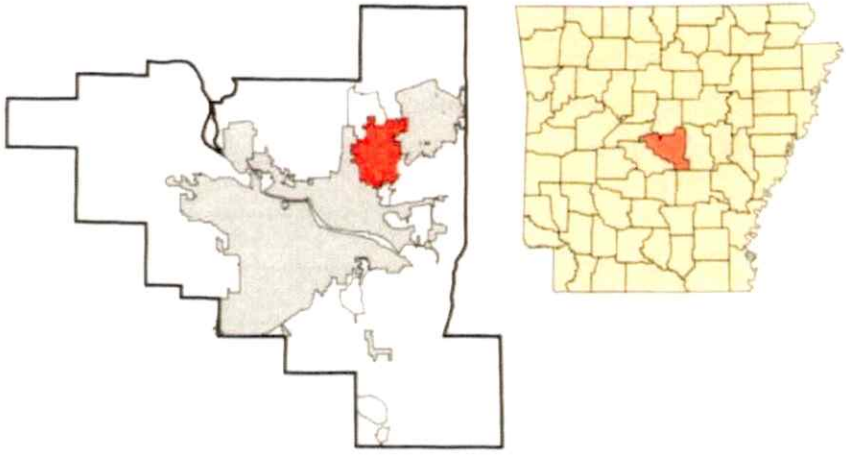
SHERWOOD

Sanitary Sewer Long-Range Study

October 2025



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1. Introduction

The City of Sherwood contracted with Halff in July 2025 to conduct a Sanitary Sewer Long-Range Study with recommendations for the future of Sherwood's wastewater collection systems and wastewater treatment plants.

This Study provides an overall analysis of the three wastewater collection systems owned and operated by Sherwood (Sherwood North System, Sherwood South System, and Sherwood Satellite System) and evaluates the Sherwood North Facility (WWTP) and the Sherwood South Facility (WWTP). The wastewater collection systems analysis includes the gravity mains and manholes, the lift stations, and the force mains. The remaining life expectancy, anticipated maintenance and upgrades, maintenance and replacement costs, and the monthly customer rate impacts will be considered for three different options. This Study will also identify any regulatory approvals and permits required for each option including but not limited to the Arkansas Department of Health (ADH) and the Arkansas Division of Environmental Quality (ADEQ).

1.1 Definitions

This section contains the definitions and abbreviations commonly used in this report.

a. AE&E – Arkansas Department of Energy and Environment

b. ADEQ – Arkansas Division of Environmental Quality

c. ADH – Arkansas Department of Health

d. CAO – Consent Administrative Order

e. CCTV – Closed Circuit Television

f. CF – Cubic Feet

g. CIPP – Cast In Place Pipe

h. GPD – Gallons per Day

i. Infiltration (defined by the EPA) – The water entering a sewer system and service connections from the ground through such means as, but not limited to, defective pipes, pipe joints, service connections, service laterals, or manhole walls.

j. Infiltration and Inflow (I/I) – A combination of infiltration and inflow wastewater volume in sanitary sewer.

k. Inflow (defined by EPA) – The water discharged into a sewer system, including service connections, from such sources as roof leaders; cellar, yard, and area drains; foundation drains; cooling water discharges; drains from springs and swampy areas; manhole covers; cross connections from storm sewers, combined sewers, or catch basins; storm waters; surface runoff; or drainage.

l. LF – Linear feet

m. MGD – Million Gallons per Day

n. mg/L – Milligrams per Liter

o. mL - Milliliters

p. NCR – Non-Conformance Report

q. NLRWU – North Little Rock Wastewater Utility

r. NPDES – National Pollutant Discharge Elimination System

s. NPRSA – North Pulaski Regional Sewage Authority (Sherwood and NLRWU combined system)

t. SSO – Sanitary Sewer Overflow

u. Sherwood – Sherwood Wastewater Utility

v. WRF – Wastewater Reclamation Facility (North Little Rock Wastewater Utility's Treatment Plant)

w. WWTP – Wastewater Treatment Plant

2. Existing Sanitary Sewer Collection Systems

2.1 Overview

The City of Sherwood's wastewater is divided into seven wastewater collection systems as listed below:

1. The Sherwood North System
2. The Sherwood South System
3. The Sherwood Satellite System
4. The North Little Rock Wastewater Utility (NLRWU) wastewater collection system
5. City of Jacksonville

6. Gravel Ridge Sewer Improvement District #213
7. Runyan Acres Sewer Improvement District #211

The overall map of the seven wastewater collection systems is included as **Exhibit 1** of this Study.

The first three wastewater collection systems are analyzed as part of this Long-Range Study. Maps of the Sherwood North WRF Basin, Sherwood South WRF Basin, and the Sherwood Satellite System are included in this report as **Exhibits 1, 2, 3, and 4**.

Sherwood Wastewater Utilities (Sherwood) owns and operates 482,955 linear feet (91.5 miles) of gravity sewer mains and eight miles of sewer force mains throughout the three wastewater collection systems Sherwood owns and operates.

Sherwood has 210,833 linear feet of gravity sewer mains in its Sherwood North System, 83,518 linear feet of gravity sewer mains in its Sherwood South System, and 188,604 linear feet of gravity sewer mains in its Sherwood Satellite System.

A breakdown of gravity sewer mains by wastewater collection system and age is included as **Exhibit 5** in this Study.

2.2 Pump Stations

Sherwood's collection systems utilize 13 grinder and submersible pump stations between the Sherwood North System, Sherwood South System, and the Sherwood Satellite System. Ten pump stations are in the Sherwood North System, two pump stations are in the Sherwood Satellite System, and one pump station is in the Sherwood South System. The locations of the sewer pump stations are included in **Exhibits 2-4** of this Study.

2.3 Treatment Facilities

Sherwood owns and operates two treatment facilities – the Sherwood North Facility and the Sherwood South Facility. Per the 1989 Chancery Court Agreement with North Little Rock Wastewater Utility, the wastewater from the Sherwood Satellite System flows to the NLRWU's Five Mile Creek Wastewater Treatment Plant for treatment.

Sherwood North Facility

The Sherwood North System as shown in **Exhibit 2** feeds into the Sherwood North Facility (WWTP). The North Facility is owned and operated by Sherwood and is located at 19 Algonkin Place in Sherwood. The facility has a design flow of 1.175 million gallons per day (MGD) and is considered a major municipal facility since the design flow of the facility has a design flow greater than 1.0 MGD. The average daily flows at the facility are between 0.4-0.5 MGD in the summer months and 0.6 MGD in the winter months.

The wastewater treatment processes at the Sherwood North Facility include a bar screen, grit chamber, pH adjustment, four (4) sequential batch reactors, post-aeration, and ultraviolet (UV) disinfection. The treated wastewater is discharged from the facility into an unnamed tributary,

thence to Kellogg Creek, thence to Bayou Meto, and thence to the Arkansas River. The layout of this facility, the treatment process, sludge ponds, detention ponds, and equalization basin are included in this report as **Exhibits 6 and 7.**

The Sherwood North Facility had an ammonia exceedance in January 2025.

Sherwood South Facility

The Sherwood South System as shown in **Exhibit 3** feeds into the Sherwood South Facility (WWTP). The South Facility is owned and operated by Sherwood and is located at 2000 Stafford Road in Sherwood. The facility has a design flow of 0.6 million gallons per day (MGD). The average daily flows at this facility are about 0.3-0.4 MGD in the summer months and about 0.4-0.45 MGD in the summer months.

The wastewater treatment processes at the Sherwood South Facility include a bar screen, activated sludge (BIOLAC), post aeration, and ultraviolet (UV) disinfection. The treated wastewater is discharged from the facility into Woodruff Creek, thence to Brushy Island Creek, thence to Bayou Meto, and thence to the Arkansas River. The layout of this facility, the treatment process, sludge ponds, detention ponds, and equalization basin are included in this report as **Exhibits 8 and 9.**

The Sherwood South Facility had an ammonia exceedance in February 2025.

Sherwood Satellite System

The Sherwood Satellite System flows into the Five Mile Creek WRF Basin. The wastewater flowing through this basin goes to North Little Rock Wastewater Utility's (NLRWU) Five Mile Creek Wastewater Treatment Plant (WWTP) for treatment. The Five Mile Creek WWTP is owned and operated by NLRWU and is located at 5601 East 54th Street in North Little Rock. The WWTP has a design flow of 6.6 million gallons per day (MGD) and is considered a major municipal facility since the design flow of the facility has a design flow greater than 1.0 MGD. The wastewater treatment processes at the Five Mile Creek WWTP include bar screens, two aerated lagoons, polishing pond, and chlorine disinfection. The treated wastewater is discharged into the Arkansas River. The layout of this WWTP, the treatment processes, aerated lagoons, and equalization basin are included in this report as **Exhibits 10 and 11.**

NPDES Discharge Permits

The effluent characteristics for the Sherwood North, Sherwood South, and North Little Rock Wastewater Utility Five Mile Creek wastewater treatment plants are summarized in **Table 1** below. The Fecal Coliform Bacteria (FCB) are measured in colonies per 100 milliliters (mL). The pH is measured in standard units. The rest of the effluent characteristics listed in **Table 1** are measured in milligrams per liter (mg/L).

Table 1: Discharge Limitations (Monthly Average)
Sherwood WWTPs & Five Mile Creek WWTP

Effluent Characteristic	Sherwood North	Sherwood South	NLRWU – Five Mile Creek
Carbonaceous Biochemical Oxygen Demand (CBOD5)	15	10	25
Total Suspended Solids (TSS)	20	15	90
Ammonia Nitrogen (NH3-N) – April	2.2	5.6	Not Included
Ammonia Nitrogen (NH3-N) – May to October	2.2	7.0	Not Included
Ammonia Nitrogen (NH3-N) – November to March	5.0	8.0	Not Included
Dissolved Oxygen (DO) – June to October	5.0	3.0	2.0
Dissolved Oxygen (DO) – November to May	5.0	6.0	2.0
Fecal Coliform Bacteria (FCB) – May to September	1000	1000	200
Fecal Coliform Bacteria (FCB) – October to April	1000	1000	1000
pH	6.0 – 9.0	6.0 – 9.0	5.0 – 9.0
Total Residual Chlorine (TRC)	Not Included	Not Included	0.79

Table 1 shows that the National Pollutant Discharge Elimination System (NPDES) Discharge Permit for the NLRWU's Five Mile Creek WWTP is more favorable compared to the discharge permits for the Sherwood North and Sherwood South WWTPs. Five Mile Creek has higher discharge limits for CBOD5, Total Suspended Solids, Dissolved Oxygen, and pH as well as no discharge requirements for Ammonia Nitrogen. The only additional requirement that Five Mile Creek WWTP has compared to the Sherwood North and South WWTPs is a 2000 colonies per 100 mL limit for Facal Coliform Bacteria between May and September.

2.4 Growth

Sherwood provides sewer service to 6,144 customers throughout the City.

The City of Sherwood's population has a population of 32,731 according to the 2020 United States Census Bureau. The City's population has increased to an estimated 33,281 in 2025.

