 2016, January-June 2017, and July-December 2017). Public notice was not provided for each of these instances. MSDH has not entered any of the violations into SDWIS.

In August 2016, the city of Jackson exceeded the lead action level.

On December 29, 2017, MSDH issued a letter to city of Jackson, responding to the city's "Optimal Corrosion Control Treatment" (OCCT) desktop study dated July 1, 2016. The letter concurred with the recommended pH range and approved the pH adjustment recommendations, specifically the switch from lime to soda ash. MSDH established a deadline of May 31, 2019, for the city to complete the backup pH adjustment system at the O.B. Curtis WTP (understood primary system already in place) and to construct similar facilities at the J.H. Fewell WTP. MSDH was to designate optimal water quality parameters (OWQPs), based on the OCCT report, to monitor the effectiveness of the installed treatment, even as some elements of the new process have yet to be installed:

Entry-point pH: > 9.0.

Distribution system pH: > 8.6

Alkalinity: >25 milligrams per liter (mg/L)

Dissolved inorganic carbon (DIC): 5-10 mg/L

On June 27, 2018, the city of Jackson requested an extension to the MSDH compliance plan for installing corrosion control treatment. Specifically, the city of Jackson requested to extend the O.B. Curtis WTP deadline from May 2019 to November 2019, and improvements at the J.H. Fewell WTP to December 2019.

On August 13, 2019, MSDH granted the city of Jackson the requested extensions for both WTP compliance plans. MSDH also responded to the city of Jackson's request to modify the designated OWQPs, stating that any deviations to what was previously set must be supported by an amended corrosion control study.

On December 18, 2019, MSDH confirmed in a letter to the PWS that a final inspection for improvements at the O.B. Curtis WTP took place on November 15, 2019. MSDH stated that it anticipated noncompliance with the December 30, 2019, deadline at the J.H. Fewell WTP.



**Observation: 2**

On January 29, 2020, MSDH issued a treatment technique (TT) violation to the city of Jackson for its failure to install corrosion control treatment, as required in the compliance plan, at the J. H. Fewell WTP.

The city of Jackson has not been able to consistently meet water quality parameters for water exiting the O.B. Curtis or J.H. Fewell WTPs. The January 29, 2020, MSDH TT violation also cited this failure to meet water quality parameter minimum values.

EPA inspectors noted that MSDH designated no OWQPs prior to the June 2015 lead ALE.

**Observation: 3**

**Observation Summary:** The city of Jackson failed to conduct required public education tasks and failed to provide required consumer notifications related to lead action level exceedances.

**Citation:**

**40 CFR § 141.86(d)(iv) Timing of monitoring** – *any water system on a reduced monitoring schedule for lead and copper tap samples must collect the samples during the period of June 1 through September 30 and report the results to the state by October 10 of that year, unless the state has approved a different sampling period in accordance with 40 CFR 141.86(d)(4)(iv)(A).*

**40 CFR § 141.85(b)(2) Delivery of public education materials** – *A community water system that exceeds the lead action level on the basis of tap water samples collected in accordance with § 141.86, and that is not already conducting public education tasks under this section, must conduct public education tasks under this section within 60 days after the end of the monitoring period in which the exceedance occurred.*

**40 CFR § 141.90(f)(3) Reporting requirements** – *no later than three months following the end of the monitoring period, each system must mail a sample copy of the consumer notification of tap results to the State along with a certification that the notification has been distributed in a manner consistent with the requirements of 40 C.F.R. § 141.85(d).*

**Evidence:**

Inspector observations

Lead and copper monitoring results from 2015-2019 (**Appendix D**)

Consumer notices provided by the city of Jackson and MSDH (**Appendix H**)

EPA Region 4 MSDH Priority Review Final Report dated March 28, 2018 (final report dated January 24, 2020) (**Appendix I**)

**Description of Observation:**

- EPA inspectors confirmed the previously documented finding regarding late reporting and notification of lead results from MSDH to the city of Jackson following the 2015 lead ALE, and the associated delayed public education by the city of Jackson.
- The city of Jackson failed to provide the consumer notice certification forms for the second half of 2017 and the second half of 2018.
- A review of the consumer notice certifications provided by the city of Jackson showed that, for the first half 2016, the certification form was filled out, signed, and dated that consumer notices were distributed in February 2016, before the date the last sample result was analyzed for that period in March 2016.

