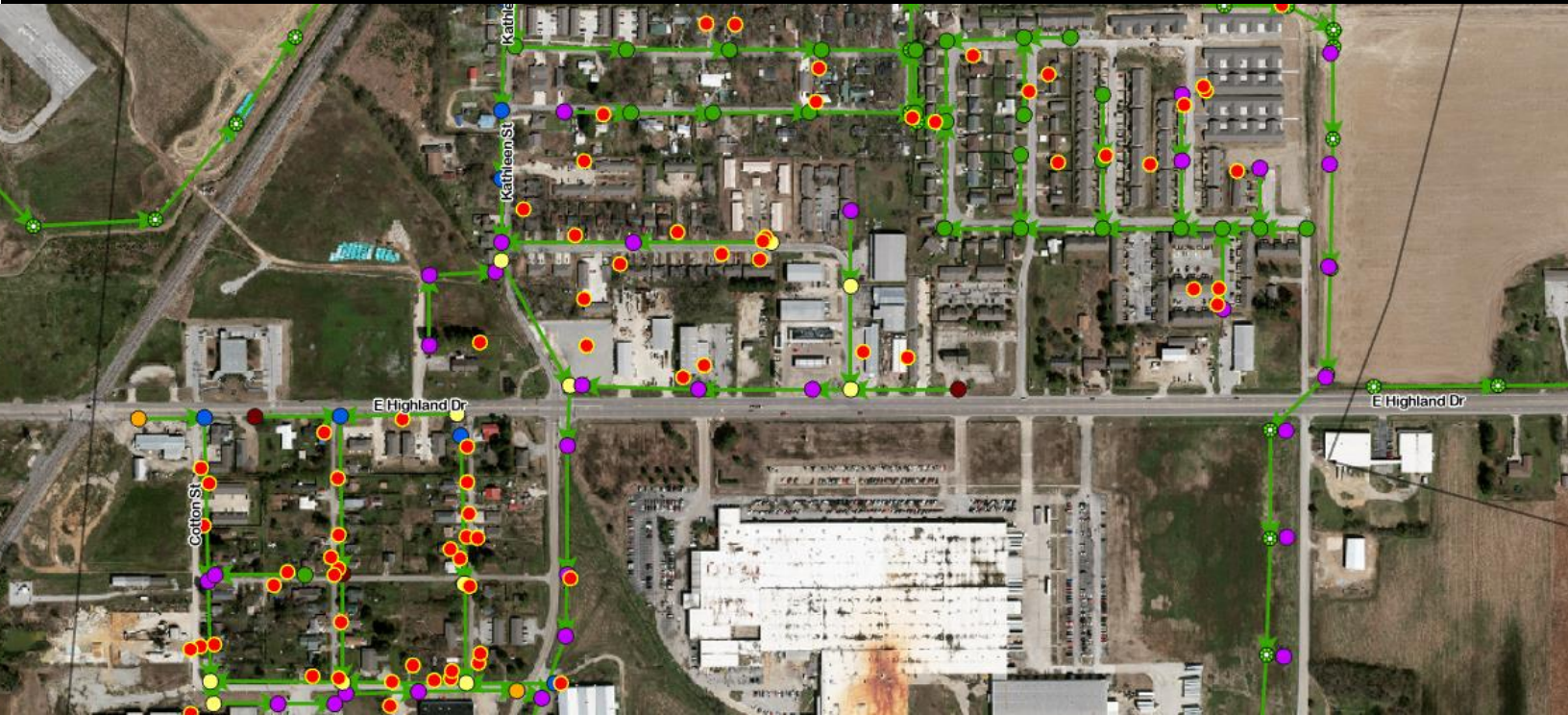


CITY WATER & LIGHT

JONESBORO, ARKANSAS



2023 PROGRESS REPORT

CORRECTIVE ACTION PLAN

SANITARY SEWER OVERFLOWS: SUMMARY OF ONGOING ACTIONS
AND PLAN FOR ADDITIONAL CORRECTIVE MEASURES


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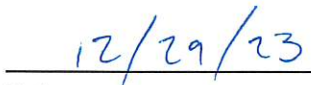
December 29, 2023

CITY WATER & LIGHT
JONESBORO, ARKANSAS
2023 PROGRESS REPORT
CORRECTIVE ACTION PLAN
SANITARY SEWER OVERFLOWS

I certify under penalty of law that this document and all appendices were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations.



