



# North Little Rock Wastewater

# Annual Report

# 2023



<b>LIST OF VISUALS.....</b>	<b>3</b>
LIST OF FIGURES .....	3
LIST OF TABLES .....	3
<b>2023 HIGHLIGHTS .....</b>	<b>4</b>
REHABILITATION HIGHLIGHTS .....	4
OPERATIONS HIGHLIGHTS .....	4
COLLECTION SYSTEM HIGHLIGHTS.....	5
ENVIRONMENTAL COMPLIANCE HIGHLIGHTS .....	6
<b>REHABILITATION SUMMARY .....</b>	<b>7</b>
PROJECTS UNDER CONSTRUCTION IN 2023 .....	7
PROJECTS COMPLETED IN 2023.....	11
<b>OPERATIONS SUMMARY .....</b>	<b>14</b>
YEAR OVERVIEW .....	14
SOLAR ENERGY PRODUCTION .....	16
<b>COLLECTION SYSTEM SUMMARY .....</b>	<b>17</b>
SANITARY SEWER OVERFLOWS .....	17
GRAVITY LINE CLEANING .....	20
CLOSED-CIRCUIT TELEVISIONING .....	22
CONSTRUCTION.....	24
AIR RELEASE VALVES.....	24
<b>ENVIRONMENTAL COMPLIANCE SUMMARY.....</b>	<b>25</b>
LABORATORY .....	25
PRE-TREATMENT TESTING AND INSPECTIONS .....	25
<b>NPDES PERMIT COMPLIANCE SUMMARY.....</b>	<b>26</b>
2023 PERMIT COMPLIANCE.....	26
PAST PERMIT COMPLIANCE.....	27

# LIST OF VISUALS

## List of Figures

<i>Figure 1. Map of Dixie and Baring Cross Basins Pipe Bursting.....</i>	<i>7</i>
<i>Figure 2. Map of Broadway Area CIPP.....</i>	<i>8</i>
<i>Figure 3. Map of Broadway Area Pipe Bursting .....</i>	<i>9</i>
<i>Figure 4. Map of Upper Riverside Interceptor CIPP Phase II.....</i>	<i>10</i>
<i>Figure 5. Map of Curtis Sykes and Meadow Park Basins Pipe Bursting .....</i>	<i>11</i>
<i>Figure 6. Map of Rose City and Military Drive Basins Pipe Bursting.....</i>	<i>12</i>
<i>Figure 7. Map of Lower Riverside Interceptor CIPP Phase I .....</i>	<i>13</i>
<i>Figure 8. Solar Plant Energy Production in 2023 .....</i>	<i>16</i>
<i>Figure 9. Sanitary Sewer Overflows (SSOs) Each Year from 2011 to 2023 .....</i>	<i>17</i>
<i>Figure 10. Total Annual Precipitation from 2011 to 2023 .....</i>	<i>17</i>
<i>Figure 11. Causes of Sanitary Sewer Overflows (SSOs) in 2023 .....</i>	<i>18</i>
<i>Figure 12. Map of Sanitary Sewer Overflows (SSOs) in 2023 .....</i>	<i>19</i>
<i>Figure 13. Length of Pipe Cleaned Each Year from 2014 to 2023.....</i>	<i>20</i>
<i>Figure 14. Map of Pipes Cleaned in 2023 .....</i>	<i>21</i>
<i>Figure 15. Length of Pipe Televised Each Year from 2014 to 2023.....</i>	<i>22</i>
<i>Figure 16. Map of Pipes Televised in 2023.....</i>	<i>23</i>
<i>Figure 17. Types of Construction Activities Performed by NLRW Crews in 2023 .....</i>	<i>24</i>
<i>Figure 18. NPDES Permit Violations in 2023 .....</i>	<i>26</i>
<i>Figure 19. NPDES Permit Violations for Faulkner Lake WRF Each Year from 2014 to 2023 ....</i>	<i>27</i>
<i>Figure 20. NPDES Permit Violations for White Oak WRF Each Year from 2014 to 2023 .....</i>	<i>28</i>
<i>Figure 21. NPDES Permit Violations for Five Mile Creek WRF Each Year from 2014 to 2023..</i>	<i>29</i>
<i>Figure 22. NPDES Permit Violations for Maumelle WRF Each Year from 2014 to 2023 .....</i>	<i>30</i>

## List of Tables

<i>Table 1. Collection System Rehabilitation Projects Under Construction in 2023.....</i>	<i>4</i>
<i>Table 2. Collection System Rehabilitation Projects Completed in 2023 .....</i>	<i>4</i>
<i>Table 3. Number of Environmental Compliance Tests and Inspections in 2023.....</i>	<i>6</i>
<i>Table 4. Solar Plant Energy Production in 2023 .....</i>	<i>16</i>
<i>Table 5. Sanitary Sewer Overflows per 100 Miles of Pipe and Precipitation Each Year from 2011 to 2023 .....</i>	<i>18</i>
<i>Table 6. Length of Pipe Cleaned Each Year from 2014 to 2023.....</i>	<i>20</i>
<i>Table 7. Length of Pipe Televised Each Year from 2014 to 2023.....</i>	<i>22</i>
<i>Table 8. Number of Construction Activities Performed by NLRW Crews in 2023 .....</i>	<i>24</i>
<i>Table 9. Laboratory Tests Performed in 2023 .....</i>	<i>25</i>
<i>Table 10. Pretreatment Activities in 2023 .....</i>	<i>25</i>
<i>Table 11. NPDES Permit Violations in 2023 .....</i>	<i>26</i>
<i>Table 12. NPDES Permit Violations for Faulkner Lake WRF Each Year from 2014 to 2023 .....</i>	<i>27</i>
<i>Table 13. NPDES Permit Violations for White Oak WRF Each Year from 2014 to 2023 .....</i>	<i>28</i>
<i>Table 14. NPDES Permit Violations for Five Mile Creek WRF Each Year from 2014 to 2023....</i>	<i>29</i>
<i>Table 15. NPDES Permit Violations for Maumelle WRF Each Year from 2014 to 2023 .....</i>	<i>30</i>

## 2023 HIGHLIGHTS

### Rehabilitation Highlights

#### *Under Construction*

*Table 1. Collection System Rehabilitation Projects Under Construction in 2023*

Project	Sewer Line Type	Linear Feet	Estimated Cost
Dixie and Baring Cross Basins Pipe Bursting	Secondary Sewers	18,248	\$1,622,193
Broadway Area CIPP	Secondary Sewers	29,457	\$2,518,119
Broadway Area Pipe Bursting	Secondary Sewers	24,279	\$5,029,653
Upper Riverside Interceptor CIPP Phase II	54" Interceptor	5,824	\$2,082,635
<b>Total</b>		<b>77,808</b>	<b>\$11,252,600</b>

#### *Completed*

*Table 2. Collection System Rehabilitation Projects Completed in 2023*

Project	Sewer Line Type	Linear Feet	Cost
Curtis Sykes and Meadow Park Basins Pipe Bursting	Secondary Sewers	26,825	\$2,361,434
Rose City and Military Drive Pipe Bursting	Secondary Sewers	24,796	\$2,378,750
Lower Riverside Interceptor CIPP Phase I	54" Interceptor	4,358	\$4,388,238
<b>Total</b>		<b>55,979</b>	<b>\$9,128,422</b>

### Operations Highlights

#### *General*

- Purchased and installed chlorine shutdown actuators at Faulkner Lake WRF, Five Mile Creek WRF, and White Oak WRF. Incorporated the actuators into the SCADA system and chlorine alarm to automatically close the chlorine tank valve in the event of a detected leak.
- Identified critical plant VFDs and ordered spares to minimize failure-driven down time. Typical VFD lead times have been 8-12 months.
- Switched SCADA data services from AT&T to T-Mobile APN because Cradlepoint (router vendor) is no longer offering cloud management. This also improved security as the APN is not connected to the general internet.

### *Faulkner Lake WRF*

- Began rehabilitation project on all four primary clarifiers as well as Sludge Thickeners #2 & #3. The project includes recoating the clarifier mechanisms and rehabilitating concrete.
- Purchased a spare drive unit for secondary clarifiers to provide full plant capacity redundancy.

### *White Oak WRF*

- Upgraded the SCADA system:
  - Added statuses and alarms for all 32 lagoon aerators. Future plans include incorporating hardware for starting and stopping aerators remotely during freezing weather.
  - Completed a total upgrade of the influent pump station controls, including 3 new VFDs sized to handle future pumps.
  - Upgraded Pump #3, which was a dedicated constant speed lag pump with low run hours, with a VFD and added it to the regular pump rotation.
- Made the major purchase of upgraded bar screens. The new screens have ¼" spacing to remove more material than the previous ¾" spaced units. Installation is ongoing.

### *Five Mile Creek WRF*

- Majorly repaired the 700 KW influent generator, including replacing the oil pump and repairing the radiator.

### *Maumelle WRF*

- Upgraded the SCADA system to allow remote on/off operation of the blower as an option to aid in low alkalinity pH boosting and to relieve clarifier solids overloads.
- Upgraded the SCADA system to monitor Aerobic Digester level and sludge wasting.
- Upgraded the 150 HP Effluent Pump #2 VFD to a modern and currently supported unit.
- Completed the control upgrade for Comminutor #3.
- Purchased and installed a new Comminutor #2.
- Purchased a spare drive unit for the clarifier to minimize failure-driven downtime. Failure of this unit without a spare on hand would cause permit violations.

## **Collection System Highlights**

- Owned and maintained 666 miles of gravity lines and 66 miles of force mains in 2023.
- **Thirty** (30) Sanitary Sewer Overflows (SSOs) were reported in 2023. This averages to 4.1 SSOs per 100 miles of pipe.
- Cleaned **1,642,999** linear feet of the gravity collection system in 2023. This was 47% of the 3,516,480 linear feet of active gravity lines in the system.
- Televised **245,945** linear feet of the gravity collection system in 2023. This was 7% of the 3,516,480 linear feet of active gravity lines in the system.

## Environmental Compliance Highlights

*Table 3. Number of Environmental Compliance Tests and Inspections in 2023*

	<b>Monthly Average</b>	<b>Year Total</b>
<b>Laboratory</b>	4,173	50,076
<b>Pretreatment</b>	1,211	14,532

# REHABILITATION SUMMARY

## Projects Under Construction in 2023

### *Dixie and Baring Cross Basins Pipe Bursting*

- Contract awarded to Burkhalter Technologies Inc. in November 2021 for \$1,278,595. Change orders increased the contract to \$1,622,193.
- Pipe burst approximately 18,248 linear feet of 6” and 8” secondary sewers.
- Reconnect approximately 398 active services.