**Observation: 3**

- EPA inspectors discovered customer complaints on the “Homeowner Lead/Copper Sample Collection” forms from sampling conducted in October 2018 that they were not being notified of the lead and copper sampling results. A note on a form from an unnumbered site read “we never receive any explanation about the water – no one tells us if we have lead or not!”

**Observation: 4**

**Observation Summary:** The city of Jackson has not implemented a lead service line replacement program and has not completed a materials evaluation to identify potential lead service lines

**Citation:**

**40 CFR § 141.84 Lead service line replacement requirements – (a)** Systems that fail to meet the lead action level in tap samples taken pursuant to § 141.86(d)(2), after installing corrosion control and/or source water treatment (whichever sampling occurs later), shall replace lead service lines in accordance with the requirements of this section. If a system is in violation of § 141.81 or § 141.83 for failure to install source water or corrosion control treatment, the State may require the system to commence lead service line replacement under this section after the date by which the system was required to conduct monitoring under § 141.86(d)(2) has passed. **(b)(1)** A water system shall replace annually at least 7 percent of the initial number of lead service lines in its distribution system. The initial number of lead service lines is the number of lead lines in place at the time the replacement program begins. The system shall identify the initial number of lead service lines in its distribution system, including an identification of the portion(s) owned by the system, based on a materials evaluation, including the evaluation required under § 141.86(a) and relevant legal authorities (e.g., contracts, local ordinances) regarding the portion owned by the system. The first year of lead service line replacement shall begin on the first day following the end of the monitoring period in which the action level was exceeded under paragraph (a) of this section. If monitoring is required annually or less frequently, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs. If the State has established an alternate monitoring period, then the end of the monitoring period will be the last day of that period.

**Evidence:**

Interview with William Miley, city of Jackson water/sewer utilities manager  
Inspector observations

**Description of Observation:**

The city of Jackson has not implemented a lead service line replacement program following the initial (June 2015) lead ALE.

The city of Jackson has not completed a materials evaluation to identify potential lead service lines, which was required when the Lead and Copper Rule was promulgated in 1991.

**Observation: 5**

**Observation Summary:** The city of Jackson did not provide lead and copper results for both monitoring periods in its consumer confidence reports for the years 2016 or 2018.



**Observation: 5****Citation:**

**40 CFR § 141.153(vi) – Content of the reports** – each community water system must provide to its customers an annual report that contains specific information, including lead and copper 90<sup>th</sup> percentile values from the most recent round of lead and copper sampling and the number of sampling sites that exceeded the action level.

**Evidence:**

City of Jackson consumer confidence reports 2016-2019 (**Appendix J**)

**Description of Observation:**

The city of Jackson did not provide lead and copper results for both monitoring periods in its consumer confidence reports for the years 2016 or 2018.

**Observation: 6**

**Observation Summary:** Turbidity exceedances were reported at both the O.B. Curtis and J.H. Fewell WTPs in the January 2020 MOR. The O.B. Curtis WTP MOR also reported no individual filter turbidity exceedances for January 2020, even though the continuous turbidity monitoring equipment at that plant was reported to give inaccurate readings because it had not been calibrated and maintained in approximately 3 years.

**Citation:**

**40 CFR § 141.173 – Filtration.** A public water system subject to the requirements of this subpart that does not meet all of the criteria in this subpart and subpart H of this part for avoiding filtration must provide treatment consisting of both disinfection, as specified in § 141.72(b), and filtration treatment which complies with the requirements of paragraph (a) or (b) of this section or § 141.73 (b) or (c) by December 31, 2001.