While the City's population has grown as shown in **Table 2** below, the City's growth has slowed since 2010. The only area in the City of Sherwood that could experience growth is the Miller's Pointe area along Highway 107. As shown in **Exhibit 2 – North System Map**, there is undeveloped land within the North System's boundary as well as to the north of the boundary. Assuming 1/3 acre lots, this development is proposed to add roughly 1,000 homes to Sherwood's North System. At 2.5 people per household and 100 gallons per person per day, the added demand to the system would be around 250,000 GPD or 0.25 MGD.

Table 2: Sherwood City Population (1980-2025)

Year	Population
1980	10,423
1990	18,893
2000	21,511
2010	29,523
2020	32,731
2025	33,281 (estimated)

2.5 Financial Situation

As of January 1, 2025, Sherwood Wastewater Treatment Committee has $15,296,396 in assets for the wastewater systems. The assets include $3,655,120 in cash and cash equivalents, $204,820 in accounts receivable, and $11,436,456 in capital assets (net of accumulated depreciation). Sherwood also has $82,384 in accounts payable and accrued expenses and no total long-term liabilities.

The operating revenues for Sherwood in the year ending December 31, 2024 was $2,347,357, and the total operating expenses (including depreciation) was $2,175,425.

2.6 Current Average Sewer Bills

The City of Sherwood wastewater rates for customers inside the City limits and outside the City limits in 2024, 2025, and 2026 are listed below in **Table 3**.

Table 3: Sherwood Wastewater Base and User Rates (2024-2026)

	Inside City Limits		Outside City Limits	
Year	Base Rate (400 CF)	Per 100 CF	Base Rate (400 CF)	Per 100 CF
2024	$18.75	$5.25	$23.44	$6.56
2025	$23.44	$6.50	$29.30	$8.13
2026	$29.30	$7.47	$36.63	$9.34

1. Note: 100 Cubic Feet (CF) is equivalent to 748.1 gallons. 400 CF is equivalent to 2992.2 gallons.

Assuming a monthly sewer usage of 400 CF (2992.2 gallons) per customer per customer, Sherwood's average sewer bill for City customers will increase from $18.75 a month in 2024 to $29.30 a month in 2026 – a 56.3% increase in two years. The average sewer bill for customers outside the city limits will increase from $23.44 a month in 2024 to $36.63 a month in 2026 – 56.3% increase in two years.

The summary of the monthly sewer bills for Sherwood, Jacksonville, North Little Rock Wastewater Utility, Runyan Acres, and Gravel Acres in 2025 and 2026 is shown in **Table 4** below. The monthly sewer bill for each entity is calculated assuming an average monthly usage of 400 cubic feet (2992.2 gallons).

Table 4: Average Monthly Sewer Bills for Entities Serving Customers in City of Sherwood

Entity	2025	2026
Sherwood – Inside City	$23.44	$29.30
Sherwood – Outside City	$29.30	$36.63
Jacksonville – Inside City	$27.77	$27.77
Jacksonville – Outside City	$41.81	$41.81
North Little Rock Wastewater Utility	$22.15	$23.92
Gravel Ridge SID #213	$29.97	$29.97
Runyan Acres SID #211	$36.00	$36.00

Sherwood's sewer rates for 2024, 2025, and 2026 are listed in **Table 3**. The sewer rates for customers served by the City of Sherwood will be higher than the sewer rates of the other sewer utilities that serve customers inside the City of Sherwood in 2026.

Jacksonville's sewer rates are $16.29 base rate (2,000 gallon minimum) + $5.74 per 1,000 gallons usage rate for City customers and $24.59 base rate (2,000 gallon minimum) + $8.61 per 1,000 gallons usage rate for customers outside the City.

North Little Rock Wastewater Utility sewer rate is $22.15 base rate (400 cubic feet minimum) + $6.92 per 100 cubic feet usage rate for all customers. NLRWU's rates will increase to a $23.92 base rate (400 CF minimum) + $7.47 per 100 cubic feet usage rate for all customers on January 1, 2026.

Gravel Ridge's sewer rate is $29.97 base rate (400 cubic feet minimum) + $6.06 per 100 cubic feet usage rate for all customers.

Runyan Acres's sewer rate is a $36.00 flat rate for all customers.

3. Study Options

Three options have been evaluated in this study. The options are listed and detailed as follows:

1. Remain Independent (requiring new Chancery Court agreement with NLRWU)
    a. Permitting and Compliance Officer will be created.
    b. Reporting of sanitary sewer overflows (SSOs) and Backups.
    c. Fats, Oils, and Greases (FOG) Program with annual Inspections.
    d. Plan Review and Inspection Program for Developer Projects.
    e. Specification compliance for infrastructure.
    f. Annual Reports with goals and results.
    g. SSO Investigations with targeted plan to reduce and eliminate each SSO.
    h. Reporting of Non-Conformance Report (NCR) to North Little Rock Wastewater Utility (NLRWU) as well as Arkansas Energy and Environment (AE&E).
    i. Provide documentation for annual review with NLRWU.

j. Develop and maintain an effective cleaning program to include frequency cycle (complete hydro cleaning on three-year cycles), measurable goal with documentation to clean 56,400 linear feet of gravity sewer mains per year, and review cleaning records to note defects and issues within the collection system.
k. Develop a closed-circuit television (CCTV) inspection program to include repository and protocols for defects and issues.
l. Rehabilitation of aging sewer lines at 2% annual basis: about 9,660 linear feet of pipeline rehab via pipe bursting or cured-in-place pipe (CIPP) lining.
m. Develop a Manhole Rehabilitation program and implement for inflow and infiltration (I/I) abatement.

2. Divest the "Satellite System" and the Sherwood South facilities to North Little Rock Wastewater Utility (NLRWU).
    a. Single entity in control of operating Satellite System and Sherwood South System.
    b. Single entity responsible for reporting of sanitary sewer overflows (SSOs).
    c. Fats, Oils, and Greases (FOG) Program with annual Inspections under responsibility of NLRWU.
    d. Plan Review and Inspection Program for Developer Projects will be incorporated into existing program.
    e. Eliminate Sherwood's existing Consent Administrative Order (CAO) dating back to 2008. This CAO has been active for the last seventeen (17) years.
    f. SSO Investigations with targeted plans to reduce or eliminate each SSO.
    g. NLRWU will clean all gravity sewer lines in the Sherwood Satellite System within one year and develop a three-year cleaning cycle.
    h. NLRWU will clean all gravity sewer lines in the Sherwood South System within two years and develop a three-year cleaning cycle.
    i. NLRWU will perform closed-circuit television (CCTV) inspections of all gravity sewer lines in the Sherwood Satellite System within two years and all gravity sewer lines in the Sherwood South System within four years.
    j. Rehabilitation of aging sewer lines at 2% annual basis; about 9,660 linear feet of pipeline rehab via pipe bursting or cured-in-place pipe (CIPP) lining.
    k. Incorporate NLRWU's Manhole Rehabilitation program and implement part of inflow and infiltration (I/I) abatement.
    l. Close the Sherwood South Treatment plant and move the wastewater to a nearby existing 24" gravity line to the Five Mile Creek Water Reclamation Facility (WRF) to economize regionalization.
    m. Remove existing biosolids at Sherwood South facility.
    n. Construct a peak flow attenuation facility at the existing lagoons at the Sherwood South facility for storage if sanitary sewer overflows (SSOs) cannot be managed.

3. Consolidate, or merge with North Little Rock Wastewater Utility to form a "Regional" wastewater collection and treatment system.
    a. NLRWU resources can absorb common expenses.
    b. Single entity handling sanitary sewer overflows (SSOs) and Backups.
    c. Established Fats, Oils, and Greases (FOG) Program with annual Inspections.
    d. Plan Review and Inspection Program for Developer Projects already in place.
    e. SSO Investigations with targeted plans to reduce or eliminate each SSO.
    f. Reporting responsibility for Non-Compliance Reports (NCR) to Arkansas Energy and Environment (E&E).
    g. A cleaning program to include cleaning and all gravity sewer lines within one year and placed on three-year cycles. Annual documentation to clean a minimum of 56,400 linear feet per year with defects and issues noted within the collection system.
    h. Develop a closed-circuit television (CCTV) inspection program to include repository and protocols for defects and issues. All gravity sewer lines to be televised over a two-year period.
    i. Rehabilitation of aging sewer lines on a 2% annual basis: about 5,250 linear feet of pipeline rehab via pipe bursting or cured-in-place pipe (CIPP) lining.
    j. Incorporate NLRWU Manhole Rehabilitation program and implement for inflow and infiltration (I/I) abatement.

In each option, the interceptor cleaning and rehabilitation project, a cleaning schedule of the systems and a rehabilitation schedule will be added to the cost since they are required by Arkansas Energy & Environment (AE&E) regardless of option chosen. Addressing each sanitary sewer overflow (SSO) requires engineering analysis and remediation efforts which require time, money, and effort for addressing each SSO.

3.1 Remain Independent

Sherwood's first option is to remain independent, which will require a new Chancery Court agreement with North Little Rock Wastewater Utility (NLRWU). There are three alternatives to what Sherwood could choose to do with their systems if they decide to stay independent.

3.1.1 Alternative 1: Sherwood Remains "As Is"

Alternative 1 is Sherwood keeping their wastewater systems as-is. Sherwood would own, maintain, and operate the Sherwood North System, Sherwood South System, and the Sherwood Satellite wastewater collection system that flows down to the Five Mile Creek Water Reclamation Facility (WRF).

This alternative will require Sherwood and NLRWU to negotiate a new Chancery Court Agreement. A new agreement between Sherwood and NLRWU would require Sherwood to:

1. maintain their sewer systems to NLRWU Standards including reporting sanitary sewer overflows (SSOs),

2. create and maintain a Fats, Oils, and Grease (FOG) Program with annual inspections to prevent the discharge of FOG into the sewer systems,
3. create a Plan Review and Inspection Program for projects by developers,
4. complete and submit all Non-Conformance Reports (NCRs) to NLRWU and the Arkansas Division of Energy and Environment (AE&E),
5. provide documentation for annual review to NLRWU,
6. ensure specification compliance for infrastructure,
7. hire a Permitting and Compliance Officer and approximately 7 additional employees dedicated to cleaning and closed-circuit television (CCTV) inspection work on the sewer collection systems.
8. develop and maintain a cleaning program to clean all 483,017 linear feet of their gravity sewer mains every three years,
9. develop and maintain a CCTV inspection program for all 483,017 linear feet of their gravity sewer main every seven years,
10. rehabilitate approximately 62,469 linear feet of the gravity sewer mains over fifty years old within the next two years,
11. rehabilitate the remaining 199,710 linear feet of gravity sewer mains over fifty years old within the next ten years,
12. rehabilitate 2% of their aging gravity sewer mains (approximately 9,660 linear feet of gravity sewer mains) every year.

This alternative would allow Sherwood to perform rehabilitation on their systems as well as acquiring the proper funds for said rehabilitation. There would also be no additional costs for decommissioning or upgrading one of their wastewater treatment plants (WWTP), although the proposed growth in the North System would require the North WWTP to be retrofitted or upgraded to handle the added flows.