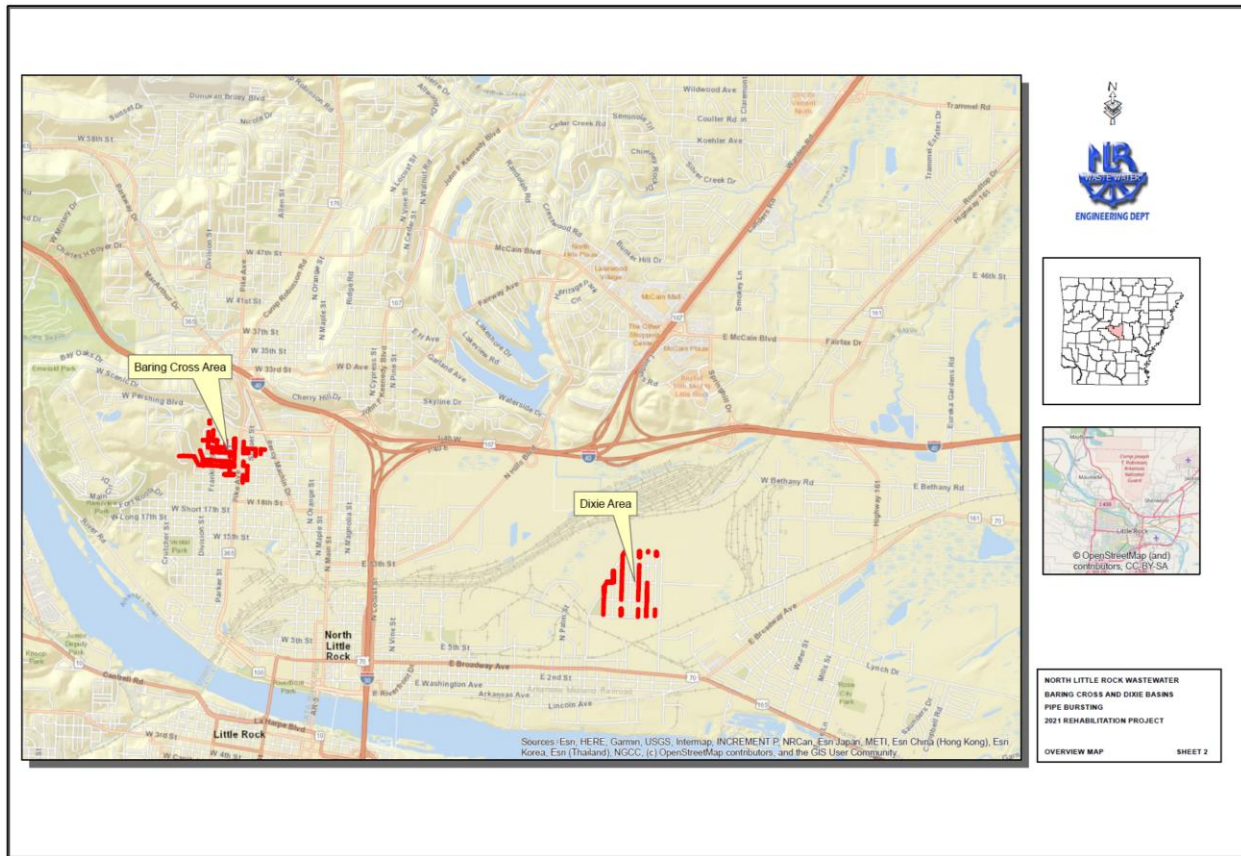
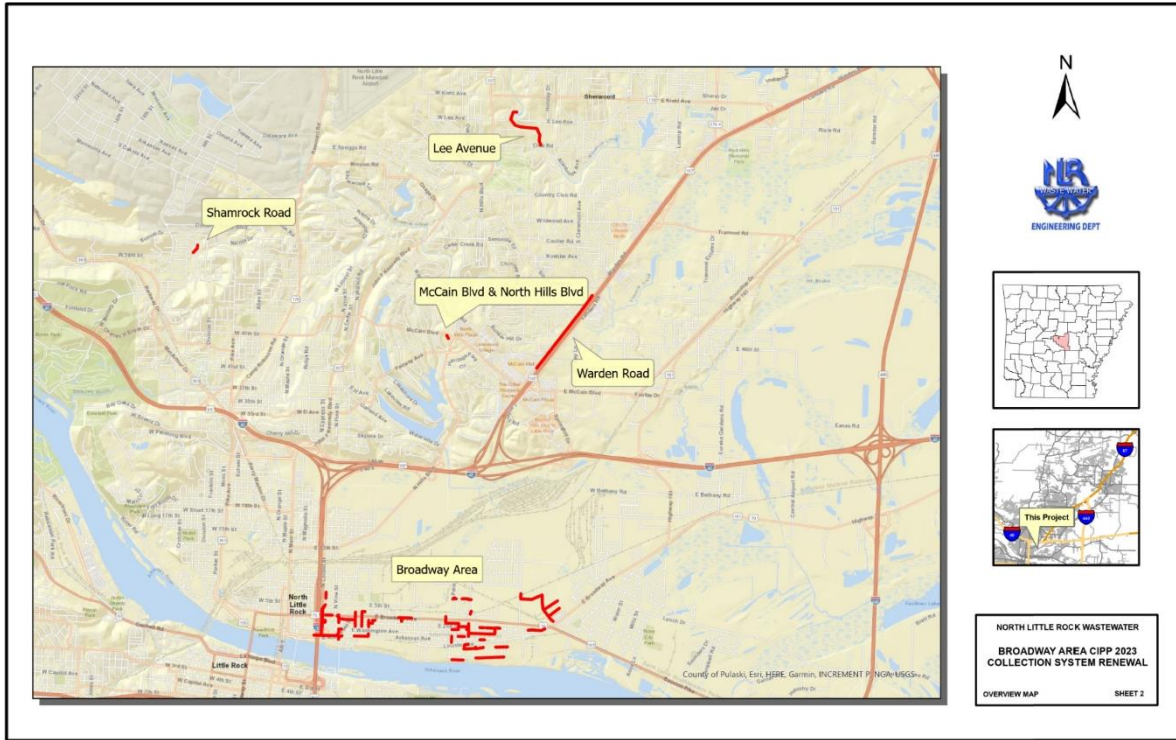


Figure 1. Map of Dixie and Baring Cross Basins Pipe Bursting

*Broadway Area CIPP*

- Contract awarded to Suncoast Infrastructure Inc. in March 2023 for \$2,518,119.
- Use CIPP to rehabilitate approximately 29,457 linear feet of 6" to 18" secondary sewers.

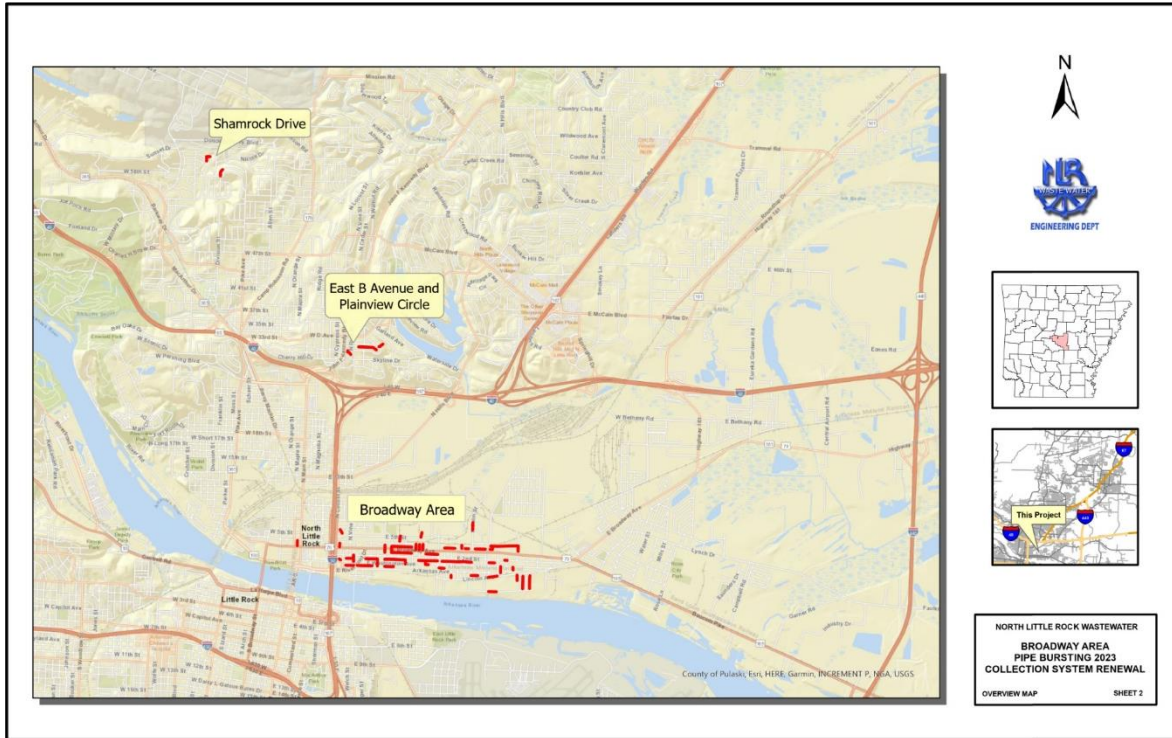


*Figure 2. Map of Broadway Area CIPP*



*Broadway Area Pipe Bursting*

- Contract awarded to Arkansas Cleaning and Televising, in September 2023 for \$3,640,045. Change orders increased the contract to \$5,029,653.
- Pipe burst approximately 24,279 linear feet of 6" to 8" secondary sewers.
- Reconnect approximately 315 active services.



*Figure 3. Map of Broadway Area Pipe Bursting*

### Upper Riverside Interceptor CIPP Phase II

- Contract awarded to Insituform Technologies LLC in March 2023 for \$2,082,635.
- Use CIPP to rehabilitate approximately 5,824 linear feet of 30" reinforced concrete pipe.

