

Lack of State Financial Support and Local Capacity Prolonged Jackson, Mississippi Drinking Water Issues

May 13, 2024 | Report No. 24-P-0038



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Abbreviations

| | |
|-------|--|
| DWSRF | Drinking Water State Revolving Fund |
| EPA | U.S. Environmental Protection Agency |
| MSDH | Mississippi State Department of Health |
| OIG | Office of Inspector General |
| SDWA | Safe Drinking Water Act |

Cover Image

Soda ash silos and intake pumps at O.B. Curtis Water Treatment Plant in Jackson, Mississippi. (EPA OIG photo)

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At a Glance

Lack of State Financial Support and Local Capacity Prolonged Jackson, Mississippi Drinking Water Issues

Why We Did This Audit

The U.S. Environmental Protection Agency Office of Inspector General conducted this audit to identify federal funding and spending decisions related to drinking water in Jackson, Mississippi. Specifically, our audit objective was to identify award and expenditure decisions at the state and local level related to the community water system in Jackson.

From fiscal year 2015 through 2022, the EPA awarded the State of Mississippi Drinking Water State Revolving Fund over \$81 million in capitalization grants and the Mississippi State Department of Health awarded nearly \$265 million in Drinking Water State Revolving Fund loans to all its loan recipients combined; \$51 million in loans were awarded to Jackson from 2016 through 2021.

To support these EPA mission-related efforts:

- Ensuring clean and safe water.
- Partnering with states and other stakeholders.

To address these top EPA management challenges:

- Maximizing compliance with environmental laws and regulations.
- Overseeing, protecting, and investing in water and wastewater systems.

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[List of OIG reports.](#)

What We Found

The City of Jackson's funding for its water system did not address the capacity issues at the O.B. Curtis Water Treatment Plant, leading to chronic problems with operations and maintenance. For example, a \$2.7 million corrosion control system at O.B. Curtis funded by a Drinking Water State Revolving Fund, or DWSRF, loan repeatedly malfunctioned because of inconsistent maintenance, which resulted in increased water treatment costs. Various Jackson departments did not effectively communicate the water system's capacity issues internally, which only served to exacerbate the problems facing O.B. Curtis and the city's water system. In addition, while the Mississippi State Department of Health, or MSDH, took informal compliance and enforcement actions with Jackson, it did not provide additional technical assistance to Jackson through the Local Assistance and Other State Programs set-aside. Because of the city's inability to maintain its water system infrastructure, O.B. Curtis was unable to respond to the flooding of the Ross Barnett Reservoir in August 2022. This failure initiated emergency drinking water declarations that resulted in emergency funding from the federal government and the appointment of an interim third-party manager to stabilize and improve operations at O.B. Curtis.

We found that the MSDH could have been more proactive in the years leading up to Jackson's water system failure in providing flexible DWSRF loan options for disadvantaged communities like Jackson. The Safe Drinking Water Act provided different funding options for states to help disadvantaged communities better afford DWSRF loans, including increased loan subsidies, extended loan terms, and reduced interest rates. However, the MSDH did not make these flexible loan and subsidy options available to disadvantaged communities, including Jackson, until after June 2021. Also, only after Jackson requested a refinance in October 2022 did the MSDH approve refinancing the city's DWSRF loans. Had the MSDH provided flexible loan options for disadvantaged communities in a timelier manner, Jackson may have decided earlier to request and use these options to lower its financing costs to improve its water system. Additionally, these funding options could help other disadvantaged communities in Mississippi better afford investing in their drinking water infrastructure.

Jackson may have better and in a timely manner addressed its drinking water issues if it had sufficient technical, managerial, and financial capacity and received more funding options and assistance from Mississippi.

Recommendation and Planned Agency Corrective Actions

We recommend that the Region 4 regional administrator provide training to the MSDH on the *DWSRF Disadvantaged Community Definitions: A Reference for States* to assist it in exploring options to refine assistance programs to better support disadvantaged communities in need. Region 4 agreed with our recommendation, and the Agency's planned corrective actions meet the intent of our recommendation. Therefore, we consider this recommendation resolved with corrective actions pending.



OFFICE OF INSPECTOR GENERAL
U.S. ENVIRONMENTAL PROTECTION AGENCY

May 13, 2024

MEMORANDUM

SUBJECT: Lack of State Financial Support and Local Capacity Prolonged Jackson, Mississippi
Drinking Water Issues
Report No. 24-P-0038

FROM: Sean W. O'Donnell, Inspector General *Sean W O'Donnell*

TO: Jeaneanne Gettle, Acting Regional Administrator
Region 4

This is our report on the subject audit conducted by the U.S. Environmental Protection Agency Office of Inspector General. The project number for this audit was [OA-FY23-0035](#). This report contains findings that describe the problems the OIG has identified and corrective actions the OIG recommends. Final determinations on matters in this report will be made by EPA managers in accordance with established audit resolution procedures.

EPA Region 4 is responsible for the issues discussed in this report.

In accordance with EPA Manual 2750, your office provided acceptable planned corrective actions and estimated milestone dates in response to the OIG recommendation. The recommendation is resolved, and no final response to this report is required. If you submit a response, however, it will be posted on the OIG's website, along with our memorandum commenting on your response. Your response should be provided as an Adobe PDF file that complies with the accessibility requirements of section 508 of the Rehabilitation Act of 1973, as amended. The final response should not contain data that you do not want to be released to the public; if your response contains such data, you should identify the data for redaction or removal along with corresponding justification.

We will post this report to our website at www.epaoig.gov.

Table of Contents

Chapters

| | | |
|----------|--|-----------|
| 1 | Introduction | 1 |
| | Purpose..... | 1 |
| | Background..... | 1 |
| | Responsible Offices | 6 |
| | Scope and Methodology..... | 6 |
| | Prior Reports..... | 7 |
| 2 | Jackson’s Funding for Its Water System Did Not Address the Capacity Issues at the O.B. Curtis Water Treatment Plant | 8 |
| | SDWA Requires that States Ensure Public Water Systems Maintain Capacity and Provide Funding for Technical Assistance..... | 8 |
| | Operation and Maintenance Problems at O.B. Curtis Were a Symptom of Jackson’s Capacity Issues | 8 |
| | Jackson’s Water System Managers and the MSDH Did Not Effectively Address Issues at the O.B. Curtis Water Treatment Plant..... | 10 |
| | The Future of Jackson’s Water System..... | 11 |
| 3 | The MSDH Could Have Been More Proactive in Considering Flexible Loan Options in Its Disadvantaged Community Program | 12 |
| | SDWA Provides Various Funding Options to Borrowers and Allows States to Define Disadvantaged Communities..... | 12 |
| | The MSDH Could Have Offered More Flexible Loan Options Including Expanded Loan Subsidies to Jackson | 13 |
| | Jackson Requested a Refinance of Its DWSRF Loans..... | 13 |
| | The MSDH Could Have Considered Flexible Loan Options in a Timely Manner..... | 15 |
| | Flexible Loan Options Benefit Disadvantaged Communities Like Jackson | 16 |
| | Recommendation | 17 |
| | Agency Response and OIG Assessment..... | 17 |
| 4 | Status of Recommendation..... | 18 |

Appendixes

| | | |
|----------|--|-----------|
| A | Agency Response to Draft Report | 19 |
| B | Distribution | 21 |

Chapter 1

Introduction

Purpose

The U.S. Environmental Protection Agency Office of Inspector General [initiated](#) this audit to identify federal funding and spending decisions related to drinking water in Jackson, Mississippi. Specifically, our audit objective was to identify award and expenditure decisions at the state and local level related to the community water system in the City of Jackson.