(a) Conventional filtration treatment or direct filtration.

(1) For systems using conventional filtration or direct filtration, the turbidity level of representative samples of a system's filtered water must be less than or equal to 0.3 NTU in at least 95 percent of the measurements taken each month, measured as specified in § 141.74(a) and (c).

(2) The turbidity level of representative samples of a system's filtered water must at no time exceed 1 NTU, measured as specified in § 141.74(a) and (c).

**40 CFR § 141.174 – Filtration sampling requirements.**

(a) Monitoring requirements for systems using filtration treatment. In addition to monitoring required by § 141.74, a public water system subject to the requirements of this subpart that provides conventional filtration treatment or direct filtration must conduct continuous monitoring of turbidity for each individual filter using an approved method in § 141.74(a) and must calibrate turbidimeters using the procedure specified by the manufacturer. Systems must record the results of individual filter monitoring every 15 minutes.

(b) If there is a failure in the continuous turbidity monitoring equipment, the system must conduct grab sampling every four hours in lieu of continuous monitoring, but for no more than five working days following the failure of the equipment.

**Observation: 6****Evidence:**

City of Jackson water system January and February 2020 MORs (**Appendix F-5**)  
Conversations with WTP operators, supervisors, and maintenance staff

**Description of Observation:**

In January 2020, the city of Jackson reported in its MOR that multiple turbidity exceedances had occurred at the O.B. Curtis and J.H. Fewell WTPs. Finished water turbidity reached 1.35 Nephelometric Turbidity Units (NTU) at the O.B. Curtis WTP and 3.00 NTU at the J.H. Fewell WTP. Turbidities exceeding 1.0 NTU were reported on 1 day at the O.B. Curtis WTP and on 3 days at the J.H. Fewell WTP. Also, the O.B. Curtis WTP reported that 93.5 percent of turbidity samples were equal to or less than the turbidity limit of 0.3 NTU. The city reported, in item 3 of the O.B. Curtis WTP MOR, that no filters had exceeded 0.5 NTU in two consecutive readings taken 15 minutes apart after the first 4 hours of operation. The city reported, in item 4 of the O.B. Curtis WTP MOR, that no filters had exceeded 1.0 NTU in two consecutive readings taken 15 minutes apart in 3 consecutive months. Inspectors learned that the continuous turbidity monitoring equipment at the O.B. Curtis WTP has read inaccurately for approximately 3 years due to a lack of calibration and maintenance, and that turbidity samples were taken during this time period at a frequency of once per shift, for a total of 3 times per day.

In February 2020, the city of Jackson reported in its MOR that multiple turbidity exceedances had occurred at the O.B. Curtis WTP. Finished water turbidity was reported to have reached 1.55 NTU for the membrane-treated water at the O.B. Curtis WTP. Turbidities exceeding 1.0 NTU were reported on 1 day at the O.B. Curtis WTP. Based on information provided in the MOR, the continuous turbidity monitoring equipment at the O.B. Curtis WTP was calibrated on February 28, 2020.

*This observation was not discussed at the close-out meeting since it was discovered once the MORs were submitted after the on-site inspection ended.*

**Observation: 7**

**Observation Summary:** Disinfection issues were found at both the O.B. Curtis and J.H. Fewell WTPs. Maximum residual disinfectant levels (MRDLs) for chloramines were exceeded at both plants. UV disinfection devices were found to be offline for significant periods of time at both plants.

**Citation:**

**40 CFR § 141.65 – Maximum residual disinfectant levels.** (a) Maximum residual disinfectant levels (MRDLs) are as follows:

Disinfectant residual	MRDL (mg/L)
Chlorine .....	4.0 (as Cl <sub>2</sub> ).
Chloramines .....	4.0 (as Cl <sub>2</sub> ).
Chlorine dioxide .....	0.8 (as ClO <sub>2</sub> ).