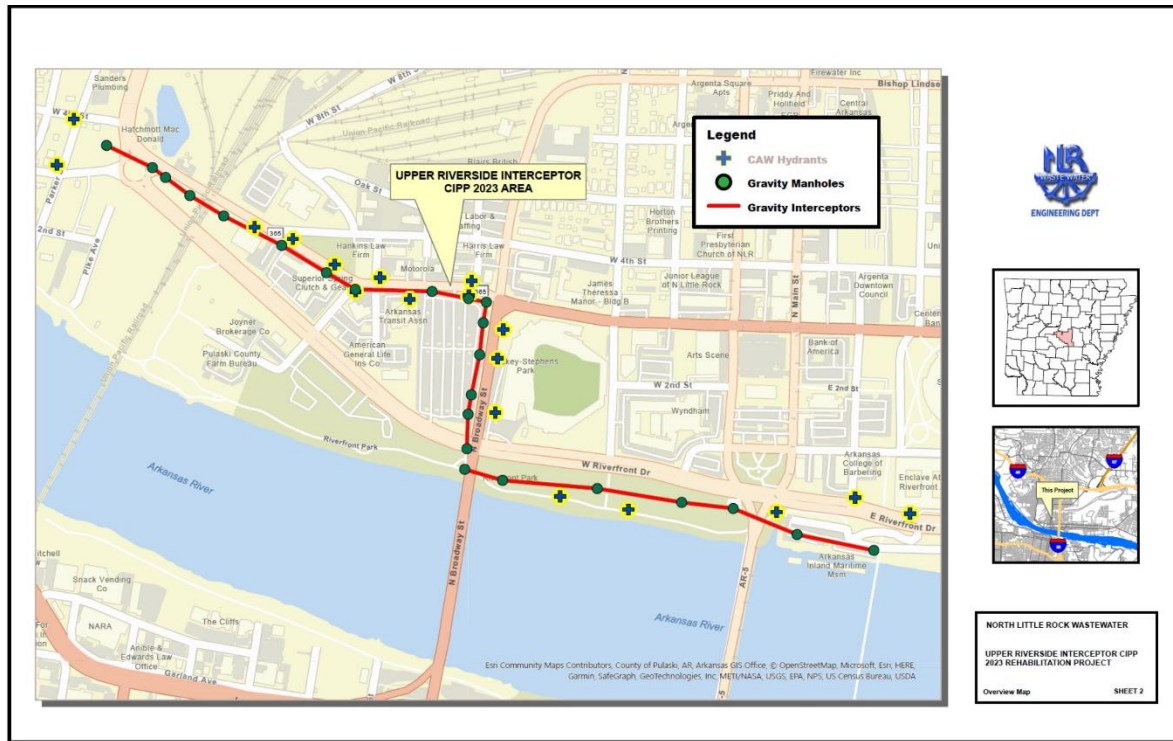
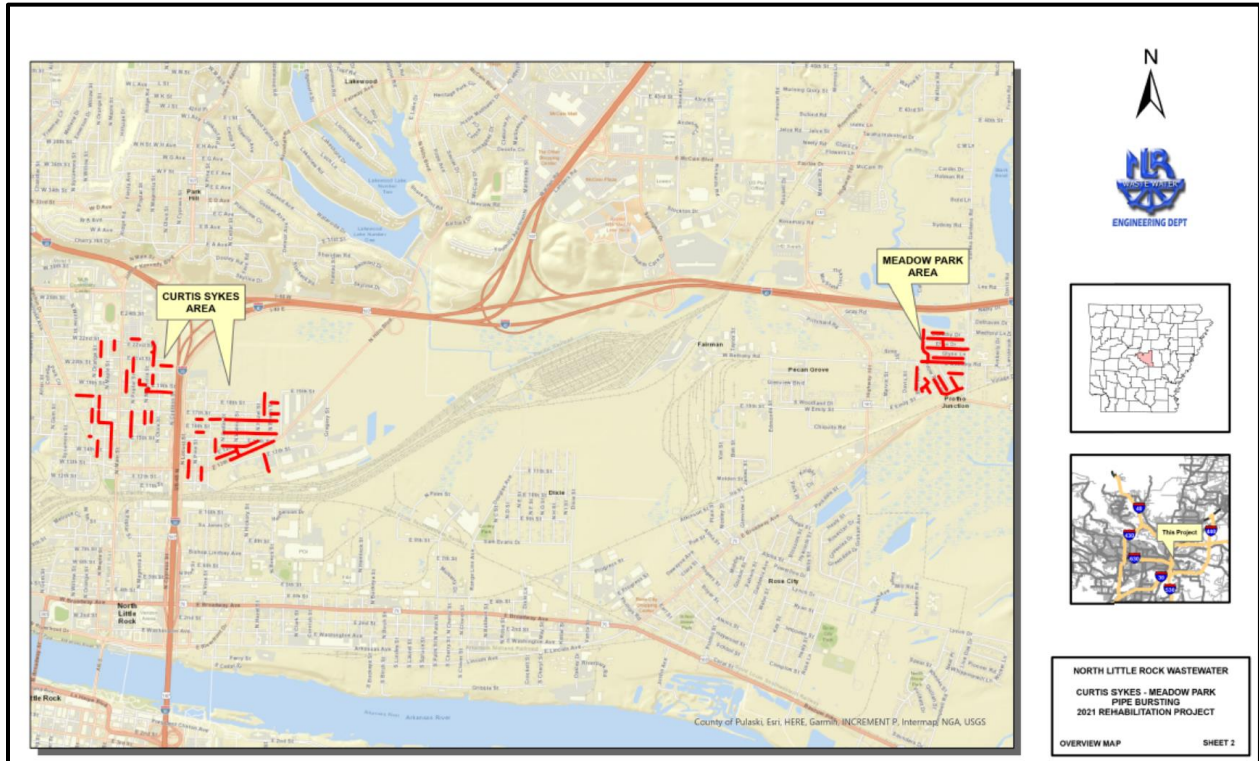


Figure 4. Map of Upper Riverside Interceptor CIPP Phase II

## Projects Completed in 2023

### *Curtis Sykes and Meadow Park Basins Pipe Bursting*

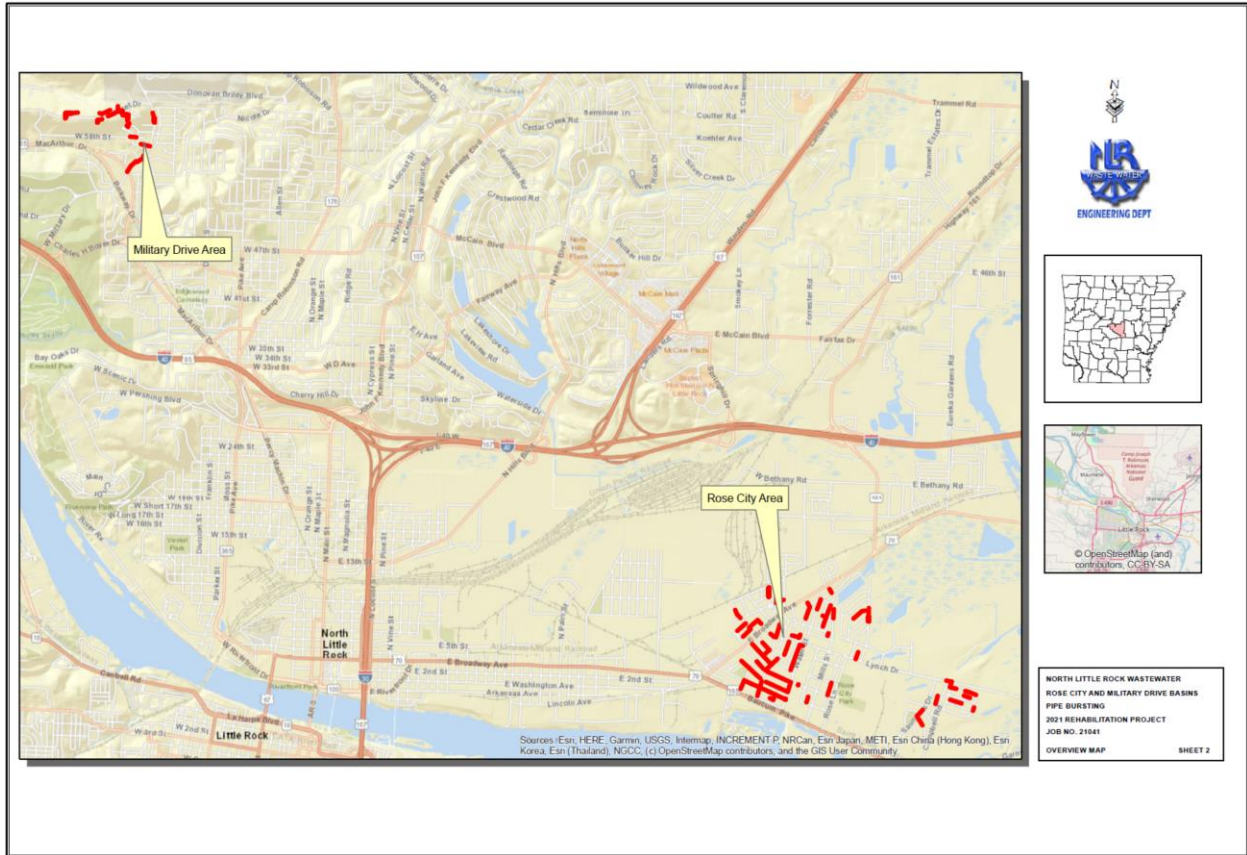
- Contract awarded to Horseshoe Construction Inc. in April 2022 for \$1,779,766.
- Pipe bursted 26,825 linear feet of 6” and 8” secondary sewers.
- Completed for \$2,361,434.



*Figure 5. Map of Curtis Sykes and Meadow Park Basins Pipe Bursting*

*Rose City and Military Drive Basins Pipe Bursting*

- Contract awarded to Burkhalter Technologies Inc. in April 2021 for \$2,091,202.
- Pipe bursted 24,796 linear feet of secondary sewers.
- Completed for \$2,378,750.



*Figure 6. Map of Rose City and Military Drive Basins Pipe Bursting*

*Lower Riverside Interceptor CIPP Phase I*

- Contract awarded to Insituform Technologies LLC in February 2022 for \$4,272,238.
- Used CIPP to rehabilitate 4,358 linear feet of 54” reinforced concrete pipe.
- Installed four 8-foot-diameter manholes.
- Completed for \$4,388,238.



*Figure 7. Map of Lower Riverside Interceptor CIPP Phase I*

# OPERATIONS SUMMARY

## Year Overview

### *January*

- Maumelle WRF – Repaired chlorine ejector.
- Maumelle WRF – Purchased and installed a new pump for Surge Basin #2.
- Faulkner Lake WRF – Installed stone and fabric to mitigate erosion around East Lagoon inlet pipe.

### *February*

- Faulkner Lake WRF – Massive amount of biosolids had accumulated on the North (inlet) end of the West Lagoon, to the point where the solids were near the surface. A contractor was hired to balance the solids blanket by moving the solids further downstream within the lagoon.

### *March*

- Five Mile Creek WRF – Influent VFD #4 failed due to failed fan control board. A new board was ordered and installed to restore the VFD to service.
- White Oak WRF – Replaced the control panel on Chlorine Pump #1.
- White Oak WRF – Pulled Influent Pump #1 for repairs.
- Maumelle WRF – Diagnosed and remediated Surge Basin Pump #3 VFD faults.
- Faulkner Lake WRF – The contractor finished sending the biosolids further downstream within the lagoon.
- General – Completed required biannual operator RMP training.

### *May*

- White Oak WRF – Stabilized Lagoon 3&4 aerator MCC panel slab foundation.
- General – Completed annual sludge depth measurements at Faulkner Lake WRF, Five Mile Creek WRF, and White Oak WRF.
- Maumelle WRF – RAS pump failed and was rebuilt by the repair shop.

### *June*

- Five Mile Creek WRF – Pulled Effluent Pump #3 and sent it off for repairs.

### *July*

- White Oak WRF – Influent generator fuel transfer pump failed and was upgraded.
- Solar Plant – Inverter #3 failed and was replaced under warranty.

### *August*

- White Oak WRF – Incorporated Northshore and plant west gate controls into SCADA to allow remote operation.

- Maumelle WRF – Effluent VFD #1 failed due to faulty control board. Board was replaced and unit was put back into service.

### *September*

- White Oak WRF – Installed security cameras.
- Solar Plant – Built a “doghouse” style shade structure to help shield inverters from the elements.

### *October*

- Faulkner Lake WRF – Upgraded gate network radios to Ubiquiti brand specified by IT manager for network security purposes.
- Five Mile Creek WRF – Repaired Effluent Pump #3 and put it back into service.
- White Oak WRF – Repaired Influent Pump #1 and put it back into service.
- Solar Plant – Two solar plant tracker units failed and were replaced under warranty.

### *November*

- Five Mile Creek WRF – Effluent flowmeter vault flooded due to faulty sump pump. Sump pump was replaced.
- Maumelle WRF – Influent Pump #2 failed and was sent to the repair shop.

### *December*

- Maumelle WRF – Repaired Influent Pump #2 and put it back into service.