Top management challenges addressed

This audit addresses the following top management challenges for the Agency, as identified in the OIG's *The EPA's Fiscal Year 2024 Top Management Challenges [report](#)*, issued November 15, 2023:

- Maximizing compliance with environmental laws and regulations.
- Overseeing, protecting, and investing in water and wastewater systems.

Background

The O.B. Curtis Water Treatment Plant provides drinking water to the approximately 160,000 residents in Jackson, treating up to 33.6 million gallons of water per day from the Ross Barnett Reservoir. The plant uses two different processes to remove contaminants from water, a conventional process and a membrane treatment process. The former uses traditional filtration, ultraviolet disinfection, and chemical treatment, while the latter uses advanced membrane filters and chemical treatment. While the city generates its own revenue for operations and maintenance of its water system, it has also taken loans through Mississippi's Drinking Water Systems Improvement Revolving Loan Fund Program, generally known as the Mississippi DWSRF Program, which is managed by the Mississippi State Department of Health, or MSDH. The MSDH's Local Governments and Rural Water Systems Improvements Board is the decision-making body behind Mississippi's DWSRF Program and is responsible for finalizing and submitting the state's intended use plan to the EPA. We will refer to the MSDH, the Mississippi DWSRF Program, and the MSDH board as the MSDH in this report.

Jackson's Drinking Water Challenges

Jackson has a long history of financial and technical challenges with its water system. The financial challenges are attributable, in part, to inadequate revenue sources resulting from a shrinking tax base and metering issues caused by defective equipment. In addition, the city has been governed by five different administrations since 2013, with the administration at the time of this audit having held office since 2017. Over the years, efforts to improve the water system resulted in additional financial challenges for Jackson. For example, according to Jackson officials, revenue from a state-approved sales tax, which was meant for infrastructure projects, was not always applied toward drinking water projects. In addition, Jackson settled a dispute with a contractor for approximately \$90 million regarding

defective metering equipment, but the settlement proceeds were not sufficient to pay off the original debt from purchasing and installing the water meters, according to Jackson officials. The meter issues persisted, and Jackson was unable to provide accurate and reliable bills to its water customers. Jackson officials stated that, as a result, the city faced revenue challenges.

Simultaneously, the city has faced technical challenges related to its drinking water system, which has been subject to a litany of maintenance failures, distribution system losses, and natural disasters. The city's lead-and-copper rule violations of applicable drinking water regulations resulted in a 2016 compliance plan issued by the MSDH and eventually led to an EPA Emergency Administrative Order in March 2020 regarding treatment and distribution concerns, followed up by an EPA Administrative Compliance Order on Consent in July 2021.

Flooding at the Ross Barnett Reservoir caused a major water treatment failure at O.B. Curtis, triggering emergency declarations at the local level on August 29, 2022, and at the federal and state level on August 30, 2022. Many residents had no access to running water until the water pressure was restored on September 6, 2022. The boil water notice remained in effect until September 15, 2022.



Mississippi Army National Guard soldiers distribute water to Jackson residents. (U.S. Department of Defense photo)

On November 29, 2022, the U.S. Department of Justice, on behalf of the EPA, filed a complaint in U.S. District Court for the Southern District of Mississippi concerning the failure of Jackson to provide clean drinking water to city residents in accordance with the Safe Drinking Water Act, or SDWA. On that same day, the court issued an interim stipulated order that appointed a third-party manager to implement actions needed to stabilize Jackson's drinking water system, remedy problems that contributed to the water crisis, and establish sustainable practices for future SDWA compliance. The interim stipulated order requires the third-party manager to submit quarterly status reports to the court; at the time of this audit, the most recent report was submitted on July 31, 2023.

The DWSRF and the State of Mississippi

The DWSRF is a federal-state partnership and public health protection program designed to create a perpetual source of financing for each state's drinking water infrastructure. Congress established the DWSRF in the 1996 amendments to SDWA. Congress annually appropriates funding for the DWSRF, and the EPA awards annual capitalization grants to each state and Puerto Rico to fund their DWSRF Programs; SDWA requires that each state and Puerto Rico also provide an amount equal to at least 20 percent of the total grant. These state programs act as infrastructure banks, and their various water systems apply for loans to fund drinking water projects. Figure 1 illustrates how the DWSRF Program operates.

Figure 1: DWSRF infrastructure funding model



Source: EPA presentation, *Drinking Water State Revolving Fund, the Bipartisan Infrastructure Law, and Disadvantaged Community Definitions*, dated October 11, 2022. (EPA image)

States craft their individual DWSRF Programs to meet their needs. While they all operate within the federal DWSRF framework, states may target funding to water systems differently. For example, during the application process for a MSDH loan, entities must provide, among other things, a completed loan application and water system facilities plan. These documents allow state DWSRF Programs to prioritize projects based on needs, such as returning a water system to compliance with primary drinking water regulations, building new wells, and constructing new water treatment facilities. However, SDWA prohibits states from using DWSRF funds for operation and maintenance costs. This project priority information is compiled and finalized in an intended use plan, which the state DWSRF Program, after seeking public input, submits to the EPA before the state is awarded its capitalization grant.

From 2015 through 2022, the EPA awarded the MSDH over \$81 million in capitalization grants, not including capitalization grants from the Infrastructure Investment and Jobs Act of 2021.¹

DWSRF Set-Aside and Its Purposes for DWSRF Activities

SDWA allows each state to reserve up to 31 percent of each DWSRF capitalization grant from the EPA to fund a variety of a state’s drinking water responsibilities. As shown in Table 1, the states can use

¹ For FY 2022 and FY 2023, the MSDH was awarded \$122,605,000 in capitalization grants from the Infrastructure Investment and Jobs Act.

set-asides to fund activities that help water systems qualify for and responsibly manage a DWSRF loan. States must balance their funding opportunities and consider the trade-offs between funding technical assistance activities and providing DWSRF loans, including how much funding would be targeted towards small, rural, and disadvantaged communities.