Any improvements to the Sherwood North and South WWTPs would require permits from ADH and ADEQ. In addition, any expansions or improvements to the Sherwood South Plant would require a Floodplain Development Permit Application and a hydraulic analysis as detailed in Section 4.1.1 of this report.

Sherwood would incur higher costs to clean and inspect their sewer collection systems and upgrade any sections of the wastewater collection systems and wastewater treatment plants that are undersized or in poor condition. As a result, Sherwood would have to raise their customers' rates to cover the costs of the wastewater rehabilitation and replacement projects.

The five-year cost estimate in **Exhibit 12** lists the various costs associated with this alternative from 2026 to 2030. The Total Cost increases from $3,327,273 in 2026 to $6,714,490 in 2030. Sherwood would require a cumulative 71.8% increase in the sewer base rates and user rates from 2026 to 2030 to break even on the total annual expenses with this alternative.

This cost estimate makes the following assumptions:

1. The annual Operating Expenses are based on the $1,614,872 total amount of Operating Expenses in Fiscal Year 2024 and indexed for 5% inflation for two years. Recurring operating expenses are projected to increase by 5% each year thereafter.
2. The Sewer Revenues for the City of Sherwood are projected to be:
    a. $3.125 million in 2025 (based on $1,823,996.67 of revenue from the first seven months of 2025).
    b. $3.908 million in 2026, including the 25% increase in the customer base rate in 2026.
3. The new Permitting and Compliance Officer is hired with an annual salary and benefits of $65,000 a year and will include salary/benefit increases of 5% each year thereafter.
4. Sherwood would need to hire 7 employees dedicated to Sherwood's cleaning and CCTV work on the wastewater collection systems. Their total annual salaries and benefits total $400,000 in the first year and will include salary/benefit increases of 5% each year thereafter.
5. The employees who will conduct the CCTV and assess the gravity sewer mains would need NASSCO (National Association of Sewer Service Companies) Pipeline Assessment Certification Program (PACP) certification.
6. The Cleaning and CCTV work is estimated to cost $1.25 per linear foot of gravity sewer main. Sherwood would be responsible for the cleaning and CCTV of the Sherwood North, Sherwood South, and Sherwood Satellite Systems.
7. The cost of signing a new Agreement with NLRWU is estimated to be $50,000 to account for legal expenses and time spent by Sherwood personnel for the Agreement.
8. The estimated costs for improving the Sherwood North and Sherwood South WWTPs are based on $15 per gallon per day (GPD) treated at the respective plants.
9. The financing of the Five Mile Creek Sewer Interceptor Project assumes a $7,036,716 20-year loan at 5.0% interest with the first payments starting July 1, 2026.
10. The financing of the North and South WWTP improvements assumes a $16.5 million 30-year loan at 4.5% interest with the first payments starting January 1, 2028.
11. The financing of the Gravity Sewer Line Rehabilitation – Phase 1 assumes a $6 million 30-year loan at 4.5% interest with the first payments starting January 1, 2027.
12. The financing of the Gravity Sewer Line Rehabilitation – Phase 2 assumes a $21 million 30-year loan at 4.5% interest with the first payments starting January 1, 2028.
13. The total Gravity Sewer Line Rehabilitation work is estimated to include 262,179 linear feet of sewer mains over 50 years old (157,307 linear feet in pipe bursting and 104,872 linear feet in CIPP rehab work). 62,469 linear feet would be rehabilitated in Phase 1, and 199,710 linear feet would be rehabilitated in Phase 2.
14. Sewer rehabilitation work is estimated to be 60% pipe bursting and 40% cured-in-place pipe (CIPP) lining. The pipe bursting is estimated to cost $110 per linear foot of gravity sewer main. The CIPP lining is estimated to cost $65 per linear foot of gravity sewer main.

3.1.2 Alternative 2: Sherwood Decommissions North Plant

Alternative 2 is Sherwood decommissioning the North System's WWTP and diverting its flows to the South System, creating a regionalized plant for the Sherwood North and Sherwood South Systems. Sherwood would still use NLRWU's Five Mile Creek WRF to treat the wastewater from the Satellite System assuming NLRWU continues to maintain and operate the Five Mile Creek WWTP.

Sherwood would still have to meet the requirements listed above in Section 3.1.1 – Alternative 1 for their new Agreement with NLRWU.

Decommissioning the North System's WWTP would require upgrades to the South System's WWTP to handle the flows of both the North and South systems. The proposed growth in the North System at Miller's Pointe would have to be accounted for when upgrading the South plant.

A new pump station would be installed to pump wastewater from the existing North WWTP to a point in the South System to divert the flows to the south. Decommissioning the North WWTP and adding a pump station of this size would each cost an estimated $1.5 million. The cost of upgrading the South WWTP would be $22,500,000, assuming a cost of $15/GPD of wastewater treated.

The City of Sherwood would be responsible for removing and disposing of the existing biosolids at their Sherwood South Facility. The City of Sherwood does not have a biosolids disposal permit at this time.

This alternative would allow Sherwood to consolidate the North and South Systems as one system in order to reduce its wastewater treatment costs and maintenance costs by operating only one WWTP instead of two WWTPs.

Any improvements to the Sherwood North and South WWTPs would require permits from ADH and ADEQ. Any new sewer pump stations and force mains from the pump station to the Sherwood South Plant would require a permit from ADH. In addition, any expansions or improvements to the Sherwood South Plant would require a Floodplain Development Permit Application and a hydraulic analysis as detailed in Section 4.1.1 of this report.

The five-year cost estimate in **Exhibit 12** lists the various costs associated with this alternative from 2026 to 2030. The Total Cost increases from $3,262,270 in 2026 to $7,286,934 in 2030. Sherwood would require a cumulative 86.5% increase in the sewer base rates and user rates from 2026 to 2030 to break even on the total annual expenses with this alternative.

This cost estimate makes the following assumptions:

1. The annual Operating Expenses are based on the $1,614,872 total amount of Operating Expenses in Fiscal Year 2024 and indexed for 5% inflation for two years. Recurring operating expenses are projected to increase by 5% each year thereafter.
2. The Sewer Revenues for the City of Sherwood are projected to be:

a. $3.125 million in 2025 (based on $1,823,996.67 of revenue from the first seven months of 2025).
b. $3.908 million in 2026, including the 25% increase in the customer base rate in 2026.

3. The new Permitting and Compliance Officer is hired with an annual salary and benefits of $65,000 a year and will include salary/benefit increases of 5% each year thereafter.
4. Sherwood would need to hire 7 employees dedicated to Sherwood's cleaning and CCTV work on the wastewater collection systems. Their total annual salaries and benefits total $400,000 in the first year and will include salary/benefit increases of 5% each year thereafter.
5. The employees who will conduct the CCTV and assess the gravity sewer mains would need NASSCO (National Association of Sewer Service Companies) Pipeline Assessment Certification Program (PACP) certification.
6. The Cleaning and CCTV work is estimated to cost $1.25 per linear foot of gravity sewer main. Sherwood would be responsible for the cleaning and CCTV of the Sherwood North, Sherwood South, and Sherwood Satellite Systems.
7. The cost of signing a new Agreement with NLRWU is estimated to be $50,000 to account for legal expenses and time spent by Sherwood personnel for the Agreement.
8. The estimated costs for improving the Sherwood North and Sherwood South WWTPs are based on $15 per gallon per day (GPD) treated at the respective plants.
9. The financing of the Five Mile Creek Sewer Interceptor Project assumes a $7,036,716 20-year loan at 5.0% interest with the first payments starting July 1, 2026.
10. The financing of removing the biosolids at the Sherwood South Plant assumes a $600,000 30-year loan at 4.5% interest with the first payments starting January 1, 2027.
11. The financing of the North Plant Pump Station, force main from the North Plant Pump Station to the South Plant, South Plant Upgrades, and the Decommissioning of the North Plant assumes a $27.414 million 30-year loan at 4.5% interest with the first payments starting January 1, 2028.
12. The financing of the Gravity Sewer Line Rehabilitation – Phase 1 assumes a $6 million 30-year loan at 4.5% interest with the first payments starting January 1, 2027.
13. The financing of the Gravity Sewer Line Rehabilitation – Phase 2 assumes a $21 million 30-year loan at 4.5% interest with the first payments starting January 1, 2028.
14. The total Gravity Sewer Line Rehabilitation work is estimated to include 262,179 linear feet of sewer mains over 50 years old (157,307 linear feet in pipe bursting and 104,872 linear feet in CIPP rehab work). 62,469 linear feet would be rehabilitated in Phase 1, and 199,710 linear feet would be rehabilitated in Phase 2.
15. Sewer rehabilitation work is estimated to be 60% pipe bursting and 40% cured-in-place pipe (CIPP) lining. The pipe bursting is estimated to cost $110 per linear foot of gravity sewer main. The CIPP lining is estimated to cost $65 per linear foot of gravity sewer main.

3.1.3 Alternative 3: Sherwood Decommissions South Plant

Alternative 3 is Sherwood decommissioning the South System's WWTP and diverting its flows to the North System, creating a regionalized plant to the north as opposed to the south. Sherwood would still use NLRWU's Five Mile Creek WRF to treat the Satellite System.

Sherwood would still have to meet the requirements listed in Section 3.1.1 – Alternative 1 for their new Agreement with NLRWU.

Decommissioning the South System's WWTP would require upgrades to the North System's WWTP to handle the flows of both systems as well as the proposed growth in the North System. A new pump station would be installed to pump wastewater from the existing South WWTP to a point in the North System to divert the flows to the north. Adding a pump station of this size and decommissioning the South WWTP would cost an estimated $2,250,000. Using $15/GPD of treated water the cost of upgrading the North WWTP would be roughly $12,000,000.

This alternative would allow Sherwood to consolidate the North and South Systems as one system in order to reduce its wastewater treatment costs and maintenance costs by operating only one WWTP instead of two WWTPs. The difference between Alternative 2 and Alternative 3 is that Sherwood would be upgrading the larger WWTP thus saving money in upgrades compared to upgrading the South WWTP in Alternative 2.

Any improvements to the Sherwood North WWTP would require permits from ADH and ADEQ. Any new sewer pump stations and force mains from the pump station to the Sherwood North Plant would require permits from ADH.

The five-year cost estimate in **Exhibit 12** lists the various costs associated with this alternative from 2026 to 2030. The Total Cost increases from $3,262,270 in 2026 to $6,543,456 in 2030. Sherwood would require a cumulative 67.5% increase in the sewer base rates and user rates from 2026 to 2030 to break even on the total annual expenses with this alternative.

This cost estimate makes the following assumptions:

1. The annual Operating Expenses are based on the $1,614,872 total amount of Operating Expenses in Fiscal Year 2024 and indexed for 5% inflation for two years. Recurring operating expenses are projected to increase by 5% each year thereafter.
2. The Sewer Revenues for the City of Sherwood are projected to be:
    a. $3.125 million in 2025 (based on $1,823,996.67 of revenue from the first seven months of 2025).
    b. $3.908 million in 2026, including the 25% increase in the customer base rate in 2026.
3. The new Permitting and Compliance Officer is hired with an annual salary and benefits of $65,000 a year and will include salary/benefit increases of 5% each year thereafter.
4. Sherwood would need to hire 7 employees dedicated to Sherwood's cleaning and CCTV work on the wastewater collection systems. Their total annual salaries and benefits total

$400,000 in the first year and will include salary/benefit increases of 5% each year thereafter.