## Solar Energy Production

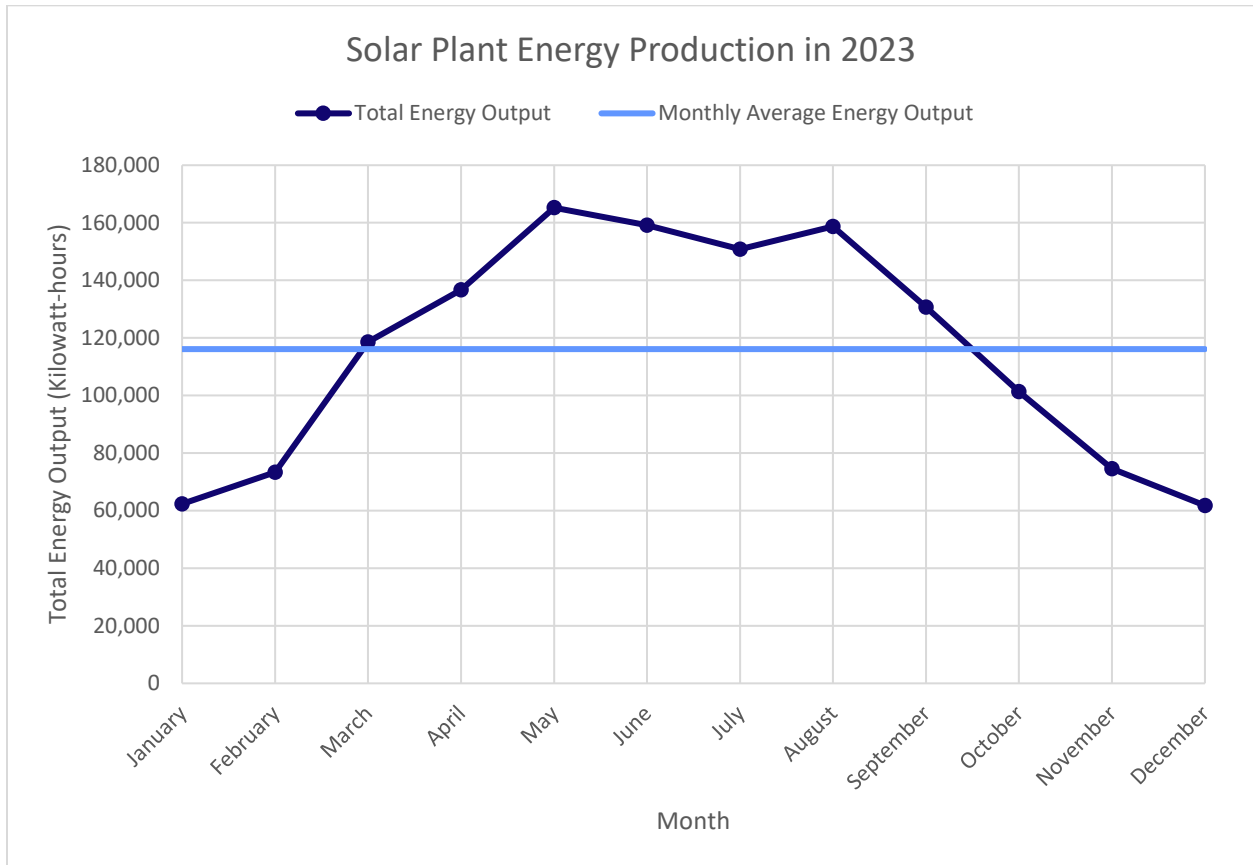


Figure 8. Solar Plant Energy Production in 2023

Table 4. Solar Plant Energy Production in 2023

Month	Total Energy Output (Kilowatt-hours)
January	62,340
February	73,290
March	118,610
April	136,680
May	165,230
June	159,220
July	150,880
August	158,770
September	130,690
October	101,350
November	74,550
December	61,790
<b>2023 Total</b>	<b>1,393,400</b>
<b>Monthly Average</b>	<b>116,117</b>
<b>Daily Average</b>	<b>3,818</b>



# COLLECTION SYSTEM SUMMARY

## Sanitary Sewer Overflows

Thirty (30) SSOs were reported in 2023. This averages to 4.1 SSOs per 100 miles of pipe.

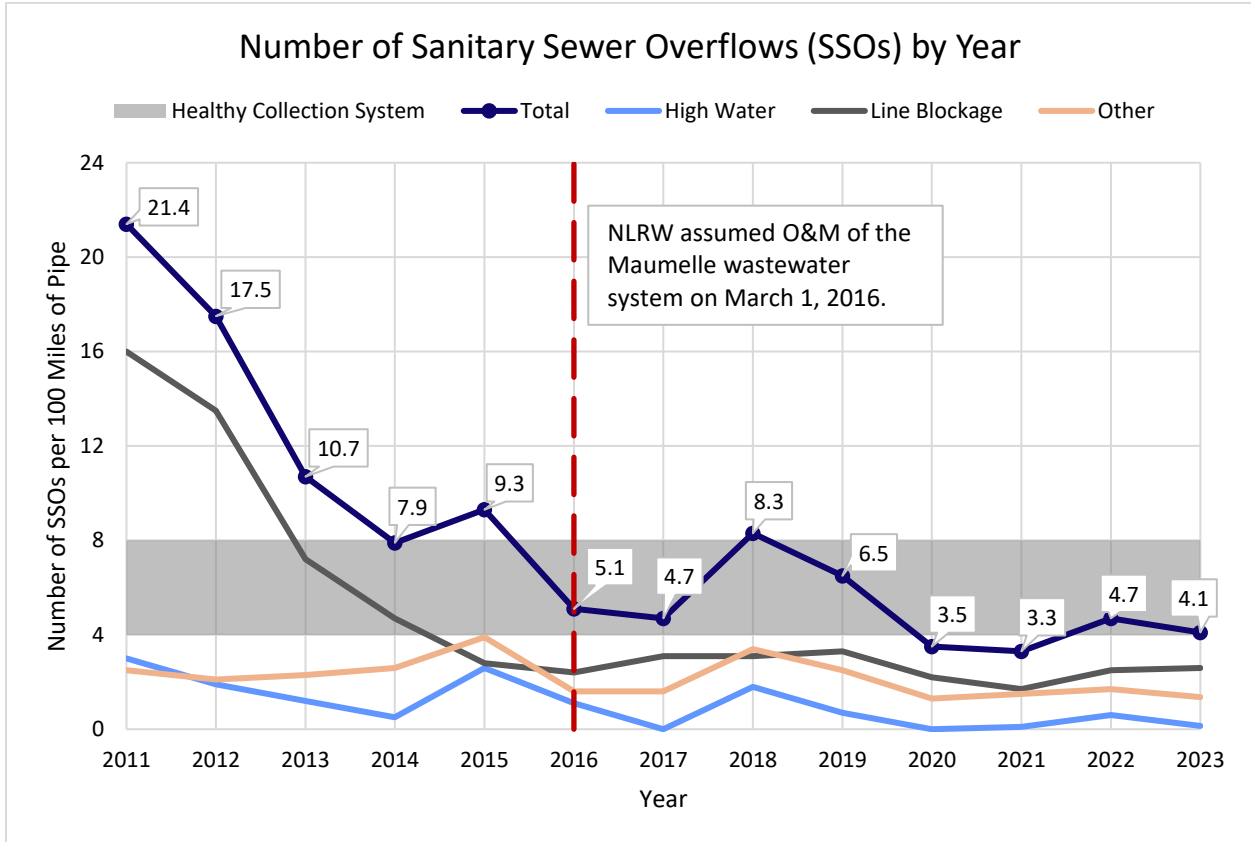


Figure 9. Sanitary Sewer Overflows (SSOs) Each Year from 2011 to 2023

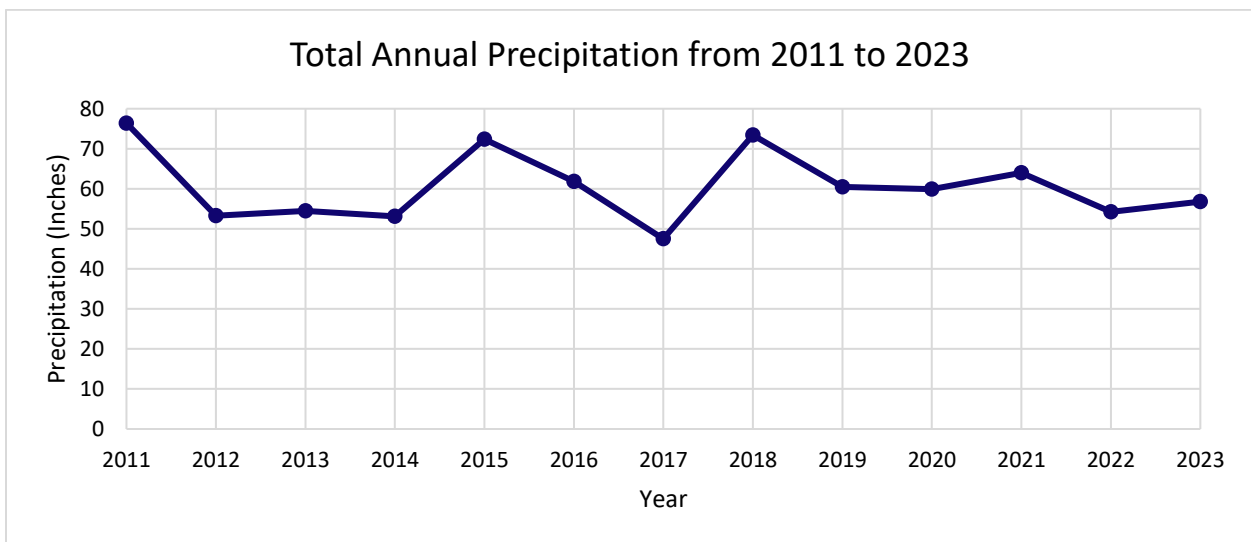


Figure 10. Total Annual Precipitation from 2011 to 2023

Data accessed June 3, 2024, from National Oceanic and Atmospheric Administration, National Centers for Environmental Information, Station: Little Rock Airport Adams Field, <https://www.ncdc.noaa.gov/cdo-web/datasets/GHCND/stations/GHCND:USW00013963/detail>