Table 1: SDWA authorized set-asides and their general use examples

| Set-Aside | Use Example |
|--|---|
| Administration and technical assistance | <ul style="list-style-type: none"> • Provide technical assistance to water systems • Provide administrative costs of the DWSRF Program |
| Small systems technical assistance | <ul style="list-style-type: none"> • Provide technical assistance and training to small water systems • Contract for third-party technical assistance providers |
| State program management | <ul style="list-style-type: none"> • Develop and implement a capacity development strategy • Develop and implement an operator certification program |
| Local assistance and other state programs | <ul style="list-style-type: none"> • Assist in the development and implementation of local drinking water initiatives • Provide technical or financial assistance to water systems for capacity development |

Source: OIG summary of the SDWA. (EPA OIG table)

Defining Water System Capacity

SDWA requires states, as a part of their capacity development strategy, to establish criteria for the technical, managerial, and financial capacity of public water systems. There are three types of capacity:

- **Technical capacity:** The physical and operational ability of a water system to meet SDWA requirements.
- **Managerial capacity:** The ability of a water system to conduct its affairs in a manner enabling it to achieve and maintain compliance with SDWA.
- **Financial capacity:** The ability of a water system to acquire and manage sufficient financial resources to allow it to achieve and maintain compliance with SDWA requirements.

For example, Jackson was the owner and operator of O.B. Curtis. This means that Jackson was responsible for financing, staffing, and managing its water system and the ability of O.B. Curtis to treat water, perform maintenance, and conduct operations. In other words, Jackson was responsible for maintaining technical, managerial, and financial capacity, which we will refer to as “capacity” in this report.

MSDH Loans Awarded to Jackson

Jackson, from 2016 through 2021, applied for and received three MSDH loans totaling \$51.7 million. They are shown in Table 2.

Table 2: Jackson’s MSDH loans

| Loan number | Initial award date | Loan amount (\$) | Interest rate (%) | Loan term | Loan subsidy (\$) |
|----------------|--------------------|------------------|-------------------|-----------|-------------------|
| DWI-L250008-01 | 9/30/16 | 10,861,920* | 1.95 | 20 years | 500,000 |
| DWI-L250008-02 | 9/30/19 | 12,903,093 | 1.95 | 30 years | 500,000 |
| DWI-L250008-03 | 9/30/21 | 27,953,300 | 1.95 | 20 years | 500,000 |
| Total | – | 51,718,313 | – | – | 1,500,000 |

Source: OIG analysis of the EPA’s Office of Water State Revolving Fund database. (EPA OIG table)

* This loan amount was amended to \$7,315,341 in 2021.

DWSRF Loan Subsidies

SDWA, as amended, allows states to provide different kinds of assistance to water systems, including below-market interest rates or extended loan terms. In addition, states can also award loan subsidies to disadvantaged communities or “to a community that the state expects to become a disadvantaged community as a result of a proposed project.” Loan subsidies, which can be provided via grants, principal-forgiveness loans, and other similar mechanisms, are not repaid to the state DWSRF. SDWA section 1452 requires states to provide a percentage of their capitalization grants as loan subsidies to disadvantaged communities; these percentages have increased over time. The loan subsidies in place during the years reviewed for this audit must be at least 12 percent of the total amount of the fiscal year’s DWSRF grant received by the state and may not exceed 35 percent. In addition to this set-aside for disadvantaged communities, annual congressional appropriations provide for separate loan subsidies, such as grants and principal forgiveness or other similar loans, for any DWSRF-eligible recipient meeting stated conditions of the applicable subsidy. The MSDH determined this separate loan subsidy to also be used only for disadvantaged communities. For example, as seen in Table 3, Mississippi was required to award over \$17 million in loan subsidies for the capitalization grants we reviewed.

Table 3: Mississippi loan subsidy requirements for capitalization grants from federal fiscal years 2015 through 2020

| Capitalization grant (federal fiscal year) | Capitalization grant amount (\$) | SDWA loan subsidy minimum requirement | Congressional appropriation loan subsidy minimum requirement | Total loan subsidy minimum (\$) |
|--|----------------------------------|---------------------------------------|--|---------------------------------|
| 2015 | 9,099,000 | 0 (0%) | 1,819,800 (20%) | 1,819,800 (20%) |
| 2016 | 8,607,000 | 0 (0%) | 1,721,400 (20%) | 1,721,400 (20%) |
| 2017 | 8,534,000 | 0 (0%) | 1,706,800 (20%) | 1,706,800 (20%) |
| 2018 | 11,957,000 | 0 (0%) | 2,391,400 (20%) | 2,391,400 (20%) |
| 2019 | 11,845,000 | 710,700 (6%) | 2,369,000 (20%) | 3,079,700 (26%) |
| 2020 | 11,853,000 | 711,180 (6%) | 1,659,420 (14%) | 2,370,600 (20%) |
| 2021 | 11,842,000 | 710,520 (6%) | 1,657,880 (14%) | 2,368,400 (20%) |
| 2022 | 7,544,000 | 905,280 (12%) | 1,056,160 (14%) | 1,961,440 (26%) |
| Total | 81,281,000 | 3,037,680 | 14,381,860 | 17,419,540 |

Source: MSDH annual reports and EPA Office of Water. (EPA OIG table)

SDWA section 1452(d)(3) provides that each state will establish the affordability criteria, which determines which communities can be considered disadvantaged. The MSDH is the state agency responsible for the Mississippi DWSRF and establishes the state's affordability criteria. It has a disadvantaged community program within its DWSRF Program that sets up a methodology for disadvantaged communities to qualify for a loan subsidy in their DWSRF loans; this methodology is based on comparing Mississippi's statewide median household income to the disadvantaged community. This means that the lower a community's median household income is, the more loan subsidy it qualifies for. For example, Jackson qualified for up to 25 percent of its loans in loan subsidy based on its median household income for all three loans. Regardless of the percentage of loan subsidy a community is entitled to, the MSDH intended use plan states that it limits the maximum loan subsidy to \$500,000 per loan to ensure "that the assistance is dispersed as far as possible." This maximum can be changed through a waiver after project bidding if costs increase and loan subsidy funds are still available.

Responsible Offices

The EPA Office of Ground Water and Drinking Water, within the Office of Water, together with states, tribes, and other partners, protects public health by ensuring safe drinking water and protecting ground water. EPA Region 4 Safe Drinking Water Branch staff and managers, within the Water Division, primarily oversee SDWA implementation in Mississippi. The MSDH is responsible for Mississippi's DWSRF Program, which is overseen by Region 4's Grants & Infrastructure Branch. The MSDH's Local Governments and Rural Water Systems Improvements Board is the decision-making body behind the DWSRF Program and is responsible for finalizing and submitting the state's intended use plan to the EPA.