5. The employees who will conduct the CCTV and assess the gravity sewer mains would need NASSCO (National Association of Sewer Service Companies) Pipeline Assessment Certification Program (PACP) certification.
6. The Cleaning and CCTV work is estimated to cost $1.25 per linear foot of gravity sewer main.
7. The cost of signing a new Agreement with NLRWU is estimated to be $50,000 to account for legal expenses and time spent by Sherwood personnel for the Agreement.
8. The estimated costs for improving the Sherwood North and Sherwood South WWTPs are based on $15 per gallon per day (GPD) treated at the respective plants.
9. The financing of the Five Mile Creek Sewer Interceptor Project assumes a $7,036,716 20-year loan at 5.0% interest with the first payments starting July 1, 2026.
10. The financing of the Gravity Sewer Line Rehabilitation – Phase 1 assumes a $6 million 30-year loan at 4.5% interest with the first payments starting January 1, 2027.
11. The financing of the Gravity Sewer Line Rehabilitation – Phase 2 assumes a $21 million 30-year loan at 4.5% interest with the first payments starting January 1, 2028.
12. The financing of the South Plant Pump Station, force main from the South Plant Pump Station to the North Plant, North Plant Upgrades, and the Decommissioning of the South Plant assumes a $15.786 million 30-year loan at 4.5% interest with the first payments starting January 1, 2028.
13. The total Gravity Sewer Line Rehabilitation work is estimated to include 262,179 linear feet of sewer mains over 50 years old (157,307 linear feet in pipe bursting and 104,872 linear feet in CIPP rehab work). 62,469 linear feet would be rehabilitated in Phase 1, and 199,710 linear feet would be rehabilitated in Phase 2.
14. Sewer rehabilitation work is estimated to be 60% pipe bursting and 40% cured-in-place pipe (CIPP) lining. The pipe bursting is estimated to cost $110 per linear foot of gravity sewer main. The CIPP lining is estimated to cost $65 per linear foot of gravity sewer main.

3.2 Partial Regionalization of Sherwood and NLRWU

This alternative forms an agreement with NLRWU where the South WWTP and the Sherwood Satellite System would be fully owned and operated by NLRWU. NLRWU would take over maintenance and repairs of the South WWTP and Sherwood Satellite System and would be responsible for cleaning all gravity sewer lines in one year as well as rehabilitating all the aging sewer lines at a 2% annual basis.

Sherwood would incorporate their own existing rehab plan in the North System. Divesting their South and Satellite Systems would reduce Sherwood's costs of personnel, operation, and maintenance.

The North WWTP would need to be upgraded to withstand the projected growth of the system. The costs of the upgrades for the North WWTP are estimated to be $4,500,000 assuming $15/GPD of treated water.

This option would reduce Sherwood's operation and maintenance costs by allowing them to operate and maintain only the North System while still having to pay for a portion of the costs for the rehabilitation in the South and Satellite Systems pending the details of a deal between Sherwood and NLRWU.

The total number of sewer customers served by Sherwood would decrease from 6,144 customers to approximately 2,500 customers if the Sherwood South and Sherwood Satellite Systems become owned and operated by NLRWU.

Any improvements to the Sherwood North WWTP and collection system would require permits from ADH and ADEQ. Any new sewer pump stations, force mains, and interceptor lines would require permits from ADH.

The City of Sherwood would be responsible for removing and disposing of the existing biosolids at their Sherwood South Facility. The City of Sherwood does not have a biosolids disposal permit currently.

The five-year cost estimate in **Exhibit 12** lists the various costs associated with this alternative from 2026 to 2030. The Total Annual Expenses increases from $1,811,199 in 2026 to $3,101,702 in 2030. Sherwood would require a cumulative 95.1% increase in the sewer base rates and user rates for the remaining customers in Sherwood North System from 2026 to 2030 to break even on the total annual expenses with this alternative.

This cost estimate makes the following assumptions:

1. The total customer count for the City of Sherwood would be reduced from 6,144 to about 2,500 customers due to the Sherwood South and Sherwood Satellite Systems being combined with NLRWU.
2. The annual Operating Expenses are based on half of the $1,614,872 total amount of Operating Expenses in Fiscal Year 2024 and indexed for 5% inflation for two years. Recurring operating expenses are projected to increase by 5% each year thereafter.
3. The Sewer Revenues for the City of Sherwood are projected to be:
    a. $3.125 million in 2025 (based on $1,823,996.67 of revenue from the first seven months of 2025).
    b. $1.59 million in 2026 (based on the customer count decreasing from 6,144 customers to 2,500 customers and including the 25% increase in the City's base rate).
4. The new Permitting and Compliance Officer is hired with an annual salary and benefits of $65,000 a year and will include salary/benefit increases of 5% each year thereafter.

5. Sherwood would need to hire three employees dedicated to Sherwood's cleaning and CCTV work on the Sherwood North System. Their total annual salaries and benefits total $171,429 in the first year and will include salary/benefit increases of 5% each year thereafter.
6. The employees who will conduct the CCTV and assess the gravity sewer mains will need NASSCO (National Association of Sewer Service Companies) Pipeline Assessment Certification Program (PACP) certification.
7. Sherwood would be responsible for the costs for rehabilitating the Sherwood North System only.
8. The Cleaning and CCTV work is estimated to cost $1.25 per linear foot of gravity sewer main. Sherwood would be responsible for the cleaning and CCTV of the Sherwood North System only.
9. The cost of signing a new Agreement with NLRWU is estimated to be $50,000 to account for legal expenses and time spent by Sherwood personnel for the Agreement.
10. The estimated costs for improving the Sherwood North and Sherwood South WWTPs are based on $15 per gallon per day (GPD) treated at the respective plants.
11. The financing of the Five Mile Creek Sewer Interceptor Project assumes a $7,036,716 20-year loan at 5.0% interest with the first payments starting July 1, 2026.
12. The financing of removing the biosolids at the Sherwood South Plant assumes a $600,000 30-year loan at 4.5% interest with the first payments starting January 1, 2027.
13. The financing of installing a force main from Sherwood South Plant to the NLRWU sewer main assumes a $500,000 30-year loan at 4.5% interest with the first payments starting January 1, 2027.
14. Sewer rehabilitation work is estimated to be 60% pipe bursting and 40% cured-in-place pipe (CIPP) lining. The pipe bursting is estimated to cost $110 per linear foot of gravity sewer main. The CIPP lining is estimated to cost $65 per linear foot of gravity sewer main.

3.3 Full Regionalization of NLRWU and Sherwood

This final option is a full regionalization between Sherwood Sewer and NLRWU. Sherwood Wastewater Utility and North Little Rock Wastewater Utility would consolidate its wastewater systems to become the "North Pulaski Regional Sewage Authority" (NPRSA). The NPRSA would introduce a cleaning program and take over all maintenance and repairs of all the sewer systems that Sherwood currently operates and maintains.

A full regionalization between NLRWU and Sherwood would:

- streamline the sewer operations with interlinked systems, reduced duplicate services, and easier maintenance schedules,
- provide better financial and rate benefits for Sherwood customers by having unified billing for most of the City's residents, providing easier access to large-scale capital investments, and
- improve regulatory compliance by reducing sanitary sewer overflows (SSOs) and discharge violations as well as simplifying reporting and permit management with state agencies.

The city of Sherwood would not incur any operating expenses from wastewater collection or treatment once the full regionalization of Sherwood and North Little Rock Wastewater Utility into a new "North Pulaski Regional Sewage Authority" is completed. Sherwood would not be responsible for any rehabilitation costs on sewer manholes nor the wastewater collection system.

All existing Shgerwood Wastewater employees would remain employed with the new "North Pulaski Regional Sewage Authority" with access to all benefits.

The City of Sherwood customers would be charged a surcharge for the biosolids removal from the Sherwood South System.

The costs associated with the decommissioning of the Sherwood North and South Facilities would be spread out across all customers in the "North Pulaski Regional Sewage Authority".

Consultants would need to be hired to do due diligence on the Full Regionalization of Sherwood and North Little Rock Wastewater Utility.

The five-year cost estimate in **Exhibit 12** lists the various costs associated with this alternative from 2026 to 2030. The Total Annual Expenses range from $778,635 in 2026 to $593,752 in 2030. Sherwood would require a cumulative 27.5% increase for City customers and a cumulative 21.9% increase for Non-City customers in the sewer base rates and user rates for the remaining customers in Sherwood North System from 2026 to 2030 to break even on the total annual expenses with this alternative.

This cost estimate makes the following assumptions:

1. The City would not incur any operating expenses for wastewater collection or treatment once the full regionalization of Sherwood and NLRWU into a new "North Pulaski Regional Sewage Authority" is completed.
2. No cleaning, CCTV, or sewer rehabilitation costs would be incurred by the City of Sherwood.
3. The City of Sherwood would not be responsible for the costs incurred with decommissioning their wastewater treatment plants.
4. The employees of the Sherwood Sewer System would transfer to the new "North Pulaski Regional Sewage Authority" upon completion of the regionalization.
5. The cost of signing a new Agreement for a full regionalization with NLRWU to form the "North Pulaski Regional Sewage Authority" is estimated to be $500,000 to account for legal and engineering consultant expenses and time spent by Sherwood personnel for the Agreement.
6. The financing of the Five Mile Creek Sewer Interceptor Project assumes a $7,036,716 20-year loan at 5.0% interest with the first payments starting July 1, 2026.
7. The financing of removing the biosolids at the Sherwood South Plant assumes a $600,000 30-year loan at 4.5% interest with the first payments starting January 1, 2027.

4. Additional Challenges

4.1.1 Development in Regulatory Floodway

The Sherwood South Plant is in the middle of a Regulatory Floodway as shown in **Exhibit 13** of this Study. Any improvements to the facility would require a Floodplain Development Permit Application. The City would also need to complete a hydraulic analysis to determine the impact on the water surface elevation depending on the planned work (i.e. grading, changing the footprint of structures, adding above ground pipes).

Approval from the United States Army Corps of Engineers may also be required if any work is performed in wetlands or working within the ordinary high water mark.

4.1.2 Equalization Basin for Five Mile Basin

An equalization basin might be required for the Five Mile Basin to handle high water flows from the Satellite System. A hydraulic model would need to be created to determine the need for an equalization basin at the Five Mile Basin Plant.

5. Conclusion

The most cost-effective alternative is Alternative 3.3 – a full regionalization between Sherwood and North Little Rock Wastewater Utility into a new "North Pulaski Regional Sewage Authority". This alternative is the most effective alternative for providing the best possible wastewater collection and treatment for the sewer customers served by the City of Sherwood at the most affordable sewer rates.

A Full Regionalization between Sherwood and NLRWU would allow Sherwood to strike a deal with NLRWU for the rehabilitation and cleaning of all their systems. In addition, Sherwood would not have to maintain and operate any of their current infrastructure, which would cut down on their costs and would allow NLRWU to clean and rehabilitate all their systems.