**40 CFR § 141.720(d)(3) – Reactor monitoring.** (i) Systems must monitor their UV reactors to determine if the reactors are operating within validated conditions, as determined under paragraph (d)(2) of this section. This monitoring must include UV intensity as measured by a UV sensor, flow rate, lamp status, and other parameters the State designates based on UV reactor operation. Systems must verify the calibration of UV sensors and must recalibrate

**Observation: 7**

*sensors in accordance with a protocol the State approves. (ii) To receive treatment credit for UV light, systems must treat at least 95 percent of the water delivered to the public during each month by UV reactors operating within validated conditions for the required UV dose, as described in paragraphs (d)(1) and (2) of this section. Systems must demonstrate compliance with this condition by the monitoring required under paragraph (d)(3)(i) of this section.*

**Evidence:**

City of Jackson water system January and February 2020 MORs (**Appendix F-5**)

MSDH sanitary survey for the city of Jackson water system dated November 21, 2019 (**Appendix K**)

Conversations with water operators, supervisors, and maintenance staff

**Description of Observation:**

In January and February 2020, the city of Jackson reported in its MORs that multiple MRDL concentrations had exceeded the regulatory limits at the O.B. Curtis and J.H. Fewell WTPs. The MRDL is the highest level of a disinfectant residual that is allowed in the drinking water. Seven instances of MRDLs exceeding 4.0 mg/L of chloramines were reported on 5 days during January 2020 at the O.B. Curtis WTP; seven instances of MRDLs exceeding 4.0 mg/L of chloramines were reported on 4 days during February 2020 at the O.B. Curtis WTP; four instances of MRDLs exceeding 4.0 mg/L of chloramines were reported on 3 days in January 2020 at the J.H. Fewell WTP; and two instances of MRDLs exceeding 4.0 mg/L of chloramines were reported on 2 days in February 2020 at the J.H. Fewell WTP.

UV disinfection treatment is installed in each filter's effluent flow piping at both the O.B. Curtis and J.H. Fewell WTPs. However, in January 2020, the city of Jackson reported in its MOR that, for the J.H. Fewell WTP, UV reactor 1 was offline for the entire month (and had been offline since October 16, 2019); UV reactor 2 was offline for 15 of 31 days; UV reactor 3 was offline 17 days; and UV reactor 4 was offline 17 days. In February 2020, at the J.H. Fewell WTP, UV reactor 1 was offline for 13 of 29 days; UV reactor 2 was offline 13 days; UV reactor 3 was offline 7 days; and UV reactor 4 was offline 20 days. During January 2020, at the O.B. Curtis WTP, UV reactor 1 was offline for 2 of 31 days; UV reactor 2 was offline 4 days; UV reactor 3 was offline 1 day; UV reactor 4 was offline 3 days; UV reactor 5 was offline 10 days; and UV reactor 6 was not offline any days. In February 2020, at the O.B. Curtis WTP, UV reactor 1 was offline for 13 of 29 days; UV reactor 2 was offline 8 days; UV reactor 3 was offline 6 days; UV reactor 4 was offline 9 days; UV reactor 5 was offline 17 days; and UV reactor 6 was offline 9 days. This issue was documented in the latest MSDH sanitary survey report (dated November 21, 2019).

Chloramines are used as the residual disinfectant in the water system served by surface water. During the course of the EPA inspection, ammonia leaks occurred at both the O.B. Curtis and J.H. Fewell WTPs. The leak at the O.B. Curtis WTP was repaired by maintenance staff, while a hazardous materials (Hazmat) team was required to help complete the repairs at the J.H. Fewell WTP.