Scope and Methodology

We conducted this performance audit from November 2022 to February 2024 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

We assessed the internal controls necessary to satisfy our audit objectives.² In particular, we assessed the internal control components—as outlined in the U.S. Government Accountability Office's *Standards for Internal Control in the Federal Government*—significant to our audit objectives. Any internal control deficiencies we found are discussed in this report.

To answer the project objective, we interviewed Jackson and MSDH personnel to determine the rationale for award and expenditure decisions for O.B. Curtis from calendar year 2015 through 2022

² An entity designs, implements, and operates internal controls to achieve its objectives related to operations, reporting, and compliance. The U.S. Government Accountability Office sets internal control standards for federal entities in GAO-14-704G, *Standards for Internal Control in the Federal Government*, issued September 10, 2014.

before the emergency declarations. Additionally, we interviewed EPA Region 4 DWSRF staff to obtain the Agency's perspective. To obtain an understanding of the award and expenditure decisions, we reviewed SDWA; DWSRF regulations; EPA DWSRF capitalization grants to Mississippi; *Operating Agreement Between Mississippi State Department of Health and the Environmental Protection Agency, Region IV*; Jackson's applications for drinking water funds; Mississippi intended use plans, project priority lists, and related documents; and Mississippi's DWSRF awards and loans to Jackson. In addition, we analyzed the MSDH's DWSRF loan data to all DWSRF recipients in Mississippi from 2008 through 2022 to obtain a historical understanding of its program.

Prior Reports

EPA OIG Report No. [23-N-0028](#), *EPA Guidance Removed States' Responsibilities for Monitoring State Revolving Fund Borrowers' Single Audit Reports*, issued August 15, 2023, found that the MSDH did not review, as required by the Single Audit Act, the single audit reports for Jackson because the EPA's September 2021 *Updated Single Audit Act Borrower Audit Collection Policy* incorrectly advised states that they were not required to do so. Single audit reports are a valuable tool for ensuring that subrecipients comply with federal requirements; protecting federal funds from fraud, waste, and abuse; and monitoring and protecting taxpayer dollars in a cost-effective manner. On July 19, 2023, the EPA issued a memorandum titled *Clarification of Single Audit Requirements Under the Clean Water and Drinking Water State Revolving Fund Programs* to the regional state revolving fund branch chiefs, which addressed the concerns we identified in this management alert.

EPA OIG Report No. [23-P-0022](#), *The EPA Could Improve its Review of Drinking Water State Revolving Fund Programs to Help States Assist Disadvantaged Communities*, dated July 11, 2023, details barriers that prevent states from awarding loan subsidies to disadvantaged communities. This report recommended that the EPA update its *State Revolving Fund Annual Review Guidance*, clarify set-aside use requirements and assess states' use of set-asides, and require states to assign executed loans to the appropriate capitalization grant to resolve database issues. The EPA agreed with all recommendations and proposed acceptable corrective actions.

Chapter 2

Jackson's Funding for Its Water System Did Not Address the Capacity Issues at the O.B. Curtis Water Treatment Plant

Jackson's funding for its water system did not address the capacity issues at the O.B. Curtis Water Treatment Plant, leading to chronic problems with operations and maintenance. For example, a \$2.7 million corrosion control system at O.B. Curtis funded by a DWSRF loan repeatedly malfunctioned because of inconsistent maintenance, which resulted in increased water treatment costs. Various Jackson departments did not effectively communicate the water system's capacity issues internally, which only served to exacerbate the problems facing O.B. Curtis and the city's water system. In addition, while the MSDH took informal compliance and enforcement actions with Jackson, it did not provide additional technical assistance to Jackson through the Local Assistance and Other State Programs set-aside. Because of the city's inability to maintain its water system infrastructure, O.B. Curtis was unable to respond to the flooding of the Ross Barnett Reservoir in August 2022. This failure initiated emergency drinking water declarations that resulted in emergency funding from the federal government and the appointment of an interim third-party manager to stabilize and improve operations at O.B. Curtis.

SDWA Requires that States Ensure Public Water Systems Maintain Capacity and Provide Funding for Technical Assistance

Water systems that lack technical, managerial, and financial capacity are not eligible to receive DWSRF assistance unless the assistance will ensure compliance with SDWA capacity requirements and the owners or operators of the systems agree to undertake feasible and appropriate changes in operations to ensure long-term compliance. Accordingly, SDWA section 1452 includes the Local Assistance and Other State Programs set-aside, which allows the states to reserve up to 15 percent of their annual DWSRF grant to provide aid, including technical and financial assistance, to any public water system as part of a capacity development strategy. Finally, the *Drinking Water State Revolving Fund Program Operations Manual Provisional Edition* requires that recipients pass a full technical, financial, and managerial review and maintain acceptable facility operations. In cases of noncompliance, the state DWSRF Program should provide appropriate technical assistance to resolve identified issues.

Operation and Maintenance Problems at O.B. Curtis Were a Symptom of Jackson's Capacity Issues

We found that O.B. Curtis had chronic problems with operations and maintenance, which were a symptom of its capacity issues. For example, according to Jackson officials, O.B. Curtis was not sufficiently staffed and few operators were qualified to run membrane treatment operations. The city

experienced a shortage in water operators necessary to operate the plant effectively. Multiple sources stated that water operators often worked seven days per week and more than 12 hours per day to attempt to meet state law to continuously have a certified water operator on-site while it was in operation. Despite this, O.B. Curtis was not always staffed by a certified operator.

Based on our interviews, as for maintenance of the plant, the maintenance manager was often the only person officially staffed to perform that function. The former O.B. Curtis maintenance manager did not effectively conduct routine maintenance, delayed routine maintenance, and did not retain new hires, hampering the day-to-day operations of the entire treatment plant. These maintenance issues also forced water operators to take on additional duties that would normally have been completed by a maintenance team. O.B. Curtis’s leadership staff compounded these capacity issues by not escalating these operations and maintenance issues to Jackson’s leadership in a timely manner. These problems persisted and worsened before the EPA Emergency Administrative Order was issued in 2020 and reached their peak in 2022. For example, the membrane treatment side of O.B. Curtis remained unprotected from adverse weather for nearly 14 years following its construction in 2006, reducing the useful lifecycle of membrane filters and increasing costs. In addition, for years Jackson’s water distribution system struggled with bursting pipes and loss of pressure because of freezing temperatures during the winter. Jackson continued to face long-term financial capacity challenges, as discussed in Chapter 1 and Chapter 3. Other examples of issues that contributed to Jackson’s water system capacity challenges are shown in Table 4.