A full regionalization also allows Sherwood and NLRWU to combine common expenses, such as repair crews, private laboratories, cleaning and CCTV personnel, administrative expenses, engineering costs, and operations and maintenance costs on the Sherwood wastewater collection and treatment infrastructure. Sherwood and NLRWU can eliminate duplicate services and expenses and streamline sewer service for most of the residents and businesses located inside the City of Sherwood.

Table 5 below shows the Total Annual Expenses for the five alternatives analyzed in Section 3 for each year from 2026 to 2030. This table summarizes the cost estimates from **Exhibit 12**.

Table 5: Total Annual Expenses for Each Alternative (2026-2030)

Alternative	2026	2027	2028	2029	2030
3.1.1 – Sherwood "As Is"	$3,367,275	$4,108,690	$6,543,959	$6,550,805	$6,714,490
3.1.2 – Sherwood Decommissions North Plant	$3,262,270	$4,034,915	$7,128,268	$7,129,326	$7,286,934
3.1.3 – Sherwood Decommissions South Plant	$3,262,270	$3,998,434	$6,384,790	$6,385,849	$6,543,456
3.2 – Partial Regionalization	$1,811,199	$2,567,121	$2,969,204	$3,000,556	$3,101,702
3.3 – Full Regionalization	$778,635	$593,752	$593,752	$593,752	$593,752

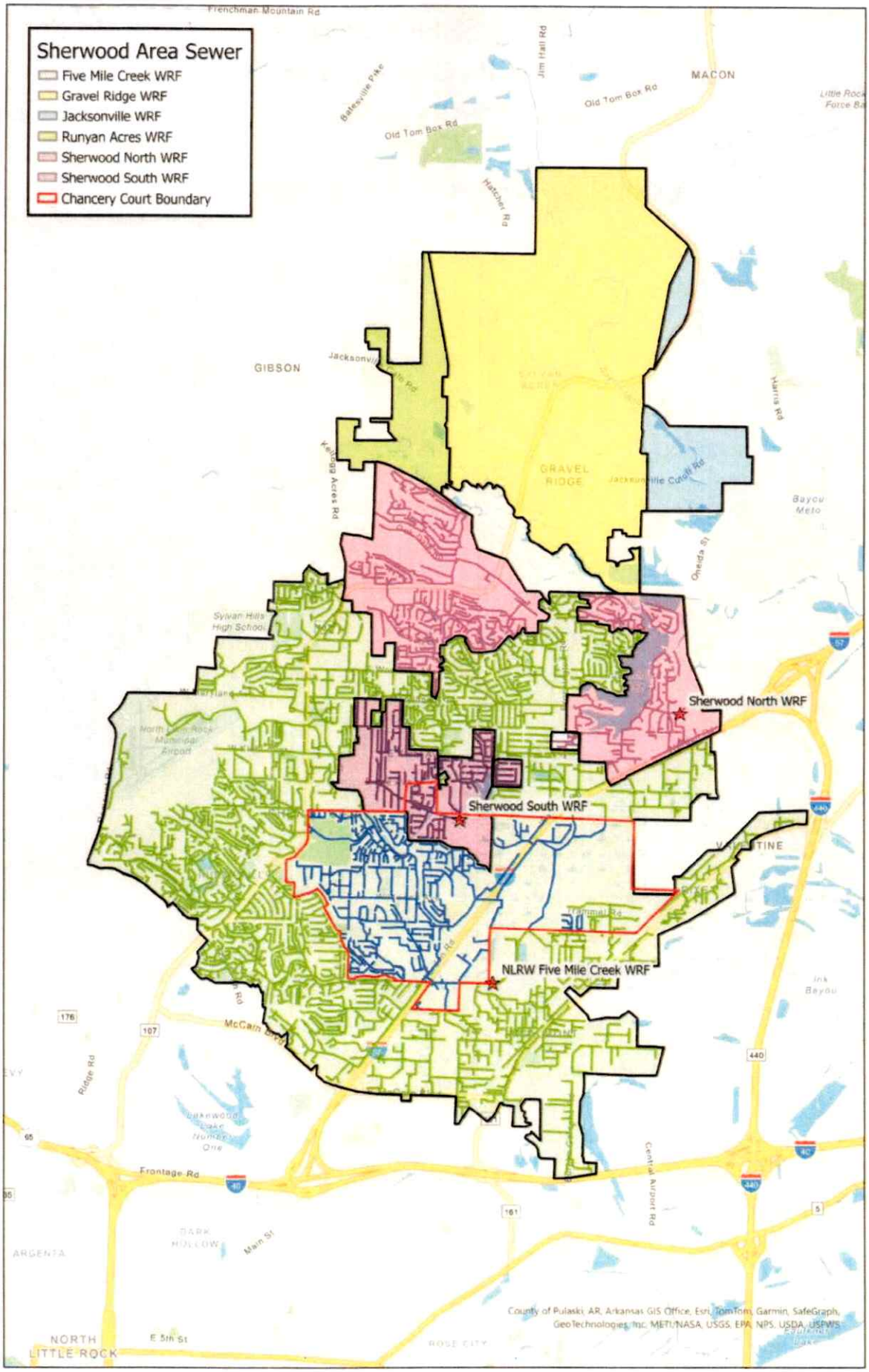
Table 6 below shows the total sewer rate increases required for each alternative from 2026 to 2030. The Full Regionalization option has the lowest expenses (legal and engineering expenses related to Agreement with NLRWU and the Five Mile Creek Sewer Interceptor project).

Table 6: Total Sewer Rate Increases Required for Each Alternative

Alternative	Total Sewer Rate Increase	Average Monthly Bill: City		Average Monthly Bill: Non-City	
		2026	2030	2026	2030
3.1.1 – Sherwood "As Is"	71.8%	$29.30	$50.34	$36.63	$62.94
3.1.2 – Sherwood Decommissions North Plant	86.5%	$29.30	$54.65	$36.63	$68.32
3.1.3 – Sherwood Decommissions South Plant	67.5%	$29.30	$49.08	$36.63	$61.36
3.2 – Partial Regionalization	95.1%	$29.30	$57.17	$36.63	$71.47
3.3 – Full Regionalization	27.5% (City) 21.9% (Non-city)	$29.30	$37.34	$36.63	$44.67

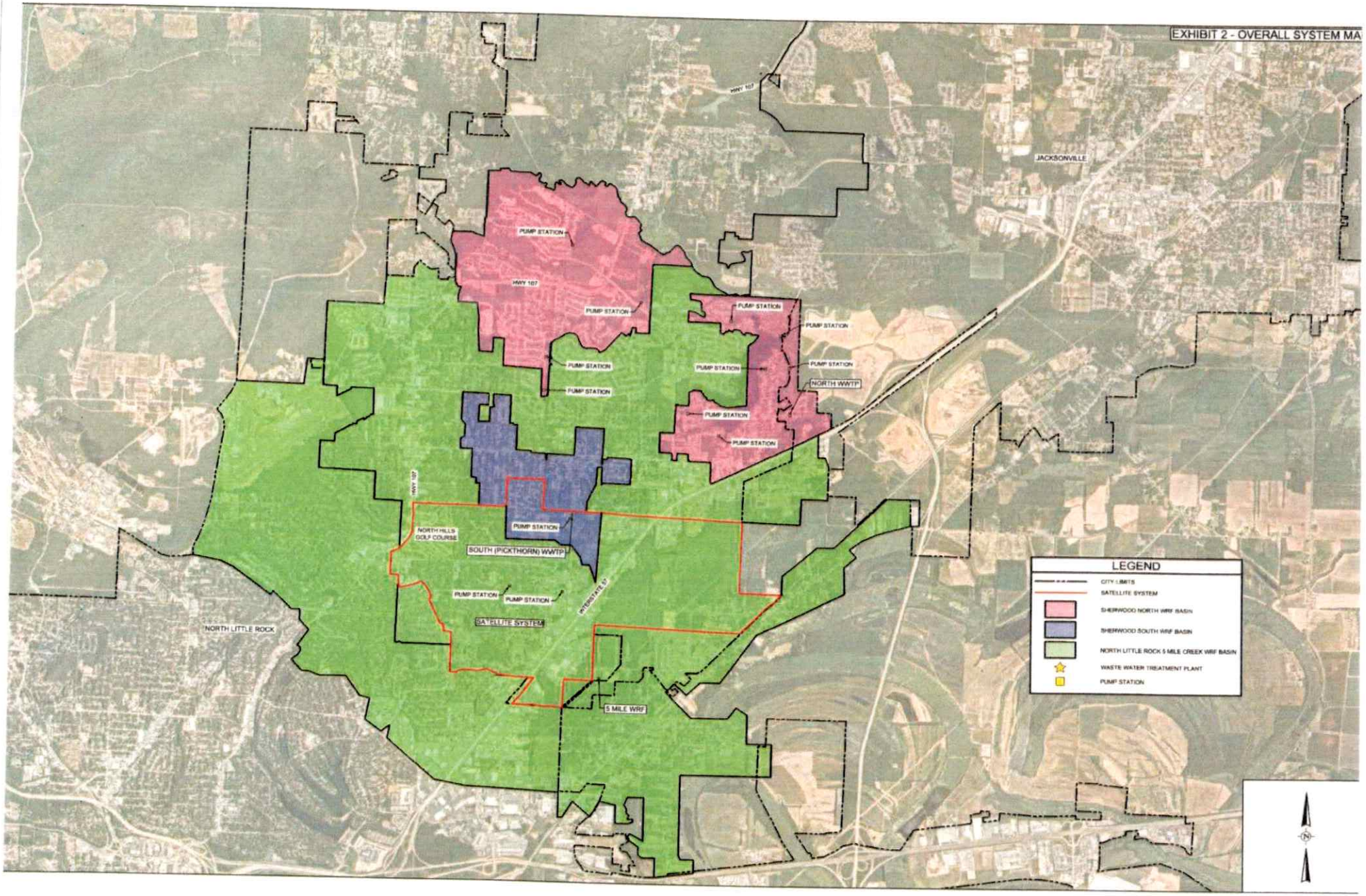
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EXHIBIT 1 – SHERWOOD AREA SEWER


Sherwood Area Sewer
Five Mile Creek WRF
Gravel Ridge WRF
Jacksonville WRF
Runyan Acres WRF
Sherwood North WRF
Sherwood South WRF
Chancery Court Boundary
Sherwood North WRF
Sherwood South WRF
NLRW Five Mile Creek WRF
GIBSON
MACON
GRAVEL RIDGE
NORTH LITTLE ROCK
ARGENTA
Frenchman Mountain Rd
Old Tom Box Rd
Jim Hall Rd
Batesville Pike
Hatchen Rd
Harris Rd
Oneida St
Bayou Meto
Frontage Rd
Main St
Ridge Rd
Central Airport Rd
E 5th St
County of Pulaski, AR, Arkansas GIS Office, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, USFWS