*This UV observation was not discussed at the close-out meeting since it was discovered once the MORs were submitted after the on-site inspection ended.*

**Observation: 8**

**Observation Summary:** EPA inspectors observed infrastructure issues with the distribution system and storage tanks.

**Citation:** none

**Evidence:**

Interview with William Miley, water/sewer utilities manager  
Inspector observations

**Description of Observation:**

The city of Jackson's water distribution system experiences numerous leaks and line breaks, with crews reportedly repairing 5 or 6 of these per day. The distribution system is operated by the city's water maintenance department. Loss of pressure associated with these incidents requires the city to issue "Boil Water Notices" (BWNs); over 750 BWNs have been issued since 2016. The distribution lines are aging, and a master plan for pipe replacement issued by the city in 2013 is not being implemented. Instead, the city focuses on replacing those line segments that require 10 to 15 repairs per year. No maintenance log records are kept for line repairs. The city estimated water loss rates in the distribution system of 40 to 50 percent. As a result of these issues, three local hospitals have drilled their own wells and left the city of Jackson's water system in order to have access to reliable sources of drinking water.

EPA inspectors visited two above-ground storage tanks, one at Maddox Road (near well #7) and one at the TV Road booster station. EPA inspectors observed standing water around part of the Maddox Road tank near well #7 and that some of the outer wall columns were pulling away from the tank. Settling may be occurring in a non-uniform manner at this tank location. The TV Road booster station tank, which has been unused since 2015, appeared to have concrete chipping occurring around the base of the tank.

**Observation: 9**

**Observation Summary:** Some of the continuous monitoring equipment at the O.B. Curtis WTP was found to be inoperable, or providing unreliable, non-calibrated, and potentially inaccurate readings.

**Citation:** none

**Evidence:**

Inspector observations

**Description of Observation:**

Continuous monitoring equipment at the O.B. Curtis WTP has not been repaired or calibrated for approximately 3 years since the instrument technician position was vacated. This equipment includes pH meters, flow measurement devices, turbidimeters, and the streaming current detector. Comparisons of operator bench laboratory results indicated that the readouts from the continuous pH meters are off by up to 2 units in some instances. Operators must make operational chemical dosing decisions based on three daily grab samples (one grab sample per shift) instead of using the continuous monitoring equipment that has been installed. Operators run the risk of missing flash changes to the water that necessitate immediate chemical dosing changes.

**Observation: 10**

**Observation Summary:** EPA inspectors found inadequate operator staffing at the O.B. Curtis and J.H. Fewell WTPs and the groundwater portion of the system.

**Citation:** Mississippi Primary Drinking Water Regulations – Title 15 – Part 20, Subpart 72 – Rule 2.1.3 – Certificates – *Effective July 1, 1987, all municipal and domestic community water systems must be operated by persons who are certified by the Bureau of Public Water Supply as qualified to operate such facilities.*

**Evidence:**

2017 and 2019 sanitary surveys for the city of Jackson (**Appendix K**)  
Inspector observations

**Description of Observation:**

MSDH sanitary survey reports for the city of Jackson dating back to 2016 have noted inadequate staffing. The MSDH sanitary survey of November 21, 2019, contained the following comment: "It is vital that both O.B. Curtis and J.H. Fewell be fully staffed with licensed Class A water operators and capable maintenance staff. The City's water treatment is not a simple undertaking and involves complex processes that require 24/7 monitoring and adjustment. These operators are necessary to keep everything running smoothly and ensuring all Federal Safe Drinking Water Act Standards are met."

EPA inspectors noted that the O.B. Curtis WTP is currently running with two operators per shift (three shifts per day). These operators are called upon to collect and analyze grab samples, make operational decisions based on interpretation of sample data, and conduct maintenance when feasible. According to the WTP's organizational chart dated FY 2/27/18, the city has allotted four operators per shift at both WTPs.

EPA inspectors also noted that the wells operated by the water system are only checked three times per week due to staffing shortages.