Example of poor maintenance of pipes using duct tape at the traditional side of the OB Curtis plant. (EPA OIG photo)

Table 4: Examples of the O.B. Curtis’ capacity challenges

| Technical | Managerial | Financial |
|--|---|--|
| Understaffed; not enough water operators | Lack of elevation of issues from deputy directors to Department of Public Works | Water operator salary below market rate |
| Lack of routine maintenance | Hiring and retention issues with maintenance staff | Inconsistent billing |
| Instances where plant was not always operated by qualified operators | Lack of knowledge of procurement procedures | Difficulties in implementing new accounting system |

Source: OIG summary of capacity challenges stated by the Jackson officials. (EPA OIG table)

Another example of these capacity issues was Jackson’s effort to address a corrosion control system that prevents the leaching of lead and other metals into the drinking water system at O.B. Curtis. Following a MSDH compliance plan issued in 2016 to address lead and copper exceedances, Jackson hired an engineering company that created and submitted a facilities plan to the MSDH that included a corrosion control project that would retrofit an existing lime treatment system to feed soda ash. The MSDH and

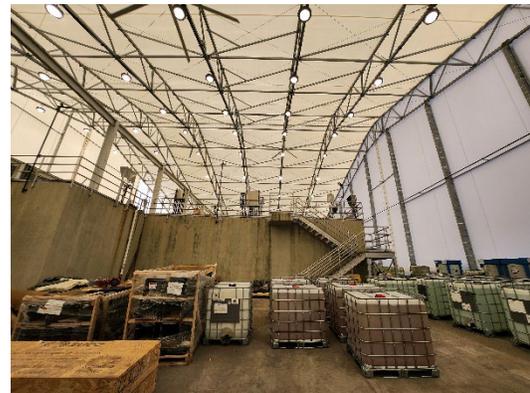
Jackson approved payments totaling \$2.7 million from its MSDH loan for the project to be completed. According to Jackson, the contractor installed dehumidifiers that did not sufficiently prevent excess humidity from hardening the soda ash material, which rendered it mostly unusable and therefore required additional upkeep that the maintenance staff did not perform regularly. As a result, the city began incurring costs by transporting liquid soda ash and liquid lime to O.B. Curtis to treat the membrane system's water and installed a separate liquid lime tank for the traditional treatment system.



Left to right: O.B. Curtis conventional water treatment, liquid soda ash storage and membrane treatment, and external liquid lime treatment tank. (EPA OIG images)

Jackson's Water System Managers and the MSDH Did Not Effectively Address Issues at the O.B. Curtis Water Treatment Plant

We found that Jackson's water system managers at O.B. Curtis and the MSDH did not effectively communicate with the city government about the water system's capacity issues, which only exacerbated the problems facing O.B. Curtis and the rest of the city's water system. As discussed in the previous section, an O.B. Curtis deputy director's lack of communication and issues with hiring and retaining water operators and maintenance staff were not urgently addressed. Furthermore, based on our interviews with staff at O.B. Curtis, water operators did not feel that they could report problems outside of their chain of command at the water treatment plant, despite the poor state of operating conditions. This left the City of Jackson leadership without vital information about the declining state of O.B. Curtis, resulting in a reactive approach to addressing major problems. For example, it was only after the EPA Emergency Administrative Order in 2020 that the city used DWSRF funds to winterize O.B. Curtis's membrane water treatment system.



Interior view of membrane plant winterization cover. (EPA OIG image)

While the MSDH took informal compliance and enforcement actions against Jackson, it did not provide additional technical assistance to Jackson through the Local Assistance and Other State Programs set-aside. Through this set-aside, the MSDH funded other state programs, such as a well head protection program and a water system regionalization and consolidation program. In addition, MSDH officials,

management, and staff stated that they were aware, through MSDH sanitary surveys, of ongoing issues at O.B. Curtis and made informal suggestions to the city for improvement. They believed that they could not act in place of the city outside of a consent decree or emergency declaration, and as a result, the MSDH also waited for an emergency to be declared so that alternate sources of funding could be used to help Jackson. EPA officials told us that Agency and the MSDH concluded that Jackson was better assisted through compliance and enforcement actions than through only technical assistance. Although set-aside use is at the discretion of the MSDH, it had the option through its DWSRF to assist Jackson in achieving and maintaining capacity through the provision of technical assistance outside of enforcement and compliance actions.

The Future of Jackson's Water System

As a result of the city being unable to address needed capital improvements in a timely manner and sustain regular operations and maintenance at O.B. Curtis, water operators at the plant could not appropriately respond to water chemistry changes from floodwater entering the Ross Barnett Reservoir, triggering a system failure in August 2022. Simultaneous emergency declarations at the local, state, and federal levels initiated action from multiple emergency response agencies to stabilize O.B. Curtis.

In November 2022, the federal district court, through an interim stipulated order, appointed an interim third-party manager to stabilize and improve the operations and maintenance of Jackson's water system. As provided in the order, the manager will, on an interim basis, oversee corrective measures to comply with SDWA regulations and administrative orders; this order will stay in place until the United States, the MSDH, and Jackson "litigate this matter to conclusion or attempt to negotiate a judicially enforceable consent decree to achieve long-term sustainability for [Jackson's water system] and the City's compliance with the SDWA, [the EPA] Emergency Order, [the EPA] Consent Order, National Regulations, and State Regulations."

The interim third-party manager established [JXN Water](#) to manage Jackson's water system and to implement priorities identified in the interim stipulated order for ongoing and future projects to improve O.B. Curtis water system operations and the public's access to clean drinking water. Reports released by the third-party manager indicate that operations have improved at O.B. Curtis after a subsequent water treatment failure due to freezing temperatures from December 24 through 25, 2022. Additional emergency funding authorized through the Consolidated Appropriations Act, 2023, resulted in \$600 million being provided to Jackson to help resolve the city's water system issues through technical assistance and capital improvements.

The EPA, Mississippi, and Jackson would benefit from a mutually agreed upon long-term governance model for the city's water system. In light of the pending litigation to address Jackson's long-term compliance with SDWA and federal and state regulations, we are not making recommendations on this subject.

Chapter 3

The MSDH Could Have Been More Proactive in Considering Flexible Loan Options in Its Disadvantaged Community Program

We found that the MSDH could have been more proactive in providing flexible DWSRF loan options for disadvantaged communities, like Jackson, in the years leading up to Jackson’s water system failure. SDWA provided different funding options for states to help disadvantaged communities better afford DWSRF loans, including increased loan subsidies, extended loan terms, and reduced interest rates. However, the MSDH did not make these flexible loan and subsidy options available to disadvantaged communities, including Jackson, until after June 2021. Also, only after Jackson requested a refinance in October 2022 did the MSDH approve refinancing the city’s DWSRF loans. Had the MSDH provided flexible loan options for disadvantaged communities in a timelier manner, Jackson may have decided earlier to request and use them to lower its financing costs to improve its water system. Additionally, these funding options could help other disadvantaged communities in Mississippi better afford investing in their drinking water infrastructure.