Jake Rice III, Manager
City Water and Light
Jonesboro, AR



Date

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Acronyms

ADH – Arkansas Department of Health

ARPA – American Rescue Plan Act

BOD – Biochemical Oxygen Demand

CAP – Corrective Action Plan

CCTV – Closed Circuit Television Video

CIPP – Cured-In-Place Pipe

CMAR – Construction Manager at Risk

CMMS – Computerized Maintenance Management System

CMOM - Capacity, Management, Operations, and Maintenance Program

CWL - City Water and Light Plant of the City of Jonesboro, Arkansas

DEQ - Arkansas Department of Energy and Environment’s Division of Environmental Quality

Duke’s - Duke’s Root Control, Inc.

ESRI – Environmental Systems Research Institute, Inc.

FOG - Fats, Oils and Grease

FSE – Food Service Establishment

GIS – Geographic Information System

I&I – Inflow and Infiltration

lbs/day – pounds per day

MGD – Million Gallons per Day

MW&Y - McGoodwin, Williams & Yates, Inc.

NPDES - National Pollutant Discharge Elimination System

Olsson – Olsson, Inc.

PVC – Polyvinyl Chloride

RJN - RJN Group, Inc.

SL-Rat® - Sewer Line Rapid Assessment Tool by InfoSense, Inc.

SSES – Sanitary Sewer Evaluation Study

SSO – Sanitary Sewer Overflow

Van Horn – Van Horn Construction, Inc.

VFD – Variable Frequency Drive

WMP – Waste Management Plan

WWTP – Wastewater Treatment Plant

1. Executive Summary

CWL has maintained a longstanding effort in the effective and continuous management, operation, and maintenance of the collection system capacity and performance. This ongoing effort continued in 2023 through the corrective action activities that CWL committed to in both the CWL CAP submitted to the DEQ on March 28, 2016 and Addendum to CWL CAP submitted to the DEQ on April 14, 2016.

With remaining easements successfully acquired in 2023 for the final Phase I Capital Improvements project, CWL is pleased to report this milestone is fully complete. In addition, CWL considers overall mitigation improvements ahead of schedule, particularly with the status of the Westside WWTP replacement, a Phase II capital improvement project.

As of November 1, 2023, the corrective actions outlined in CWL's CAP and follow-up Addendum have been accomplished or are on schedule to be achieved by the respective initial or updated target completion date. For 2023, these activities included:

- i. Progress on Phase I & II Capital Improvements
- ii. Performed SSES of Approximately 35 Miles of the Collection System
- iii. Performed Resultant Repairs for Phase I & II SSES Basins
- iv. Ridgecrest Force Main Upgrade completion, Phase I Capital Improvement
- v. Progress on CMOM Software Solutions
- vi. Progress on Sewer Lateral Repair Program
- vii. Continued FOG Management Program Outreach

In addition to the corrective actions performed this year, CWL continued ongoing comprehensive SSO mitigation efforts through the routine inspection and maintenance programs for the collection system and lift stations and the CMOM programs and processes currently in place and active. To enhance maintenance efforts and build on last year's success, CWL contracted additional CIPP lining/pipe bursting of sewer mains identified as optimal candidates.

CWL, for many years, has demonstrated a culture of compliance and a commitment to SSO mitigation and as outlined in this progress report, 2023 was no exception. For the period of November 1, 2022 thru October 31, 2023, CWL has documented CMOM expenses totaling over **\$2.9 million** and capital costs totaling over **\$44.2 million**.

Also, CWL has concluded Phase I capital improvements this year, with approximately **\$32 million** spent to date. In addition, CWL has invested over **\$56.6 million** toward the Phase II capital improvement projects and estimates additional capital expenditures of approximately **\$18 million** to complete these Phase II efforts.