**Observation: 11**

**Observation Summary:** EPA inspectors found operations and maintenance issues at the O.B. Curtis WTP.

**Citation:** 40 CFR § 141.719 (b) (3) *Direct integrity testing. Systems must conduct direct integrity testing in a manner that demonstrates a removal efficiency equal to or greater than the removal credit awarded to the membrane filtration process and meets the requirements described in paragraphs (b)(3)(i) through (vi) of this section. A direct integrity test is defined as a physical test applied to a membrane unit in order to identify and isolate integrity breaches (i.e., one or more leaks that could result in contamination of the filtrate).*

*(i) The direct integrity test must be independently applied to each membrane unit in service. A membrane unit is defined as a group of membrane modules that share common valving that allows the unit to be isolated from the rest of the system for the purpose of integrity testing or other maintenance.*

*(ii) The direct integrity method must have a resolution of 3 micrometers or less, where resolution is defined as the size of the smallest integrity breach that contributes to a response from the direct integrity test.*

*(iii) The direct integrity test must have a sensitivity sufficient to verify the log treatment credit awarded to the membrane filtration process by the State, where*

**Observation: 11**

*sensitivity is defined as the maximum log removal value that can be reliably verified by a direct integrity test. Sensitivity must be determined using the approach in either paragraph (b)(3)(iii)(A) or (B) of this section as applicable to the type of direct integrity test the system uses.*

*(A) For direct integrity tests that use an applied pressure or vacuum, the direct integrity test sensitivity must be calculated according to the following equation:*

$$LRVDIT = \text{LOG10} (Q_p / (VCF \times Q_{\text{breach}}))$$

*Where:*

*LRVDIT = the sensitivity of the direct integrity test;  $Q_p$  = total design filtrate flow from the membrane unit;  $Q_{\text{breach}}$  = flow of water from an integrity breach associated with the smallest integrity test response that can be reliably measured, and VCF = volumetric concentration factor. The volumetric concentration factor is the ratio of the suspended solids concentration on the high pressure side of the membrane relative to that in the feed water.*

*(B) For direct integrity tests that use a particulate or molecular marker, the direct integrity test sensitivity must be calculated according to the following equation:*

$$LRVDIT = \text{LOG10}(C_f) - \text{LOG10}(C_p)$$

*Where:*

*LRVDIT = the sensitivity of the direct integrity test;  $C_f$  = the typical feed concentration of the marker used in the test; and  $C_p$  = the filtrate concentration of the marker from an integral membrane unit.*

*(iv) Systems must establish a control limit within the sensitivity limits of the direct integrity test that is indicative of an integral membrane unit capable of meeting the removal credit awarded by the State.*

*(v) If the result of a direct integrity test exceeds the control limit established under paragraph (b)(3)(iv) of this section, the system must remove the membrane unit from service. Systems must conduct a direct integrity test to verify any repairs, and may return the membrane unit to service only if the direct integrity test is within the established control limit.*

*(vi) Systems must conduct direct integrity testing on each membrane unit at a frequency of not less than once each day that the membrane unit is in operation. The State may approve less frequent testing, based on demonstrated process reliability, the use of multiple barriers effective for Cryptosporidium, or reliable process safeguards.*

**(4) Indirect integrity monitoring.** *Systems must conduct continuous indirect integrity monitoring on each membrane unit according to the criteria in paragraphs (b)(4)(i) through (v) of this section. Indirect integrity monitoring is defined as monitoring some aspect of filtrate water quality that is indicative of the removal of particulate matter. A system that implements continuous direct integrity testing of membrane units in accordance with the criteria in paragraphs (b)(3)(i) through (v) of this section is not subject to the requirements for continuous indirect integrity monitoring. Systems must submit a monthly report to the State summarizing all continuous indirect integrity monitoring results triggering direct integrity testing and the corrective action that was taken in each case.*

*(i) Unless the State approves an alternative parameter, continuous indirect integrity monitoring must include continuous filtrate turbidity monitoring.*

*(ii) Continuous monitoring must be conducted at a frequency of no less than once every 15 minutes.*

**Observation: 11**

*(iii) Continuous monitoring must be separately conducted on each membrane unit.*