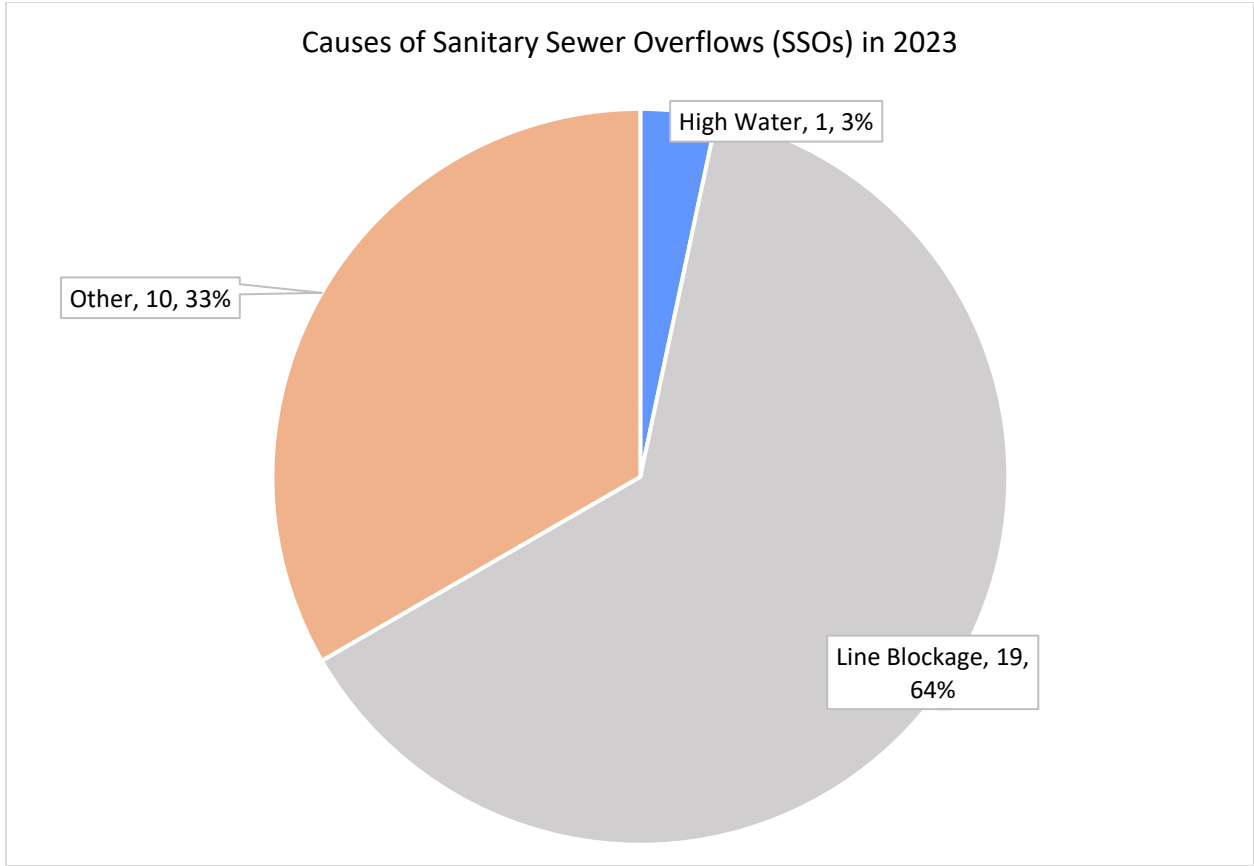
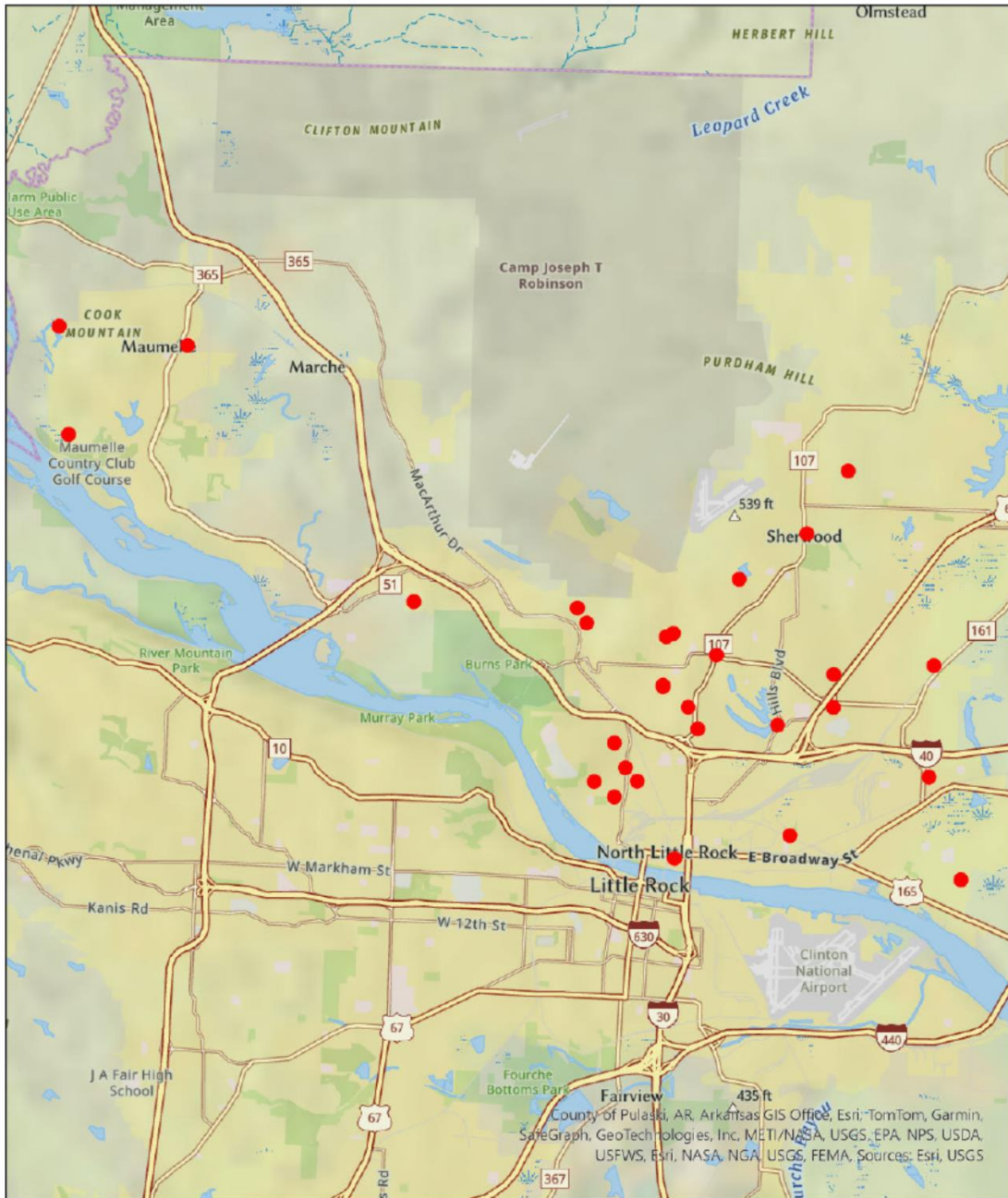


Figure 11. Causes of Sanitary Sewer Overflows (SSOs) in 2023

Table 5. Sanitary Sewer Overflows per 100 Miles of Pipe and Precipitation Each Year from 2011 to 2023

Year	Total SSOs	Line Failure	Infiltration and Inflow	Line Blockage	Precipitation (Inches)
2011	21.4	2.5	3	16	76
2012	17.5	2.1	1.9	13.5	53
2013	10.7	2.3	1.2	7.2	55
2014	7.9	2.6	0.5	4.7	53
2015	9.3	3.9	2.6	2.8	72
2016	5.1	1.6	1.1	2.4	62
2017	4.7	1.6	0	3.1	48
2018	8.3	3.4	1.8	3.1	73
2019	6.5	2.5	0.7	3.1	61
2020	3.5	1.3	0	2.2	60
2021	3.3	1.5	0.1	1.7	64
2022	4.7	1.7	0.6	2.5	54
2023	4.1	0.8	0.1	3.1	57



## North Little Rock Wastewater SSO Locations - 2023

Printed 5/10/2024  
J. Milum

Figure 12. Map of Sanitary Sewer Overflows (SSOs) in 2023

## Gravity Line Cleaning

1,642,999 linear feet of the gravity collection system was cleaned in 2023. This is 47% of the 3,516,480 linear feet of active gravity lines in the system.

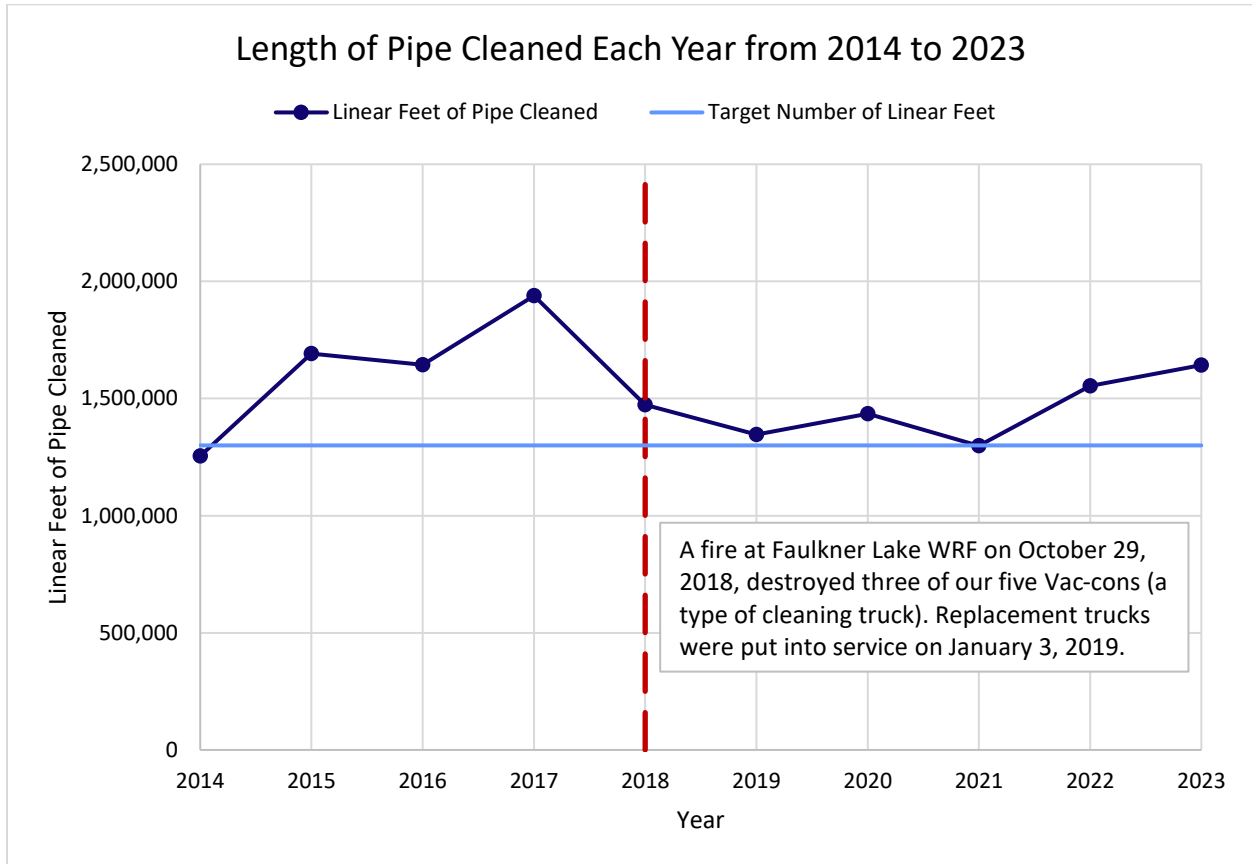
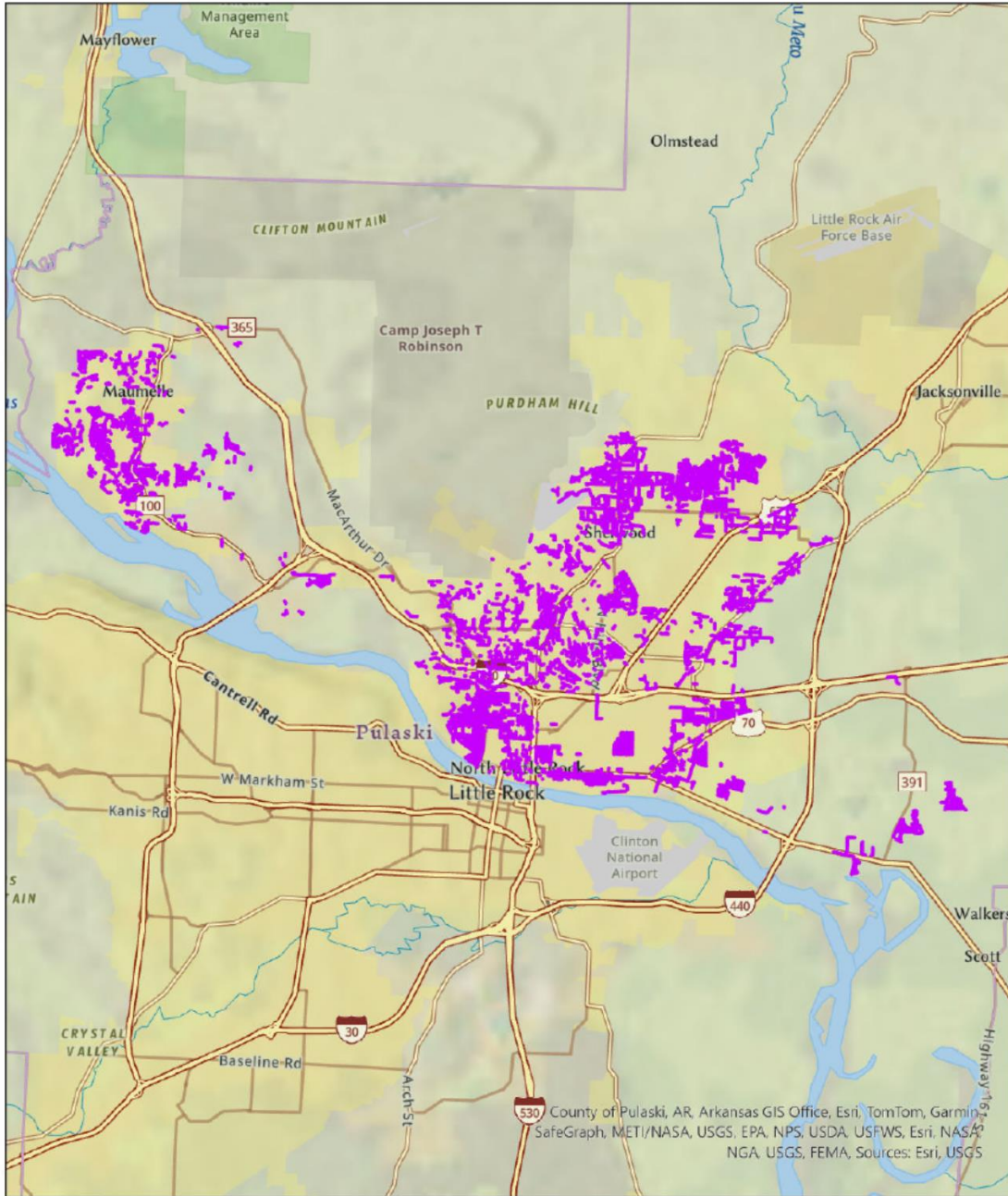