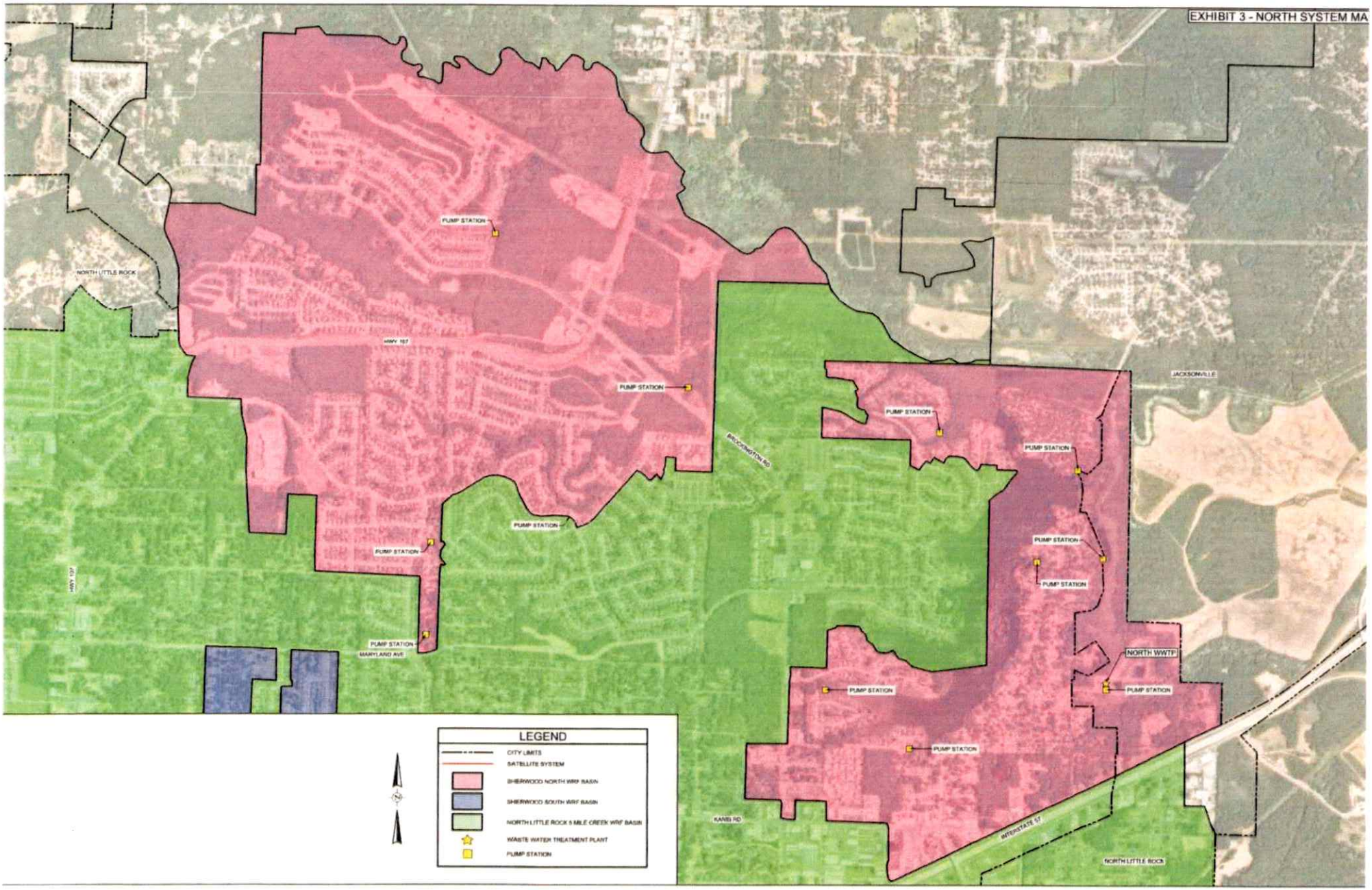
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EXHIBIT 2 – OVERALL BOUNDARY MAPS


EXHIBIT 2 - OVERALL SYSTEM MA
HWY 107
JACKSONVILLE
PUMP STATION
HWY 107
PUMP STATION
PUMP STATION
PUMP STATION
PUMP STATION
PUMP STATION
PUMP STATION
PUMP STATION
PUMP STATION
NORTH WWTP
HWY 107
NORTH HILLS GOLF COURSE
PUMP STATION
SOUTH (PICKTHORN) WWTP
PUMP STATION
PUMP STATION
INTERSTATE 57
SATELLITE SYSTEM
NORTH LITTLE ROCK
5 MILE WRF
LEGEND
CITY LIMITS
SATELLITE SYSTEM
SHERWOOD NORTH WRF BASIN
SHERWOOD SOUTH WRF BASIN
NORTH LITTLE ROCK 5 MILE CREEK WRF BASIN
WASTE WATER TREATMENT PLANT
PUMP STATION
N

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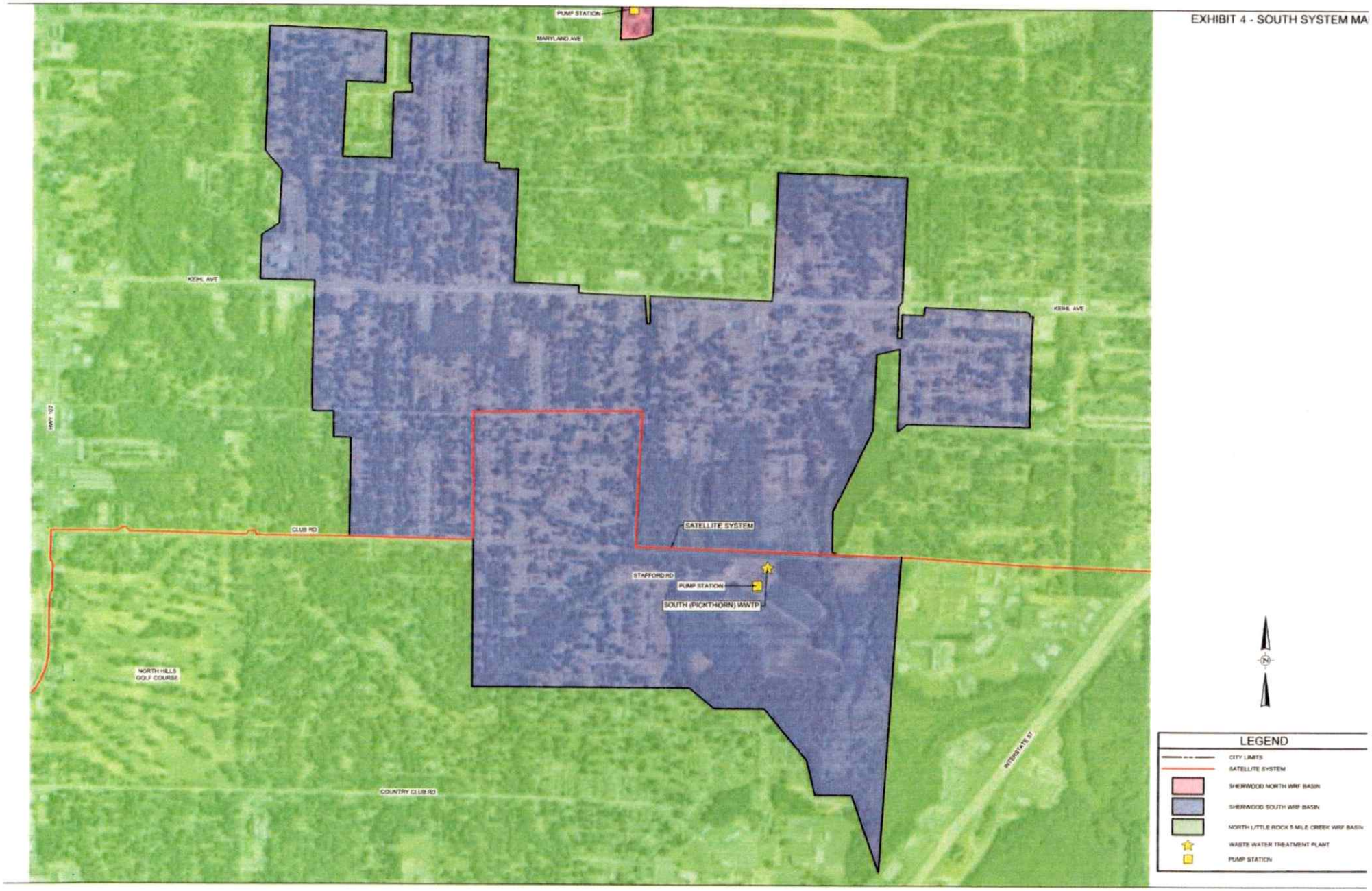
EXHIBIT 3 – SHERWOOD NORTH SYSTEM MAP


EXHIBIT 3 - NORTH SYSTEM MA
NORTH LITTLE ROCK
HWY 107
PUMP STATION
PUMP STATION
PUMP STATION
PUMP STATION
PUMP STATION
PUMP STATION
PUMP STATION
PUMP STATION
PUMP STATION
PUMP STATION
PUMP STATION
PUMP STATION
MARYLAND AVE
BRODDINGTON RD
JACKSONVILLE
NORTH WWTP
KANIS RD
INTERSTATE 57
NORTH LITTLE ROCK
LEGEND
CITY LIMITS
SATELLITE SYSTEM
SHERWOOD NORTH WRF BASIN
SHERWOOD SOUTH WRF BASIN
NORTH LITTLE ROCK 5 MILE CREEK WRF BASIN
WASTE WATER TREATMENT PLANT
PUMP STATION

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EXHIBIT 4 – SHERWOOD SOUTH SYSTEM MAP

EXHIBIT 4 - SOUTH SYSTEM MA



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EXHIBIT 5 – SHERWOOD BASIN SEWER MAIN QUANTITIES

Sherwood Sewer Systems			
	Gravity Sewer - LF	Percent (LF)	Line Segments
50 years and older*	262,180	54%	1,179
Less than 50 years old	220,775	46%	1,177
Total	482,955		2,356
*These lines were constructed in or prior to the 1970s			
Decade Constructed	LF	Percent (LF)	Line Segments
1960s	123,994	26%	552
1970s	138,186	29%	627
1980s	35,004	7%	161
1990s	7,992	2%	33
2000s	79,731	17%	444
2010s	74,579	15%	411
2020s	23,471	5%	128
Total	482,955		2,356

Sherwood North WRF			
	Gravity Sewer - LF	Percent (LF)	Line Segments
50 years and older*	52,114	25%	218
Less than 50 years old	158,719	75%	878
Total	210,833		1,096
*These lines were constructed in or prior to the 1970s			
Decade Constructed	LF	Percent (LF)	Line Segments
1960s	33,718	16%	137
1970s	18,396	9%	81
2000s	69,845	33%	392
2010s	70,590	33%	389
2020s	18,284	9%	97
Total	210,833		1,096

Sherwood South WRF			
	Gravity Sewer - LF	Percent (LF)	Line Segments
50 years and older*	74,401	89%	339
Less than 50 years old	9,117	11%	46
Total	83,518		385
*These lines were constructed in or prior to the 1970s			
Decade Constructed	LF	Percent (LF)	Line Segments
1960s	46,800	56%	227
1970s	27,600	33%	112
1980s	2,112	3%	8
1990s	796	1%	4
2000s	6,210	7%	34
Total	83,518		385