Formally presented as a Phase II Capital Improvement in 2020, the now estimated **\$73 million** Westside WWTP replacement's design was enhanced in 2021 to include **advanced nutrient removal**. With preliminary plant construction beginning in 2021, the Process and Structures contract section began in July 2022. As previously reported, the company's commitment to this project further materialized in CWL's July 2020 issuance of **\$26 million in Public Utility System Revenue Bonds**. While earmarked in part for then-current wastewater capital projects, the issue of these bonds allowed CWL reserve funds to be utilized for other projects, like the Westside WWTP. CWL furthered this commitment in May 2022 with the issuance of **\$35.5 million in Public Utility System Revenue Bonds** that are being used toward the Westside WWTP replacement. CWL's application for ARPA funding submitted in November 2022 was awarded **\$5 million in grant allocation** through the Natural Resources Division of the Arkansas Department of Agriculture for the Westside WWTP. The grant proceeds have offset the overall WWTP project costs.

The DEQ understands that SSO mitigation is an iterative and ongoing activity. CWL is pleased to present the activities outlined in this report as evidence of CWL's ongoing efforts in SSO mitigation, despite the ongoing supply chain challenges of 2023. CWL firmly believes that these proactive efforts and associated capital costs, as well as the future corrective actions identified in CWL's CAP Addendum, demonstrate CWL's dedication to collection system improvements.

This CAP report represents CWL's fulfillment of the DEQ's request for an annual progress report and constitutes CWL's sincere interest in ongoing and transparent communication with the DEQ beyond the fulfillment of our voluntary commitment of a Progress Report every two years, as presented in item IV of the Addendum to CWL CAP.

2. Corrective Action Plan Activities – 2023

CWL is pleased to report the corrective actions, as presented in the following sections, achieved in 2023 toward efforts to further mitigate SSOs in the collection system. To-date, the milestones outlined in CWL’s CAP submitted to the DEQ on March 28, 2016 and Addendum to CWL CAP submitted to the DEQ on April 14, 2016 have been achieved or are on schedule to be achieved by the respective target completion date. For the period of November 1, 2022 thru October 31, 2023, CWL has documented CMOM expenses totaling over **\$2.9 million** and capital costs totaling over **\$44.2 million**.

3. Phase II Corrective Action Plan Activities – Status

As identified in CWL’s CAP, Phase II milestones are actions targeted for completion from the 1st Quarter of 2021 thru the 4th Quarter of 2025. The following Sections 4 thru 7 provide a summary of CWL’s Phase II accomplishments as of November 1, 2023.

4. Phase II Capital Improvements

CWL is pleased to report that progress continues on-schedule for the Phase II Capital Improvements. The following Sections 4.1 thru 4.3 summarize the corrective action progress accomplished both prior to and in 2023 toward efforts on this portion of Milestone #2 of Phase II, targeted for completion by December 31, 2025.

As stated in the CAP, CWL agrees with the DEQ that mitigation efforts and associated capital improvement needs and timing are an iterative and ongoing process. Additionally, it is important to recognize and acknowledge the potential impacts on construction projects of the on-going supply chain disruptions. Despite challenges, CWL is pleased to present the status of Phase II improvements as summarized in Table 4-1.

Table 4-1: Phase II Capital Improvements (As of November 1, 2023)

Capital Improvement	Updated Cost Est.	Current Status
Westside WWTP Replacement	\$73 million	Construction in Progress
Kitchen Interceptor – Phase I	\$1.3 million	Easement Acquisition in Progress
Sports Complex Lift Station & Force Main Upgrades	\$350,000	In Planning

4.1. Westside WWTP Replacement

As previously reported, CWL began preliminary efforts toward an in-depth study of the Westside WWTP regarding the adequacy of the 1977 trickling filter Plant’s biological and hydraulic capacity for the long-term system needs with MW&Y (now Olsson) in the first quarter of 2015. In 2019, CWL contracted Olsson as the engineering firm and Van Horn as the CMAR for the replacement of the WWTP to accommodate estimated flow requirements with system growth and potentially more stringent regulatory requirements in the future. CWL officially identified the Westside WWTP as a Phase II Capital Improvement project in 2020. The status and current schedule of the project is summarized in Table 4.2.