SDWA Provides Various Funding Options to Borrowers and Allows States to Define Disadvantaged Communities

SDWA provides the states many flexibilities in how they choose to provide DWSRF loans to communities and water systems. For example, SDWA allows states to provide different types of assistance to DWSRF loan recipients, including below-market to zero-percent interest rates and guaranteeing or purchasing insurance for local debt. In addition, states can provide extended loan terms and loan subsidies to help disadvantaged communities afford drinking water infrastructure improvements. For example, the America’s Water Infrastructure Act of 2018 amended SDWA to allow states to offer up to 30-year loan terms for DWSRF loans and up to 40 years for disadvantaged community loans; previously, this was up to 20 years for DWSRF loans and up to 30 years for disadvantaged community loans. SDWA also requires states to define disadvantaged communities to help target DWSRF funding to small, rural, and disadvantaged communities that may not be able to afford drinking water improvements. Under SDWA, a disadvantaged community is defined as the service area of a public water system that meets certain affordability criteria established by the state after public review and comment.

The DWSRF *Operating Agreement Between Mississippi State Department of Health and the Environmental Protection Agency, Region IV* states that the MSDH:

[S]hall maintain a competent organization staff skill mix to assure that projects meet acceptable technical, environmental, and financial requirements as established or referenced in this [Operating Agreement] and that the DWSRF will be continuously and effectively operated.

The EPA's *DWSRF Disadvantaged Community Definitions: A Reference for States* provides guidance for states to assess and change their disadvantaged community definitions to better assist disadvantaged communities. It also discusses a holistic approach to assessing and involving disadvantaged communities regarding DWSRF funding. It also discusses the importance of states assessing the loan subsidies offered to find one that fits the needs of their municipalities that may need funding.

The MSDH Could Have Offered More Flexible Loan Options Including Expanded Loan Subsidies to Jackson

We found that the MSDH could have provided more flexible loan options to Jackson and other disadvantaged communities, on top of loan subsidies made available through its disadvantaged community program. As of July 2022, our review of MSDH DWSRF Program loan recipients showed that loan recipients from September 2008 through September 2022 received a 1.95 percent interest rate and most were awarded loans with a 20-year term. Only eight out of 199 loans awarded by the MSDH were awarded with 30-year loan terms; the eight loans were all awarded after the passage of the America's Water Infrastructure Act, which allowed for more generous loan terms to DWSRF borrowers. This means that the MSDH did not offer any disadvantaged community extended loan terms for its DWSRF loans. If criteria conditions were otherwise met, it is possible that MSDH could have offered extended loan terms as high as 40 years to disadvantaged communities. Additionally, the MSDH loan subsidy waiver, as described in Chapter 1, was not implemented until 2021 and provided limited benefits to waiver recipients.

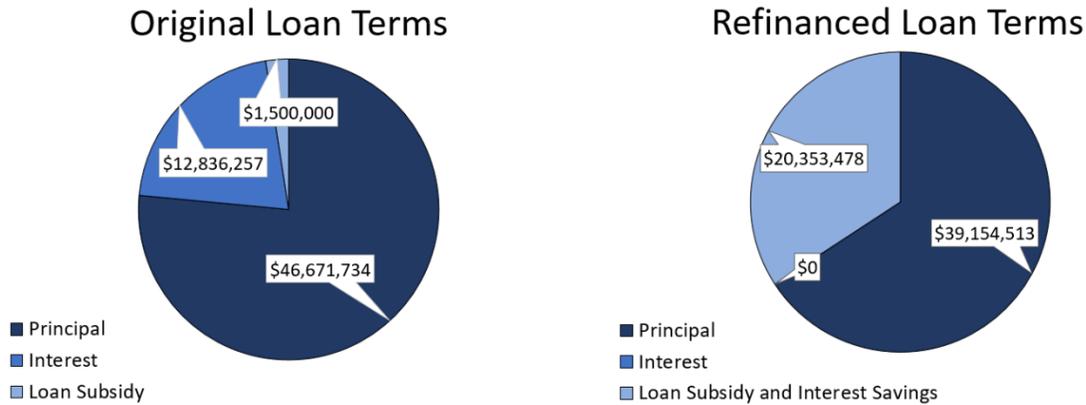
Jackson Requested a Refinance of Its DWSRF Loans

Jackson's administration stated that the limited loan options were a factor in what discouraged it from taking more DWSRF loans, following the city's 2016 MSDH compliance plan. According to Jackson officials, the city unsuccessfully pursued water infrastructure funding options outside the DWSRF, such as direct funding through state legislation or an increase in local state taxes, throughout several administrations. Jackson initially reduced its debt by closing out its first \$10.9 million DWSRF loan after it had only used \$7.3 million. While attempting to find alternate sources of funding, the city applied for its second DWSRF loan of \$12.9 million, which was awarded in 2019. Lastly, the city was awarded a \$28 million DWSRF loan in 2021 to address the 2020 EPA Emergency Administrative Order. All three loans received a \$500,000 loan subsidy, which was the highest amount the MSDH, as stated in its intended use plan, made available to ensure "that the assistance is dispersed as far as possible."

After the 2022 declared emergencies, Jackson made a formal request in October 2022 to refinance these three loans, which was approved by the MSDH one month later; this included a zero-percent interest rate and an extension of loan terms to 40 years. This refinance was estimated to award Jackson up to \$7 million in loan subsidy in addition to the original awards totaling \$1.5 million and save the city up to \$12.8 million in estimated interest payments, for a total savings of up to \$20.3 million when compared to the original loan terms, as shown in Figure 2. The MSDH reported that, at the end of fiscal year 2022,

\$7.9 million of discretionary loan subsidy was available for the MSDH to use before the refinance of Jackson’s loans.³

Figure 2: Jackson loan subsidy and interest savings resulting from 2022 refinance