Figure 13. Length of Pipe Cleaned Each Year from 2014 to 2023

Table 6. Length of Pipe Cleaned Each Year from 2014 to 2023

Year	Linear Feet of Pipe Cleaned
2014	1,255,000
2015	1,692,000
2016	1,645,000
2017	1,939,000
2018	1,473,000
2019	1,346,000
2020	1,435,000
2021	1,298,000
2022	1,554,000
2023	1,643,000



**North Little Rock Wastewater**  
Lines Cleaned - 2023

Printed 5/10/2024  
J. Milum

Figure 14. Map of Pipes Cleaned in 2023

## Closed-Circuit Televising

245,945 linear feet of the gravity collection system was televised in 2023. This is 7% of the 3,516,480 linear feet of active gravity lines in the system.

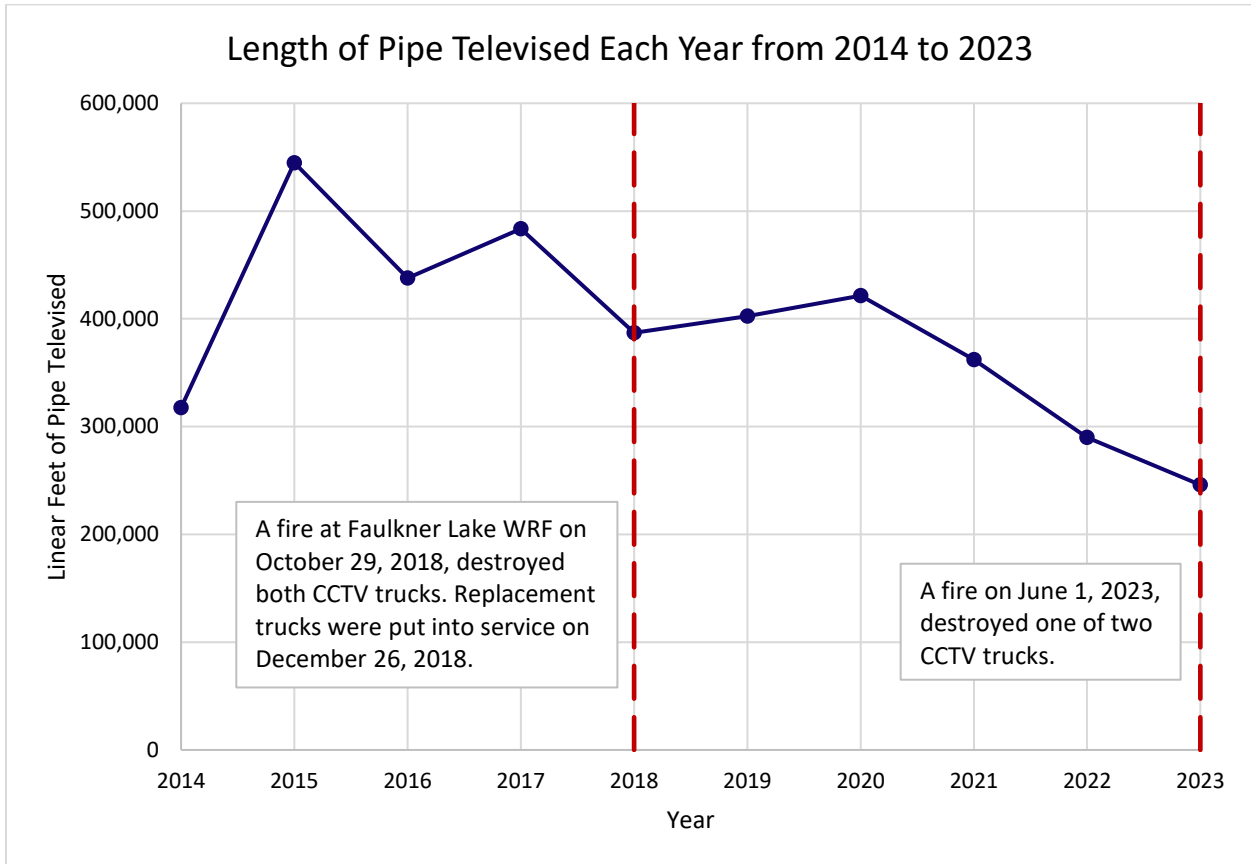


Figure 15. Length of Pipe Televised Each Year from 2014 to 2023

Table 7. Length of Pipe Televised Each Year from 2014 to 2023

Year	Linear Feet of Pipe Televised
2014	318,000
2015	545,000
2016	438,000
2017	484,000
2018	387,000
2019	402,000
2020	421,000
2021	362,000
2022	290,000
2023	246,000

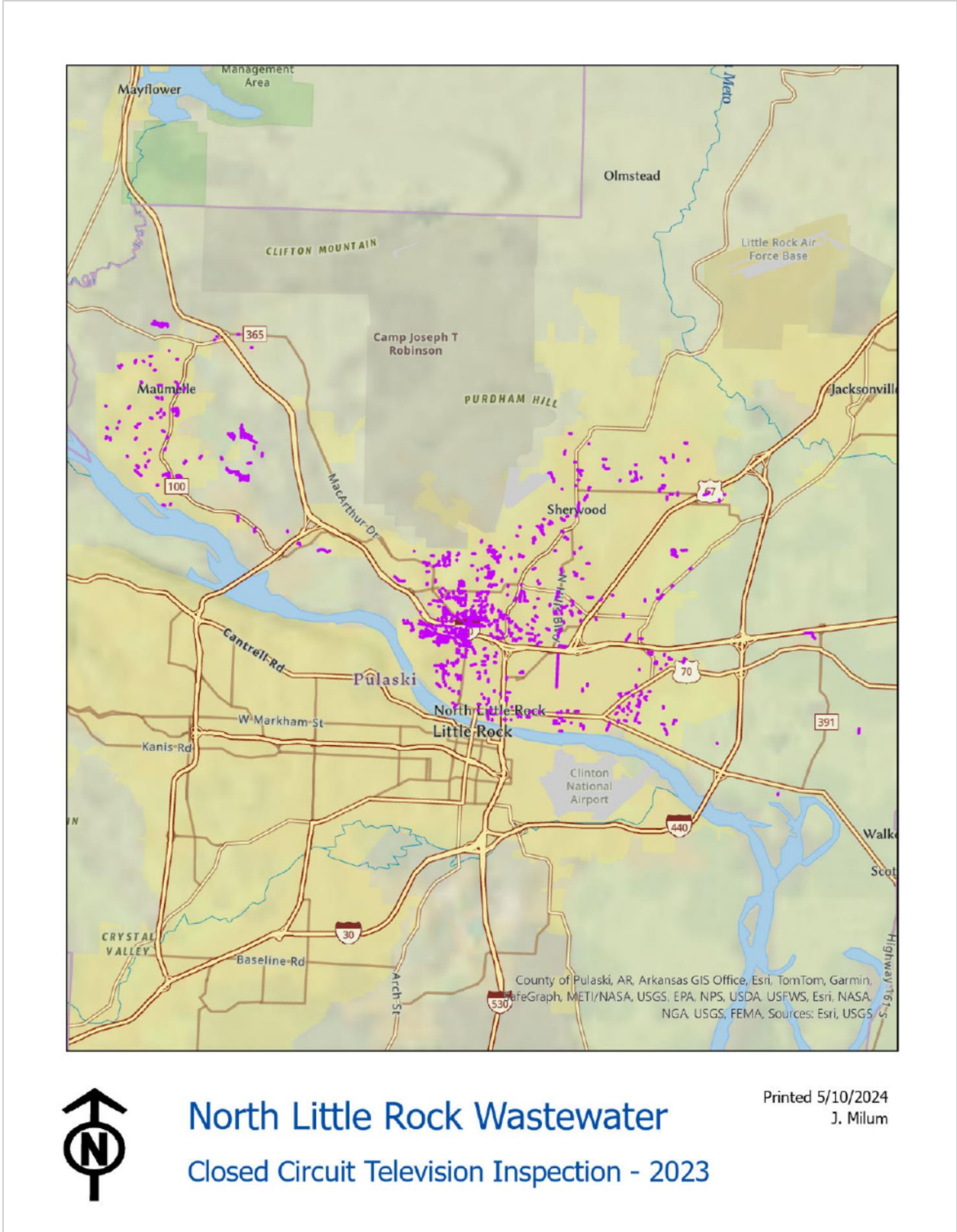


Figure 16. Map of Pipes Televised in 2023

## Construction

The 253 open cut point repairs performed by the Maintenance and Construction Department in 2023 totaled to 2,999 linear feet.