Table 4-2: Westside WWTP Contract Section Statuses (As of November 2023)

Contract Number	Contract Section	Cost to Date	Estimated Cost	Current Status
1	Tree Clearing	\$74,000	\$82,000	Completed July 2021
2	Road Work	\$752,000	\$890,000	Completed November 2021
2	Force Main Relocation & Mass Grading Site Work	\$5.64 million	\$5.64 million	Completed September 2022
3	Under Slab Pipe Procurement	\$1.13 million	\$1.15 million	Completed February 2023
3	Ovivo & Flygt Equipment Procurement	\$2.15 million	\$2.36 million	In Progress
3	Process & Structures	\$39.26 million	\$59.64 million	DEQ approved plans April 2022. In Progress with anticipated completion date of December 2024.

The final design of the WWTP, along with the Main Lift Station replacement, will increase the Westside hydraulic capacity from approximately 7 MGD to 17 MGD and the biological treatment capacity from approximately 6,880 lbs/day BOD to 9,950 lbs/day BOD. This increased capacity will not only provide for future growth needs but will also optimize operation during wet weather

flows and thus significantly enhance SSO mitigation efforts in west Jonesboro. In addition, and as with the Main Lift Station, replacing the over 40-year-old WWTP will address maintenance issues and provide a more reliable, efficient, and resilient plant.

Based on preliminary conversations with the DEQ, the Plant design was expanded in 2021 to include anaerobic selector and fermentation basins for enhanced nutrient treatment. Olsson resubmitted the construction permit, with these additions, to the DEQ in November 2021.

By April 2022, ADH design approval and appropriate DEQ and City of Jonesboro permits were acquired. The Process & Structures section of the contract began in June 2022, with a projected completion of December 2024. Construction-in-progress of the site is shown in Figure 4-1.

CWL's commitment to this project was further demonstrated in the freeing of additional reserve funds for this project through the issuance of **\$26 million in Public Utility System Revenue Bonds** in July 2020 for in-part funding of the Main Lift Station and Midtown Interceptor. Additionally, CWL furthered this commitment in May 2022 with the issuance of **\$35.5 million in Public Utility System Revenue Bonds** to be used toward the Westside WWTP replacement. CWL has invested over **\$56.5 million**, including engineering and in-house costs, on this important project to-date. Current total cost projections are estimated at over **\$73 million**. See Appendix A for a design map summarizing the replacement.

Figure 4-1: Construction of Westside WWTP Structures (October 2023)



4.1.1. 24" Force Main

As part of the Westside WWTP replacement, a new 24" force main from the new Main Lift Station to the new WWTP will be installed. The force main will operate in parallel to the existing 20" force main. Plans for the new force main were approved by ADH in September 2023. CWL awarded this project to R.L. Persons Construction, LLC. in October 2023 and construction began in November 2023. CWL has invested over **\$12,000** in the project to-date. Current total cost projections are estimated at over **\$1.06 million**.

4.1.2. Biosolids Land Application System

Another integral part of the new Westside WWTP is the biosolids land application upgrades. To handle sludge more efficiently, CWL designed a pump, pipe, and irrigation head system, similar to the Eastside WWTP Class B biosolids system, for land application of the sludge onto the permitted fields. CWL is in the process of submitting the revised Westside WWTP WMP for DEQ approval. CWL has invested over **\$62,000** in this project to-date. Current total cost projections are estimated at over **\$1.30 million**.

4.1.3. ARPA Grant

CWL applied for ARPA funding through the Natural Resources Division of the Arkansas Department of Agriculture for the Westside WWTP in November of 2022. CWL was awarded the maximum allowable grant allocation for a single wastewater project of **\$5 million**. This grant helps offset some of the costs for a project of this magnitude. Thus, providing savings to CWL's customers and aiding in CWL's dedication to SSO mitigation.