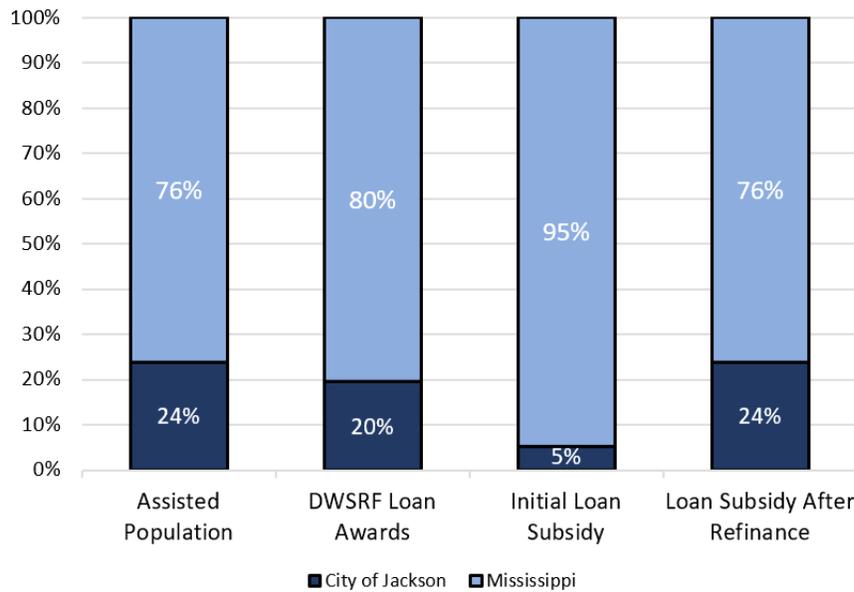


Source: OIG analysis of Jackson’s refinance request. (EPA OIG figure)

According to Region 4, Jackson received most of Mississippi’s DWSRF funding. Region 4 stated that Jackson’s loans amounted to 64 percent of the total capitalization grants awarded to Mississippi from fiscal year 2015 through fiscal year 2022. However, as shown in Figure 3, we found that from fiscal year 2015 through 2022, Jackson’s loans only amounted to 20 percent of the nearly \$265 million that the MSDH awarded to its DWSRF recipients, even as Jackson’s population represented 24 percent of DWSRF loan recipients during this period. In calculating the funding awarded to Jackson, Region 4 did not consider other sources of the MSDH’s DWSRF funding, such as loan repayments, earned interest, and state appropriations, that comprised the total funds available for DWSRF projects. We found that Jackson originally was awarded 82 percent less loan subsidy per capita when compared to all other disadvantaged communities that received DWSRF loans with loan subsidy in Mississippi. In addition, Jackson was only initially awarded 5 percent of the \$28.5 million in loan subsidy the MSDH awarded to all disadvantaged communities in the same period. We also estimated that, after Jackson requested a refinance of its loans, the MSDH’s total award of loan subsidy would increase to \$35.5 million, 24 percent of which was awarded to Jackson.

³ Discretionary loan subsidy is the loan subsidy above and beyond the minimum requirements of SDWA and congressional appropriations and below the maximum set by SDWA.

Figure 3: Jackson’s proportion of Mississippi DWSRF recipient population and funding

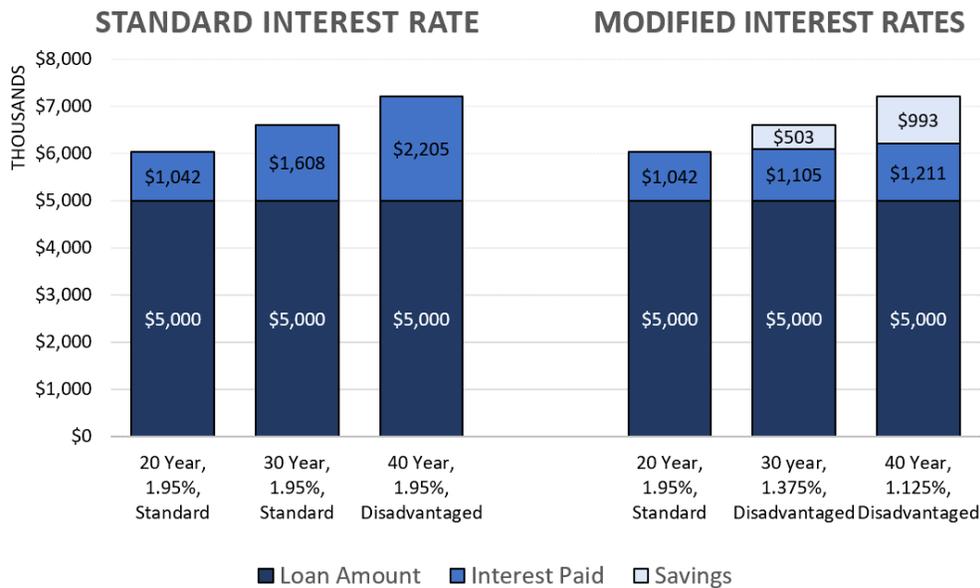


Source: OIG analysis of Office of Water State Revolving Fund and EPA Data. (EPA OIG figure)

The MSDH Could Have Considered Flexible Loan Options in a Timely Manner

We found that the MSDH did not consider changes to its DWSRF Program in a timely manner that would have provided flexible loan options to disadvantaged communities, like Jackson. In 2018, the MSDH considered an interest rate study, but then stated that recipients did not report problems with the interest rate. During an industry conference in July 2023, a MSDH staff member stated that the MSDH had kept its loan interest rate of 1.95 percent the same for over a decade because it was too complicated for the MSDH to calculate different interest rates and loan terms for DWSRF recipients. As shown in Figure 4, the combination of the same interest rate option and variable loan terms would have caused disadvantaged communities to pay up to double the interest of a standard borrower if it was awarded a loan with longer loan terms. Lower interest rates would make a DWSRF loan more affordable for a disadvantaged community in the long term by reducing total interest payments. Furthermore, lower interest rates do not contribute to the loan subsidy limit, making interest rate discounts an option for the MSDH to provide a cost benefit to disadvantaged communities.

Figure 4: Comparison of total loan costs for a \$5 million Mississippi State Department of Health Drinking Water State Revolving Fund loan



Source: OIG analysis of example loans with different terms and interest rates. (EPA OIG figure)

The MSDH did not implement its \$500,000 loan subsidy limit waiver for disadvantaged communities like Jackson in a timely manner, only doing so beginning in its fiscal year 2021 intended use plan. The MSDH told us that increasing loan subsidy awards would put the DWSRF’s perpetuity at risk and prevent other communities from receiving the benefits of loan subsidies. However, states, including Mississippi, have historically awarded loan subsidies above minimum requirements. One state concluded in its intended use plan that “establishing loan subsidy goals above the minimum does not endanger the perpetuity of the DWSRF.”

The MSDH initiated several improvements to its DWSRF Program and created more loan options for disadvantaged communities, such as implementing a cash flow model in November 2022 that would allow the MSDH to better leverage its DWSRF funds to increase project output. The MSDH also stated in June 2021 that it was making changes to its standard operating procedures to modernize and improve the application process for future DWSRF borrowers. As a result of the Infrastructure Investment and Jobs Act, the MSDH also adjusted its disadvantaged community program specifically for this funding to increase benefits to disadvantaged communities. As of fiscal year 2023, the MSDH offered up to a 40-year loan term for disadvantaged communities and the \$500,000 loan subsidy limit waiver, but still only offered one interest rate to all borrowers.