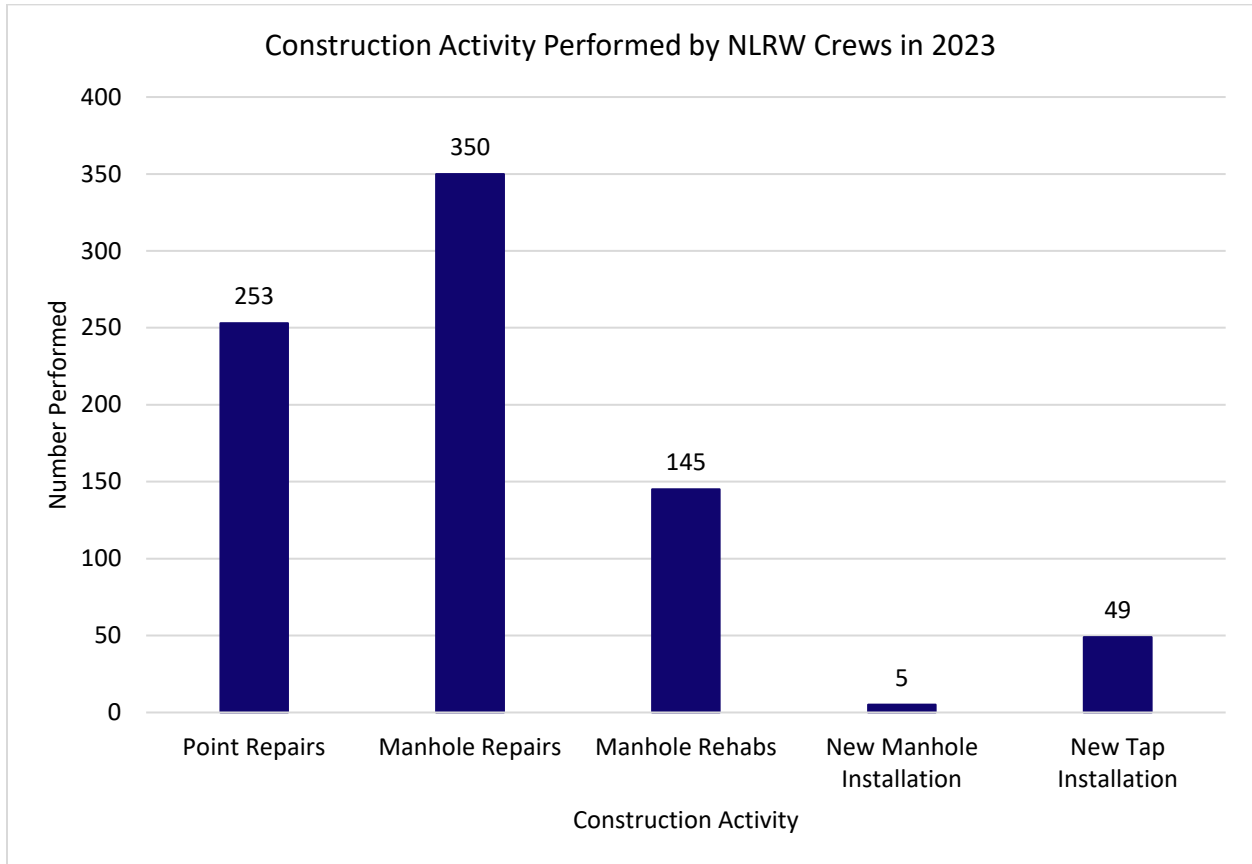


Figure 17. Types of Construction Activities Performed by NLRW Crews in 2023

Table 8. Number of Construction Activities Performed by NLRW Crews in 2023

Point Repairs	Manhole Repairs	Manhole Rehabs	New Manhole Installation	New Tap Installation
253	350	145	5	49

## Air Release Valves

A new crew was established to locate, inspect, and maintain air release valves (ARVs). So far, ARVs have been added to the computerized maintenance management system Cityworks, 105 ARVs have been located on plans, and 55 ARVs have been located in the field.



# ENVIRONMENTAL COMPLIANCE SUMMARY

## Laboratory

*Table 9. Laboratory Tests Performed in 2023*

Test	Average Frequency per Month
BOD/CBOD	1,130
DO	71
TSS	300
Field Grab pH	240
Fecal	100
TRC	113
COD	298
SS	188
Comp pH	211
Stream Temp	233
Alkalinity	178
Ammonia	204
T. Phosphorus	82
Decl2	127
O&G	65
Lab Temps	60
Calibrations	210
% Total Solids	146
% Volatile Solids	146
Special Projects	40
Microscope	31
<b>Monthly Total</b>	<b>4,173</b>
<b>Year Total</b>	<b>50,076</b>

## Pre-Treatment Testing and Inspections

*Table 10. Pretreatment Activities in 2023*

Activity	Average Frequency per Month
Grab pH	380
Stream Temp	380
Calibrations	30
Sample Station Visits	380
Annual Industry Compliance Inspection	2
Grease Trap Inspections	34
Waste Survey	3
Special Projects	2
<b>Total</b>	<b>1,211</b>
<b>Year Total</b>	<b>14,532</b>

# NPDES PERMIT COMPLIANCE SUMMARY

## 2023 Permit Compliance

Three (3) discharge violations and one (1) water quality testing violation were reported for Faulkner Lake WRF in 2023. No NPDES permit violations were reported for White Oak WRF, Five Mile Creek WRF, and Maumelle WRF in 2023.

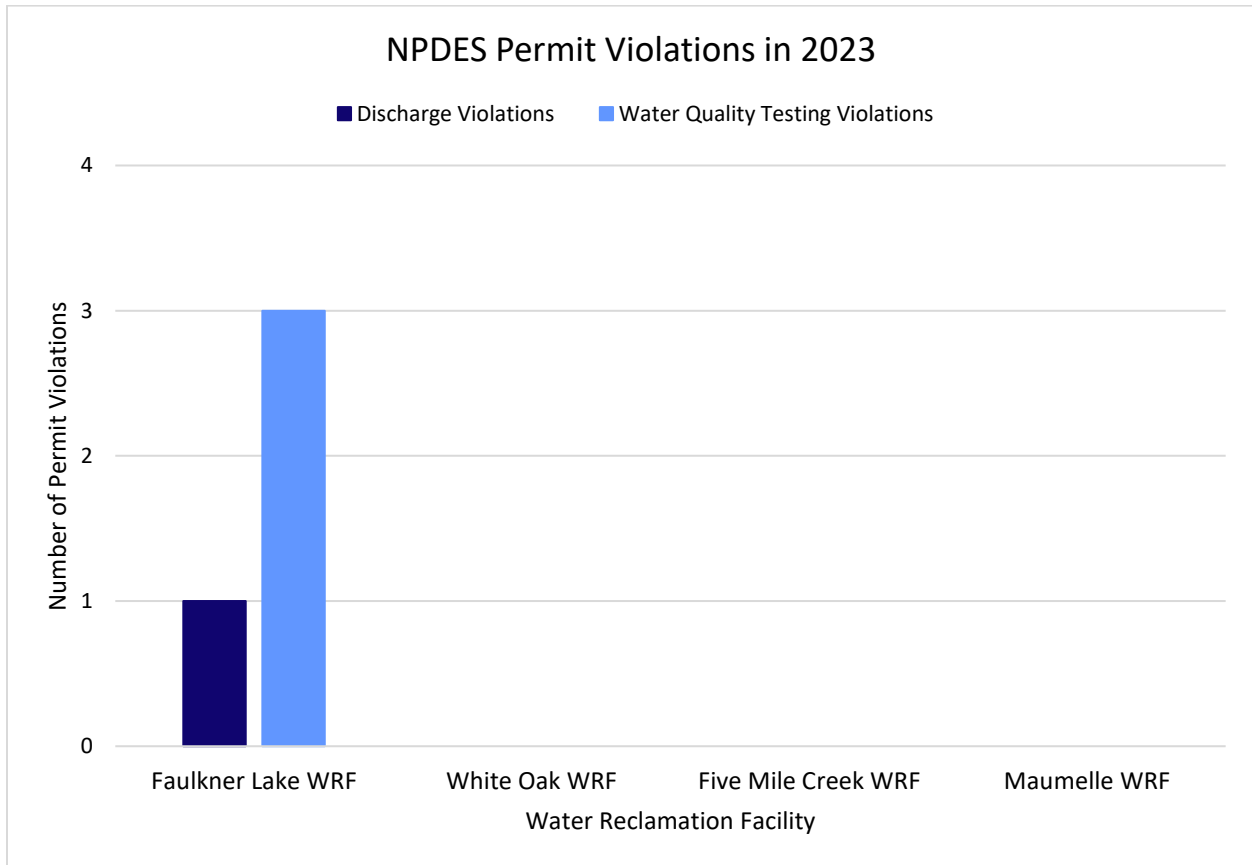


Figure 18. NPDES Permit Violations in 2023

Table 11. NPDES Permit Violations in 2023

	Faulkner Lake WRF	White Oak WRF	Five Mile Creek WRF	Maumelle WRF
<b>Discharge Violations</b>	1	0	0	0
<b>Water Quality Testing Violations</b>	3	0	0	0

## Past Permit Compliance

### Faulkner Lake WRF

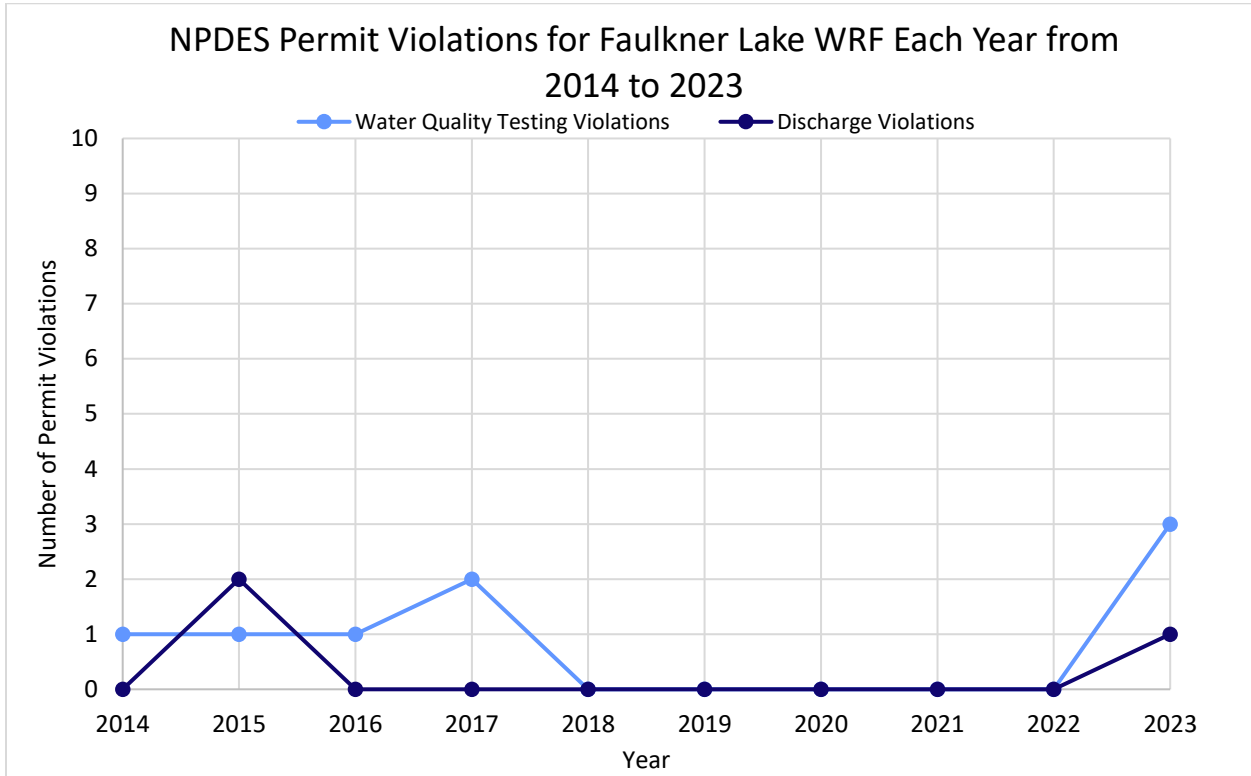


Figure 19. NPDES Permit Violations for Faulkner Lake WRF Each Year from 2014 to 2023