*(iv) If indirect integrity monitoring includes turbidity and if the filtrate turbidity readings are above 0.15 NTU for a period greater than 15 minutes (i.e., two consecutive 15-minute readings above 0.15 NTU), direct integrity testing must immediately be performed on the associated membrane unit as specified in paragraphs (b)(3)(i) through (v) of this section.*

*(v) If indirect integrity monitoring includes a State-approved alternative parameter and if the alternative parameter exceeds a State-approved control limit for a period greater than 15 minutes, direct integrity testing must immediately be performed on the associated membrane units as specified in paragraphs (b)(3)(i) through (v) of this section.*

**Evidence:**

Inspector observations

**Description of Observations:**

EPA inspectors made the following observations at the O.B. Curtis WTP during the inspection:

- The raw water screens were rehabilitated in 2014. EPA inspectors found them to be nonfunctional, and operators confirmed that they had been nonfunctional since 2017. It appeared that repairs would soon take place, but a date was unknown. In order to facilitate these repairs, excess raw water flow will be diverted to a nearby stream, which requires National Pollutant Discharge Elimination System permit coverage since the raw water is treated with potassium permanganate at the intake.
- The conventional flow sedimentation basins are equipped with an automatic sludge removal system that has been inoperable for approximately 3 years. This adversely affects settling of treated water and requires operators to manually take down each basin to remove settled solids every weekend.
- Jar tests are not conducted regularly. This testing should be done routinely to confirm that optimal coagulant dosing is being applied at the plant. Since the streaming current detector is used as a basis for those coagulant dosing decisions, without having been calibrated in the past 3 years, the lack of jar testing is significant.
- No filter maintenance has been performed in recent history. In light of the recent turbidity exceedances, it is crucial that system personnel maintain their filters so they are in optimal condition.
- Inspectors found that only 8 of the 12 membrane filtration treatment train flocculator motors were working, and 2 of the operational motors had mechanical issues that required maintenance. Inspectors also learned that only 4 of the 12 flocculator motors were working in the recent past.
- Membrane integrity testing cannot currently be performed due to wear and breakage of the system components and compressor. This issue is related to the fact that the membranes are exposed to sunlight and weather. Operators were found to have covered the membrane units with tarpaulins and run heat trace wiring to minimize the impact of the membranes' exposure to the elements.
- Membrane cleaning cycles are conducted without the use of automatic monitoring equipment for pH and chlorine levels. This equipment has been non-functional for several years.

**Observation: 11**

- One of the soda ash silos that was constructed as a result of the February 12, 2016, MSDH-issued compliance plan collapsed in early 2018. This incident put the lives of two operators at risk.

**Observation: 12**

**Observation Summary:** EPA inspectors found operations and maintenance issues at the J.H. Fewell WTP.

**Citation:** none

**Evidence:**

Inspector observations

**Description of Observation:**

EPA inspectors made the following observations at the J.H. Fewell WTP during the inspection:

- Portions of the plant are over 100 years old and are in a general state of disrepair.
- Safety issues were noted, including loose hand rails inside the buildings at the two intake structures; continuous monitoring equipment placed in a former laboratory that had standing water on the floor; trip hazards (metal cables) on walkways around the sedimentation basins; and evidence of a previous chemical spill against a concrete wall. EPA Region 4 contacted the Occupational Safety and Health Administration concerning these issues following the inspection.
- The lime room needs cleaning. Residual lime was coming out of the lime room and entering the sanitary sewer, which discharges to the wastewater treatment plant. This is a potential Clean Water Act finding as well.
- Open drums of lime were stored in a downstairs room that had standing water on the floor.
- The sedimentation basins are equipped with an automatic sludge removal system that was not functional at the time of the inspection. Each basin must be drained of water periodically, and the settled solids removed manually.
- Operators and maintenance staff are unable to calibrate the streaming current detector.
- Jar tests are not conducted regularly. This testing should be done routinely to confirm that optimal coagulant dosing is being applied at the plant. Since the streaming current detector is used as a basis for those coagulant dosing decisions without having been calibrated in the past 3 years, the lack of jar testing is significant.
- During observation of a filter backwash, low flow was observed in the corners of the filter. No filter maintenance has been performed in recent history. In light of the recent turbidity exceedances, it is crucial that system personnel maintain their filters so they are in optimal condition.