Flexible Loan Options Benefit Disadvantaged Communities Like Jackson

The MSDH, while necessarily considering financial trade-offs, could have offered flexible loan options to disadvantaged communities, including Jackson, which would have enabled water systems to take DWSRF loans at a reduced cost or consider water system improvements in a timely manner. Flexible

loan options for disadvantaged communities do not prevent the MSDH from collecting interest, administrative fees, and principal repayments that would recirculate funds back into the DWSRF, sustaining fund perpetuity and creating more opportunities to fund water systems. In addition, the DWSRF continues to be funded through annual congressional appropriations and supplemental appropriations, like the Infrastructure Investment and Jobs Act, replenishing funds that are awarded in loan subsidy or used for set-aside programs. SDWA provides subsidies for disadvantaged communities, like Jackson, so that they can more easily access capital improvement funding to build resiliency and protect public health.

Recommendation

We recommend that the regional administrator for EPA Region 4:

1. Train the Mississippi State Department of Health on the *DWSRF Disadvantaged Community Definitions: A Reference for States* and assist it in exploring options to refine assistance programs to better support disadvantaged communities.

Agency Response and OIG Assessment

Region 4 agreed with our recommendation and provided planned corrective actions and estimated milestone dates. Region 4 acknowledged the need for training to the MSDH on options to better support disadvantaged communities and highlighted activities from May to November 2022 associated with educating the MSDH on disadvantaged community assistance. In addition, Region 4 noted the planned action to evaluate the MSDH activities for meeting requirements to assist disadvantaged communities during the upcoming annual review of the MSDH and, based on the assessment, plans to offer training, recommendations, and assistance to the MSDH to better support disadvantaged communities. Lastly, Region 4 provided technical comments that we considered and incorporated, as appropriate.

We asked Region 4 to further clarify its planned corrective actions to offer training based on its assessment. The Agency committed to provide training and assist the MSDH in exploring options to better support disadvantaged communities. We believe that Region 4's planned corrective actions are acceptable and meet the intent of our recommendation. Therefore, we consider this recommendation resolved with corrective action pending. Appendix A includes Region 4's response to the draft report.

Status of Recommendation

| Rec. No. | Page No. | Recommendation | Status* | Action Official | Planned Completion Date |
|----------|----------|--|---------|------------------------------------|-------------------------|
| 1 | 17 | Train the Mississippi State Department of Health on the <i>DWSRF Disadvantaged Community Definitions: A Reference for States</i> and assist it in exploring options to refine assistance programs to better support disadvantaged communities. | R | Regional Administrator Region 4 | 6/30/24 |

* C = Corrective action completed.

R = Recommendation resolved with corrective action pending.

U = Recommendation unresolved with resolution efforts in progress.

Agency Response to Draft Report



REGION 4
ATLANTA, GA 30303

March 7, 2024

MEMORANDUM

SUBJECT: Response to Office of Inspector General Draft Report No. OA-FY23-0035 *Lack of State Financial Support and Local Capacity Prolonged Jackson, Mississippi Drinking Water Issues*, Dated February 12, 2024

FROM: Jeaneanne M. Gettle
Acting Regional Administrator

TO: Sean W. O'Donnell, Inspector General
Office of Inspector General

JEANEANNE GETTLE
Digitally signed by JEANEANNE GETTLE
Date: 2024.03.07 08:58:05 -05'00'

Thank you for the opportunity to respond to the recommendations and issues raised in the subject Office of Inspector General (OIG) draft audit report. Region 4's response is below. We have also included a Draft Report Technical Comments Attachment to supplement this response.

OVERALL POSITION

Region 4 agrees with the recommendation of the draft OIG report. The report details the recent history of capacity and funding decisions related to the City of Jackson, Mississippi's drinking water system and provides a recommendation to help Jackson and other disadvantaged communities in the state access flexibilities allowed under the Safe Drinking Water Act State Revolving Fund program. Region 4 is aware of the need for training to the Mississippi Department of Health (MSDH) regarding options to refine assistance programs to better support disadvantaged communities in need.

We ask that the OIG include the beginning date of the treatment failure at O.B. Curtis, which was August 29, 2022, so that it does not appear the water outage lasted for the entire month of August.

Region 4 appreciates the input of the OIG on how to better support disadvantaged communities in Mississippi through the Drinking Water State Revolving Fund (DWSRF). Please see the Region's response to the OIG's recommendation below, including actions we have already taken related to this recommendation.

RESPONSE TO REPORT RECOMMENDATIONS

| No. | Recommendation | Agreements: High-Level Intended Corrective Action(s) | Estimated Completion Quarter and FY |
|-----|---|--|-------------------------------------|
| #1 | <p>Train the Mississippi State Department of Health on the <i>DWSRF Disadvantaged Community Definitions: A Reference for States</i> and assist it in exploring options to refine assistance programs to better support disadvantaged communities.</p> | <p>Region 4 agrees with this recommendation. MSDH was provided information on DWSRF Disadvantaged Community Definitions during a 3-day SRF training in Atlanta in May 2022, which included a presentation on EPA priorities for assistance to disadvantaged communities. Region 4 also held discussions with MSDH about maximizing DWSRF assistance to the City of Jackson as a disadvantaged community during the Jackson drinking water emergency response in the fall of 2022. In November 2022, MSDH agreed to grant a number of requests made by the City of Jackson to reduce its DWSRF debt burden, including refinancing active loans with 0% interest, waiving its cap of \$500,000 in additional subsidization for a single assistance agreement, and increasing one of the active loan’s repayment period to 40 years.</p> <p>As part of its upcoming annual review of MSDH’s DWSRF activities conducted during fiscal year 2023, with in-person interviews scheduled for May 8-10, 2024, Region 4 will again evaluate how MSDH has been meeting requirements for assistance to disadvantaged communities. Based on this assessment, Region 4 will offer training, recommendations, and assistance to help MSDH better support disadvantaged communities and take full advantage of the maximum levels of additional subsidization that are allowed for those communities. Region 4 will include this assessment and training in all state annual reviews of fiscal year 2023 activities to ensure that Region 4 states understand the options available to assist disadvantaged communities.</p> | 3rd Quarter 2024 |

CONTACT INFORMATION

If you or your staff have any questions regarding this response, please contact the Region 4 Audit Follow-Up Coordinator, Alicia Sterk, at Sterk.Alicia@epa.gov or (801) 678-6168.

Attachment

- cc: Gloria Taylor-Upshaw, OIG
- Jean Bloom, OIG
- Kathlene (Katie) Butler, Region 4
- Denisse Diaz, Region 4
- Alicia Sterk, Region 4

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