Table 12. NPDES Permit Violations for Faulkner Lake WRF Each Year from 2014 to 2023

Year	Water Quality Testing Violations	Discharge Violations
2014	1	0
2015	1	2
2016	1	0
2017	2	0
2018	0	0
2019	0	0
2020	0	0
2021	0	0
2022	0	0
2023	3	1

White Oak WRF

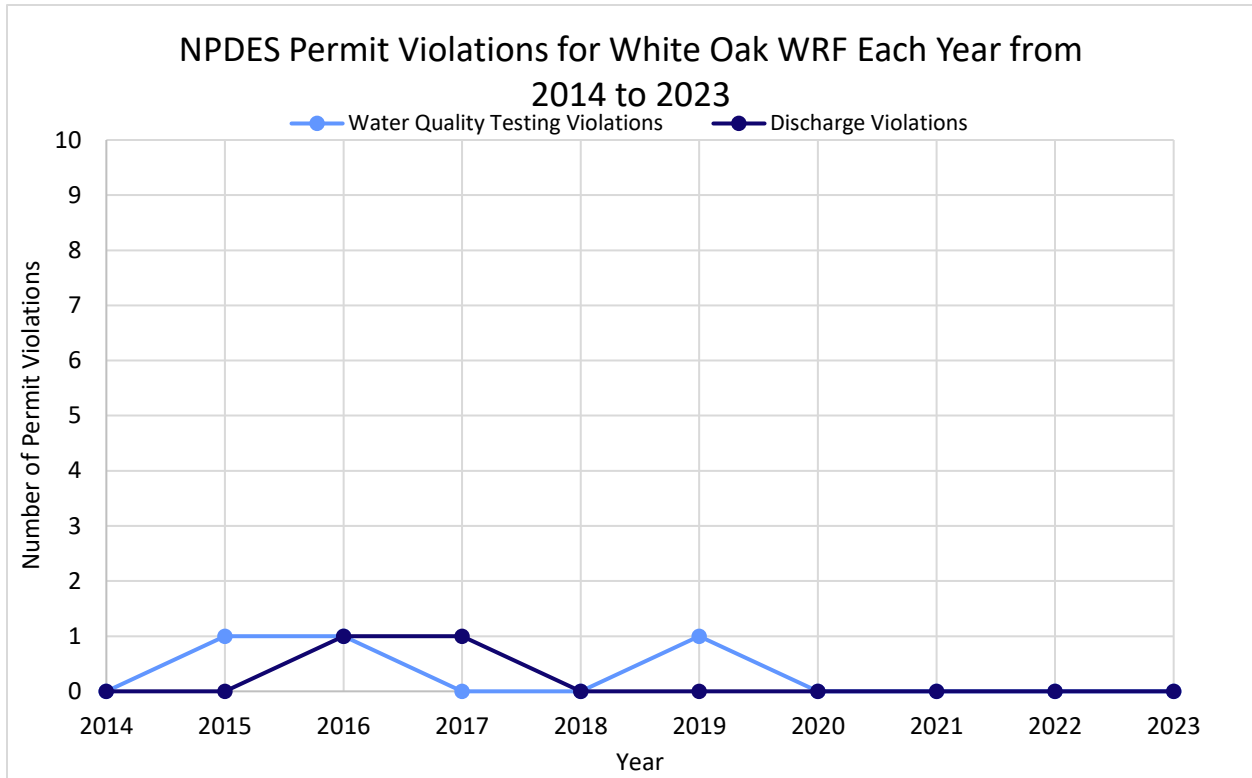


Figure 20. NPDES Permit Violations for White Oak WRF Each Year from 2014 to 2023

Table 13. NPDES Permit Violations for White Oak WRF Each Year from 2014 to 2023

Year	Water Quality Testing Violations	Discharge Violations
2014	0	0
2015	1	0
2016	1	1
2017	0	1
2018	0	0
2019	1	0
2020	0	0
2021	0	0
2022	0	0
2023	0	0

*Five Mile Creek WRF*

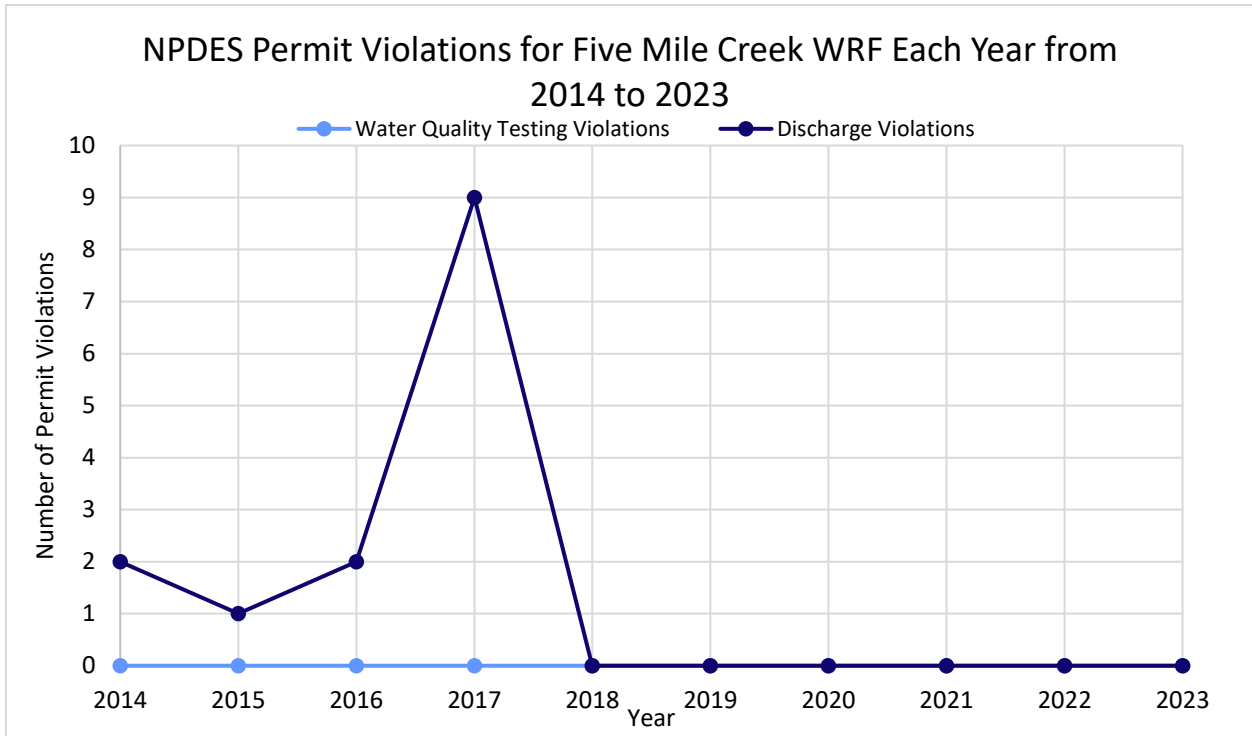


Figure 21. NPDES Permit Violations for Five Mile Creek WRF Each Year from 2014 to 2023

Table 14. NPDES Permit Violations for Five Mile Creek WRF Each Year from 2014 to 2023

Year	Water Quality Testing Violations	Discharge Violations
2014	0	2
2015	0	1
2016	0	2
2017	0	9
2018	0	0
2019	0	0
2020	0	0
2021	0	0
2022	0	0
2023	0	0

*Maumelle WRF*

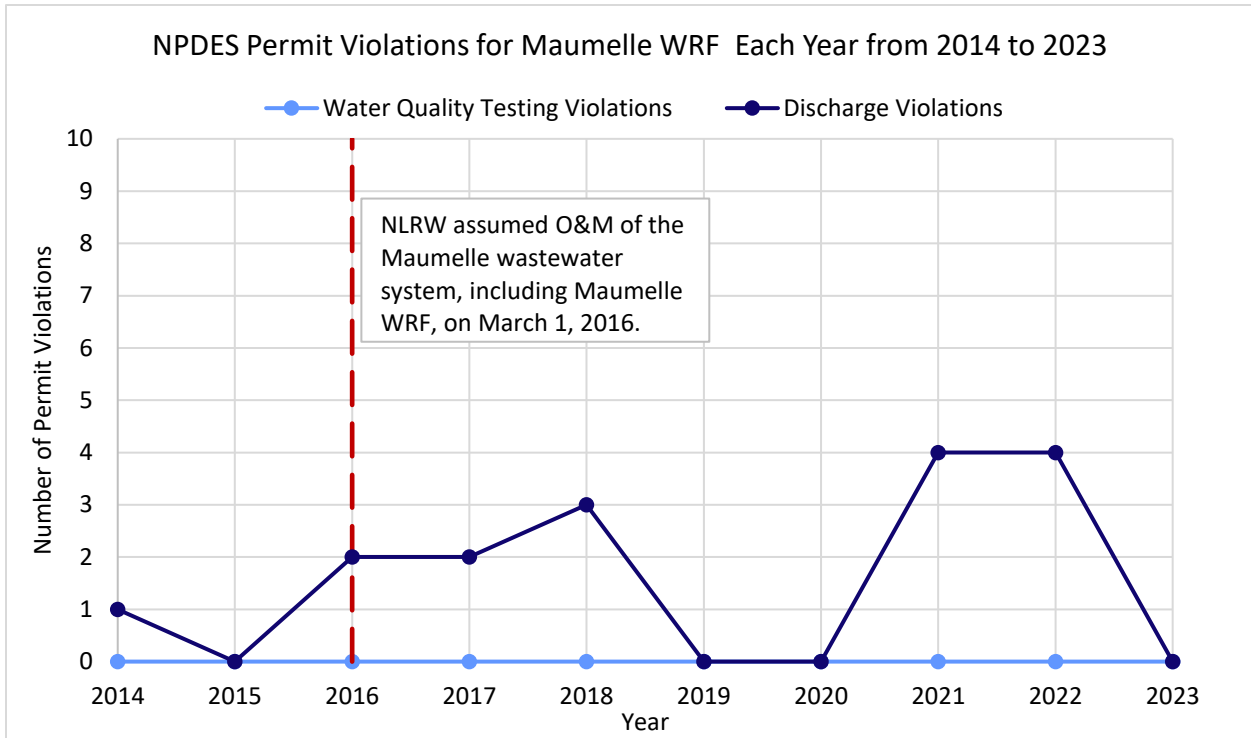


Figure 22. NPDES Permit Violations for Maumelle WRF Each Year from 2014 to 2023

Table 15. NPDES Permit Violations for Maumelle WRF Each Year from 2014 to 2023

Year	Water Quality Testing Violations	Discharge Violations
2014	0	1
2015	0	0
2016	0	2
2017	0	2
2018	0	3
2019	0	0
2020	0	0
2021	0	4
2022	0	4
2023	0	0