Sherwood Satellite System			
	Gravity Sewer - LF	Percent (LF)	Line Segments
50 years and older*	135,665	72%	622
Less than 50 years old	52,939	28%	253
Total	188,604		875
*These lines were constructed in or prior to the 1970s			
Decade Constructed	LF	Percent (LF)	Line Segments
1960s	43,476	23%	188
1970s	92,189	49%	434
1980s	32,892	17%	153
1990s	7,196	4%	29
2000s	3,676	2%	18
2010s	3,988	2%	22
2020s	5,187	3%	31
Total	188,604		875

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EXHIBIT 6 – OVERALL SHERWOOD NORTH WWTP MAP


EXHIBIT 6 - OVERALL NORTH WWT
SPILLWAY
EQ BASIN
SPILLWAY
CUSTER PL
SLUDGE POND
PADDLE WHEEL AERATOR
POST AERATION, UV, FLUME, COMPOSITE SAMPLER, AND FLOW METER
SBR UNITS 1 & 2
SBR UNITS 3 & 4
NORTH WWTP BUILDING
OLD SLUDGE POND
INFLUENT, BAR SCREEN, AND GRIT CHAMBER
PUMP STATION
SLUDGE PL
PRIVATE POND (NOT PART OF SEWER FACILITY)
LEGEND
FORCEMAIN
GRAVITY SEWER
MANHOLE
PUMP STATION
SCALE IN FEET

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EXHIBIT 7 – ENLARGED SHERWOOD NORTH PLANT MAP


EXHIBIT 7 - ENLARGED NORTH WWT
EQ BASIN
SBR UNITS 1 & 2
POST AERATION, UV, FLUME, COMPOSITE SAMPLER, AND FLOW METER
SBR UNITS 3 & 4
NORTH WWTP BUILDING
GENERATOR
OLD SLUDGE POND
INFLUENT, BAR SCREEN, AND GRIT CHAMBER
PUMP STATION
ALGONKIN PI
LEGEND
FORCEMAIN
GRAVITY SEWER
MANHOLE
PUMP STATION
SCALE IN FEET

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EXHIBIT 8 – OVERALL SHERWOOD SOUTH WWTP MAP


EXHIBIT 8 - OVERALL SOUTH WWT
OUTFALL 001
SOUTH (PICKTHORN) WWTP BUILDING
STAFFORD RD
ACTIVATED SLUDGE LAGOON
PUMP STATION
EQ BASIN
LEGEND
FORCEMAIN
GRAVITY SEWER
MANHOLE
PUMP STATION
SCALE IN FEET

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EXHIBIT 9 - ENLARGED SHERWOOD SOUTH PLANT MAP


EXHIBIT 9 - ENLARGED SOUTH WWT
OUTFALL 001
FLOW MEASUREMENT
UV DISINFECTION
SOUTH (PICKTHORN) WWTP BUILDING
TERTIARY FILTER
RETURN LINE TO ACTIVATED SLUDGE
WEIR BLADES
SETTLING BASIN
ACTIVATED SLUDGE LAGOON (BIOLAC)
SUBMERSIBLE LIFT STATION
BAR SCREEN & DUMPSTER
PUMP STATION
EQ BASIN
LEGEND
FORCEMAIN
GRAVITY SEWER
MANHOLE
PUMP STATION
0
20
40
SCALE IN FEET

CITY OF SHERWOOD
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EXHIBIT 10 – OVERALL NLRWU FIVE MILE CREEK WRF MAP


EXHIBIT 10 - OVERALL FIVE MILE CREEK WRF
EQ BASIN
AERATED LAGOONS
CHLORINE CONTACT CHAMBER
NORTH LITTLE ROCK CITY LIMITS
SHERWOOD CITY LIMITS
WWTP BUILDING
BAR SCREEN
E. 54TH ST
LEGEND
FORCEMAIN
GRAVITY SEWER
MANHOLE
PUMP STATION
N
SCALE IN FEET

CITY OF SHERWOOD
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EXHIBIT 11 - ENLARGED NLRWU FIVE MILE CREEK WRF MAP


EXHIBIT 11 - ENLARGED FIVE MILE CREEK WR
EQ BASIN
AERATED LAGOON
AERATED LAGOON
CHLORINE CONTACT CHAMBER
NORTH LITTLE ROCK CITY LIMITS
SHERWOOD CITY LIMITS
BAR SCREEN
WWTP BUILDING
GENERATOR

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EXHIBIT 12 – 5-YEAR COST ESTIMATES FOR EACH ALTERNATIVE

Alternative 3.1.1 - Sherwood Remains "As Is"

NO.	Description	2026	2027	2028	2029	2030
1	Ongoing Operating Costs	$ 1,780,400	$ 1,869,420	$ 1,962,891	$ 2,061,036	$ 2,164,087
2	Permitting and Compliance Officer	$ 65,000	$ 68,250	$ 71,663	$ 75,246	$ 79,008
3	Additional Staff for Cleaning/CCTV Work	$ 400,000	$ 420,000	$ 441,000	$ 463,050	$ 486,203
4	North Plant Improvements	$ -	$ -	$ 273,610	$ 273,610	$ 273,610
5	South Plant Improvements	$ -	$ -	$ 729,627	$ 729,627	$ 729,627
6	Cost of agreement with NLRWU	$ 50,000	$ -	$ -	$ -	$ -
7	Gravity Sewer Line Rehabilitation - Phase 1	$ -	$ 364,813	$ 364,813	$ 364,813	$ 364,813
8	Gravity Sewer Line Rehabilitation - Phase 2	$ -	$ -	$ 1,276,847	$ 1,276,847	$ 1,276,847
9	Cleaning and Debris Removal	$ 199,245	$ 208,211	$ 217,581	$ 227,372	$ 237,603
10	CCTV Inspection of Sewer Mains	$ 239,095	$ 249,854	$ 261,098	$ 116,934	$ 122,197
11	Manhole Rehabilitation	$ 354,900	$ 370,871	$ 387,560	$ 405,000	$ 423,225
12	Five Mile Creek Sewer Interceptor Project	$ 278,635	$ 557,271	$ 557,271	$ 557,271	$ 557,271
	TOTAL ANNUAL EXPENSES	$ 3,367,275	$ 4,108,690	$ 6,543,959	$ 6,550,805	$ 6,714,490

Alternative 3.1.2 - Sherwood Decommissions the North WWTP

NO.	Description	2026	2027	2028	2029	2030
1	Ongoing Operating Costs	$ 1,675,396	$ 1,759,166	$ 1,847,125	$ 1,939,481	$ 2,036,455
2	Permitting and Compliance Officer	$ 65,000	$ 68,250	$ 71,663	$ 75,246	$ 79,008
3	Additional Staff for Cleaning/CCTV Work	$ 400,000	$ 420,000	$ 441,000	$ 463,050	$ 486,203
4	North Plant Decommission	$ -	$ -	$ 91,203	$ 91,203	$ 91,203
5	South Plant Upgrades	$ -	$ -	$ 1,368,050	$ 1,368,050	$ 1,368,050
6	Remove Existing Biosolids at Sherwood South	$ -	$ 36,481	$ 36,481	$ 36,481	$ 36,481
6	Install North Plant Pump Station	$ -	$ -	$ 91,203	$ 91,203	$ 91,203
7	Install Force Main to South Plant	$ -	$ -	$ 116,376	$ 116,376	$ 116,376
8	Cost of agreement with NLRWU	$ 50,000	$ -	$ -	$ -	$ -
9	Gravity Sewer Line Rehabilitation - Phase 1	$ -	$ 364,813	$ 364,813	$ 364,813	$ 364,813
10	Gravity Sewer Line Rehabilitation - Phase 2	$ -	$ -	$ 1,276,847	$ 1,276,847	$ 1,276,847
11	Cleaning and Debris Removal	$ 199,245	$ 208,211	$ 217,581	$ 227,372	$ 237,603
12	CCTV Inspection of Sewer Mains	$ 239,093	$ 249,852	$ 261,096	$ 116,934	$ 122,196
13	Manhole Rehabilitation	$ 354,900	$ 370,871	$ 387,560	$ 405,000	$ 423,225
14	Five Mile Creek Sewer Interceptor Project	$ 278,635	$ 557,271	$ 557,271	$ 557,271	$ 557,271
	TOTAL ANNUAL EXPENSES	$3,262,270	$4,034,915	$7,128,268	$7,129,326	$7,286,934

Alternative 3.1.3 - Sherwood Decommissions the South WWTP

NO.	Description	2026	2027	2028	2029	2030
1	Ongoing Operating Costs	$ 1,675,396	$ 1,759,166	$ 1,847,125	$ 1,939,481	$ 2,036,455
2	Permitting and Compliance Officer	$ 65,000	$ 68,250	$ 71,663	$ 75,246	$ 79,008
3	Additional Staff for Cleaning/CCTV Work	$ 400,000	$ 420,000	$ 441,000	$ 463,050	$ 486,203
4	South Plant Decommission	$ -	$ -	$ 91,203	$ 91,203	$ 91,203
5	North Plant Upgrades	$ -	$ -	$ 729,627	$ 729,627	$ 729,627
6	Install South Plant Pump Station	$ -	$ -	$ 45,906	$ 45,906	$ 45,906
7	Install Force Main to North Plant	$ -	$ -	$ 93,100	$ 93,100	$ 93,100
8	Cost of agreement with NLRWU	$ 50,000	$ -	$ -	$ -	$ -
9	Gravity Sewer Line Rehabilitation - Phase 1	$ -	$ 364,813	$ 364,813	$ 364,813	$ 364,813
10	Gravity Sewer Line Rehabilitation - Phase 2	$ -	$ -	$ 1,276,847	$ 1,276,847	$ 1,276,847
11	Cleaning and Debris Removal	$ 199,245	$ 208,211	$ 217,581	$ 227,372	$ 237,603
12	CCTV Inspection of Sewer Mains	$ 239,093	$ 249,852	$ 261,096	$ 116,934	$ 122,196
13	Manhole Rehabilitation	$ 354,900	$ 370,871	$ 387,560	$ 405,000	$ 423,225
14	Five Mile Creek Sewer Interceptor Project	$ 278,635	$ 557,271	$ 557,271	$ 557,271	$ 557,271
	TOTAL ANNUAL EXPENSES	$ 3,262,270	$ 3,998,434	$ 6,384,790	$ 6,385,849	$ 6,543,456