**Observation: 13**

**Observation Summary:** EPA inspectors found operations and maintenance issues at the groundwater system.

**Citation:** 40 CFR § 141.723 (b) - *Requirements to respond to significant deficiencies identified in sanitary surveys performed by EPA - For the purposes of this section, a significant deficiency includes a defect in design, operation, or maintenance, or a failure or malfunction of the sources, treatment, storage, or distribution system that EPA determines to be causing, or has*



**Observation: 13**

*the potential for causing the introduction of contamination into the water delivered to consumers.*

**Evidence:**

Inspector observations

2017 and 2019 sanitary surveys for the city of Jackson (**Appendix K**)

Groundwater treatment technique violation letter from MSDH, May 12, 2017 (**Appendix L**)

**Description of Observation:**

- MSDH issued a significant deficiency report on May 12, 2017, in response to a November 18, 2016, sanitary survey finding of inadequate application of treatment chemicals and techniques. "The system was not achieving target hardness and alkalinity goals; pilot study underway at inspection; pilot related to lead AL exceedance." Inspectors were unable to verify whether these deficiencies were corrected within 120 days.
- The Siwell Road well has been out of service since December 2019. This is one of the highest producing wells in the portion of the water system that is fed only by groundwater.
- The Willow Wood well had a large hole in the vent screen.
- The wells were equipped for remote telemetry at some point in the past, but this equipment no longer functions.
- Several wellhouses had peeling paint and corroded metal parts.

**Observation: 14**

**Observation Summary:** Disinfection byproduct monitoring was not conducted for chlorite and chlorate.

**Citation: 40 CFR § 141.132 (b) (2) Chlorite.** *Community and nontransient noncommunity water systems using chlorine dioxide, for disinfection or oxidation, must conduct monitoring for chlorite.*

(i) Routine monitoring.

(A) Daily monitoring. *Systems must take daily samples at the entrance to the distribution system. For any daily sample that exceeds the chlorite MCL, the system must take additional samples in the distribution system the following day at the locations required by paragraph (b)(2)(ii) of this section, in addition to the sample required at the entrance to the distribution system.*

(B) Monthly monitoring. *Systems must take a three-sample set each month in the distribution system. The system must take one sample at each of the following locations: near the first customer, at a location representative of average residence time, and at a location reflecting maximum residence time in the distribution system. Any additional routine sampling must be conducted in the same manner (as three-sample sets, at the specified locations). The system may use the results of additional monitoring conducted under paragraph (b)(2)(ii) of this section to meet the requirement for monitoring in this paragraph.*

**40 CFR § 141.132 (c) (2) Chlorine dioxide -**

(i) Routine monitoring. *Community, nontransient noncommunity, and transient noncommunity water systems that use chlorine dioxide for disinfection or oxidation must*

**Observation: 14**

*take daily samples at the entrance to the distribution system. For any daily sample that exceeds the MRDL, the system must take samples in the distribution system the following day at the locations required by paragraph (c)(2)(ii) of this section, in addition to the sample required at the entrance to the distribution system.*

**Evidence:**

Inspector observations

City of Jackson water system February 2020 MOR (**Appendix F-5**)

**Description of Observation:**

- EPA inspectors observed chlorine dioxide being added to the water at the J.H. Fewell WTP on February 5, 2020. However, the February 2020 MOR indicates that chlorine dioxide was not fed at the J.H. Fewell WTP on February 5, 2020, nor was any monitoring conducted on that date for chlorine dioxide or chlorite.

*This observation was not discussed at the close-out meeting since it was discovered once the February 2020 MOR was submitted after the on-site inspection ended.*