Alternative 3.2 - Partial Regionalization of Sherwood and NLRWU

NO.	Description	2026	2027	2028	2029	2030
1	Ongoing Operating Costs	$ 890,198	$ 934,708	$ 981,444	$ 1,030,516	$ 1,082,041
2	Permitting and Compliance Officer	$ 65,000	$ 68,250	$ 71,663	$ 75,246	$ 79,008
3	Additional Staff for Cleaning/CCTV Work	$ 171,429	$ 180,000	$ 189,000	$ 198,450	$ 208,373
4	North Plant Improvements	$ -	$ -	$ 273,610	$ 273,610	$ 273,610
5	Connection from South Plant to NLRWU	$ -	$ 30,401	$ 30,401	$ 30,401	$ 30,401
6	Remove Existing Biosolids at Sherwood South	$ -	$ 36,481	$ 36,481	$ 36,481	$ 36,481
7	Cost of agreement with NLRWU	$ 50,000	$ -	$ -	$ -	$ -
8	Gravity Sewer Line Rehabilitation - Phase 1	$ -	$ 388,056	$ -	$ -	$ -
9	Gravity Sewer Line Rehabilitation - Phase 2	$ -	$ -	$ 440,643	$ 460,472	$ 481,193
10	Cleaning and Debris Removal	$ 86,994	$ 90,909	$ 95,000	$ 99,275	$ 103,742
11	CCTV Inspection of Sewer Mains	$ 104,393	$ 109,091	$ 114,000	$ 51,056	$ 53,353
12	Manhole Rehabilitation	$ 164,550	$ 171,955	$ 179,693	$ 187,779	$ 196,229
13	Five Mile Creek Sewer Interceptor Project	$ 278,635	$ 557,271	$ 557,271	$ 557,271	$ 557,271
	TOTAL ANNUAL EXPENSES	$ 1,811,199	$ 2,567,121	$ 2,969,204	$ 3,000,556	$ 3,101,702

Alternative 3.3 - Full Regionalization of Sherwood and NLRWU

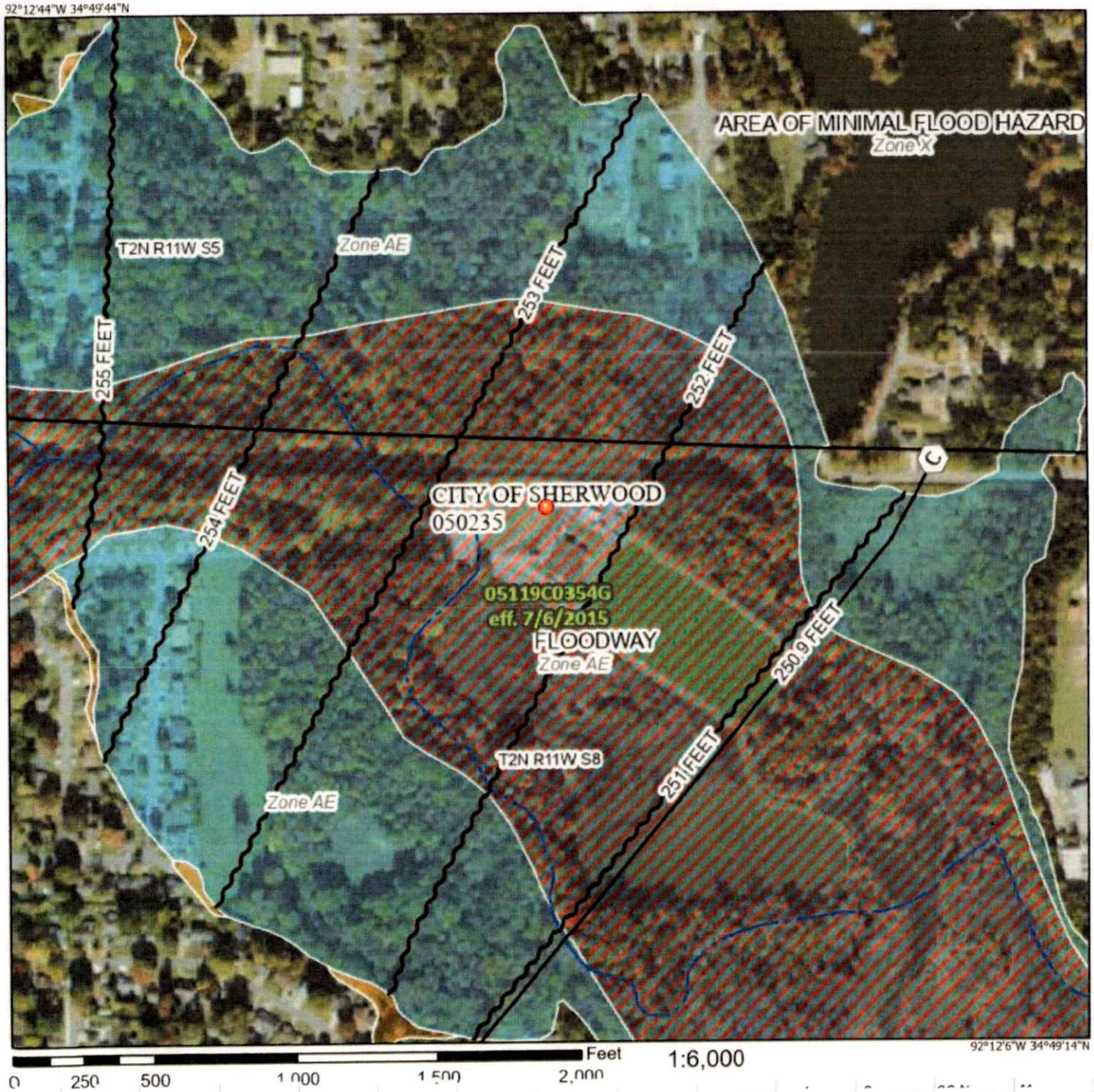
NO.	Description	2026	2027	2028	2029	2030
1	Legal and Engineering Expenses - NLRWU Agreement	$ 500,000	$ -	$ -	$ -	$ -
2	Remove Existing Biosolids at Sherwood South	$ -	$ 36,481	$ 36,481	$ 36,481	$ 36,481
3	Gravity Sewer Line Rehabilitation - Phase 1	$ -	$ -	$ -	$ -	$ -
4	Gravity Sewer Line Rehabilitation - Phase 2	$ -	$ -	$ -	$ -	$ -
5	Cleaning and Debris Removal	$ -	$ -	$ -	$ -	$ -
6	CCTV Inspection of Sewer Mains	$ -	$ -	$ -	$ -	$ -
7	Manhole Rehabilitation	$ -	$ -	$ -	$ -	$ -
8	Five Mile Creek Sewer Interceptor Project	$ 278,635	$ 557,271	$ 557,271	$ 557,271	$ 557,271
	TOTAL ANNUAL EXPENSES	$ 778,635	$ 593,752	$ 593,752	$ 593,752	$ 593,752

CITY OF SHERWOOD
SANITARY SEWER LONG-RANGE STUDY
PRELIMINARY REPORT

EXHIBIT 13 – SHERWOOD SOUTH PLANT FLOOD MAP

National Flood Hazard Layer FIRMette

FEMA



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

- SPECIAL FLOOD HAZARD AREAS
  - Without Base Flood Elevation (BFE) *Zone A, V, A99*
  - With BFE or Depth *Zone AE, AO, AH, VE, AR*
  - Regulatory Floodway
- OTHER AREAS OF FLOOD HAZARD
  - 0.2% Annual Chance Flood Hazard, Area of 1% annual chance flood with average depth less than one foot or with drainag areas of less than one square mile *Zone X*
  - Future Conditions 1% Annual Chance Flood Hazard *Zone X*
  - Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
  - Area with Flood Risk due to Levee *Zone D*
- OTHER AREAS
  - NO SCREEN Area of Minimal Flood Hazard *Zone X*
  - Effective LOMRs
  - Area of Undetermined Flood Hazard *Zone*
- GENERAL STRUCTURES
  - Channel, Culvert, or Storm Sewer
  - Levee, Dike, or Floodwall
- OTHER FEATURES
  - 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
  - Coastal Transect
  - Base Flood Elevation Line (BFE)
  - Limit of Study
  - Jurisdiction Boundary
  - Coastal Transect Baseline
  - Profile Baseline
  - Hydrographic Feature
- MAP PANELS
  - Digital Data Available
  - No Digital Data Available
  - Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represe an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/26/2025 at 1:34 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Summary of Sherwood Wastewater Study Alternatives Analysis

The City of Sherwood contracted with Halff in July 2025 to conduct a Sanitary Sewer Long-Range Study with recommendations for the future of Sherwood's wastewater collection systems and wastewater treatment plants.

The study analyzed the options of Sherwood Wastewater remaining as is, Sherwood decommissioning the North Plant, Sherwood decommissioning the South Plant, a partial regionalization where Sherwood South and Sherwood Satellite Systems combine with NLRWU, and a full regionalization between Sherwood Wastewater and NLRWU.

The summary of the current average monthly sewer bills for Sherwood, Jacksonville, North Little Rock Wastewater Utility, Runyan Acres, and Gravel Acres is shown in **Table 1** below. The monthly sewer bill for each entity is calculated assuming an average monthly usage of 400 cubic feet (2,992 gallons).

Table 1: Average Monthly Sewer Bills for Entities Serving Customers in City of Sherwood

Entity	2025	2026
Sherwood – Inside City	$23.44	$29.30
Sherwood – Outside City	$29.30	$36.63
Jacksonville – Inside City	$27.77	$27.77
Jacksonville – Outside City	$41.81	$41.81
North Little Rock Wastewater Utility	$22.15	$23.92
Gravel Ridge SID #213	$29.97	$29.97
Runyan Acres SID #211	$36.00	$36.00

Table 2 below shows the Total Annual Expenses for the five alternatives from 2026 to 2030.

Table 2: Total Annual Expenses for Each Alternative (2026-2030)

Alternative	2026	2027	2028	2029	2030
3.1.1 – Sherwood "As Is"	$3,367,275	$4,108,690	$6,543,959	$6,550,805	$6,714,490
3.1.2 – Sherwood Decommissions North Plant	$3,262,270	$4,034,915	$7,128,268	$7,129,326	$7,286,934
3.1.3 – Sherwood Decommissions South Plant	$3,262,270	$3,998,434	$6,384,790	$6,385,849	$6,543,456
3.2 – Partial Regionalization	$1,811,199	$2,567,121	$2,969,204	$3,000,556	$3,101,702
3.3 – Full Regionalization	$778,635	$593,752	$593,752	$593,752	$593,752

Table 3 below shows the total sewer rate increases required for each alternative from 2026 to 2030.

Table 3: Total Sewer Rate Increases Required for Each Alternative

Alternative	Total Sewer Rate Increase	Average Monthly Bill: City		Average Monthly Bill: Non-City	
	2026 to 2030	2026	2030	2026	2030
3.1.1 – Sherwood "As Is"	71.8%	$29.30	$50.34	$36.63	$62.94
3.1.2 – Sherwood Decommissions North Plant	86.5%	$29.30	$54.65	$36.63	$68.32
3.1.3 – Sherwood Decommissions South Plant	67.5%	$29.30	$49.08	$36.63	$61.36
3.2 – Partial Regionalization	95.1%	$29.30	$57.17	$36.63	$71.47
3.3 – Full Regionalization	27.5% (City) 21.9% (Non-city)	$29.30	$37.34	$36.63	$44.67

The most cost-effective alternative would be Alternative 3.3 – a full regionalization between Sherwood and North Little Rock Wastewater Utility into a new "North Pulaski Regional Sewage Authority". This alternative is the most cost-effective option for the City of Sherwood and its sewer customers and would allow Sherwood to strike a deal with NLRWU for the rehabilitation and cleaning of all their systems. In addition, Sherwood would not have to maintain and operate any of their current infrastructure, which would cut down on their costs and would allow NLRWU to clean and rehabilitate all their systems more efficiently than Sherwood would be able to on their own.