4.2. Kitchen Interceptor – Phase I

The Kitchen Street project involves a gravity system upstream of the Midtown Interceptor and was, therefore, always contingent on the completion of that project. With the now complete Midtown Interceptor, Kitchen Street is released for construction.

The Kitchen improvements were originally defined as various upgrades to the existing gravity sewer network in the midtown area bordered by E. Nettleton Ave, Kitchen St, Osler Dr, and E. Washington Ave (JB19 and JB20; App B, Basin Delineation). This Phase I scope of work is proposed as 2750' of an 18"-diameter gravity sewer interceptor extending upstream from the west end of the Midtown Interceptor south to Matthews Ave. CWL plans to continue evaluation of the area's needs and design additional phased improvements as may be warranted.

CWL has worked with RJN and the CWL sewer hydraulic model to determine the optimal upgraded pipe size and Fisher Arnold to determine the route for these initial improvements. Phase I plans were approved by ADH in April 2022. CWL has estimated the total cost for these upgrades at **\$1.3 million** and has invested over **\$72,000** in the project to-date. Easement

acquisitions continue, and the project is planned to begin construction in mid-2024. See Appendix A for a map summarizing the planned Phase I improvements.

4.3. Sports Complex Lift Station & Force Main Upgrades

Targeted in part through the previous Lift Station and Force Main Evaluation findings (details reported in CWL’s 2018 thru 2020 Progress Reports), the Sports Complex Lift Station and respective force main were identified in 2021 for improvements due to identified capacity constraints and operational issues. Continued efforts on the station include evaluation of station performance versus design performance and application and evaluation of the ongoing adequacy of the force main size. Therefore, the complete project scope of work is yet to be finalized. However, CWL has estimated a preliminary budgeted cost of **\$350,000**. See Appendix A for a map of the lift station and force main locations.

5. Phase II SSES Status

As a portion of Milestone #2 of Phase II of CAP Addendum, CWL provided a target completion date of December 31, 2025 for achieving an SSES of an additional 1/3 of the CWL collection system, with an average of approximately 27 miles per year. CWL prioritized basins JB03, JB11, and JB16 to study in 2023 (App B, Basin Delineation) for an estimated total of approximately 35 miles of the sewer system. The status and results of the 2023 activities under this milestone, as of November 1, 2023, are briefly outlined in the following section. CWL has now completed inspection, evaluation, and resultant repair identification of approximately 253 miles of the collection system under the CAP in the last 7 ½ years. See Appendix C, Basin SSES Status, for a summary of the SSES activities for CWL basins, designating years worked and CAP Phase.

5.1. Phase II SSES Activities - Status & Results

The following Table 5-1 provides a summary for SSES activities and current results for JB03, JB11, and JB16.

Table 5-1: 2023 SSES Activities (As of November 1, 2023)

Service	Quantity			
	JB 03	JB 11	JB 16	2023 Basins Total
Manhole Inspections (1)	166	86	423	675
Manhole Resultant Repairs Identified/Repaired	77/50	71/4	153/55	301/109
Line Testing and Repairs				
Smoke Test (ft) (2)	42,460	22,854	118,864	184,178
Dye Test	13	49	51	113
CCTV (ft) (3)	1,276	21,202	15,128	37,606

Service	Quantity			
	JB 03	JB 11	JB 16	2023 Basins Total
Mains Cleaned (ft)	335	18,199	10,254	28,788
Roots Cut (ft) (6)	0	0	993	993
SL-Rat® (ft) (4)	24,955	21,488	84,737	131,180
Replaced/Repaired Clean Out Caps	48	28	100	176
Laterals Identified/Repaired (5)	11/0	30/11	36/2	77/13
Resultant Main Repairs Identified/Repaired (7)	0/0	24/0	8/1	32/1

Notes:

- (1) Manhole inspections are 100% complete.
- (2) 100% of each JB was smoke tested.
- (3) CCTV footage shown from SL-Rat® assessments and smoke test defects identified.
- (4) SL-Rat® assessments of 12" lines and smaller.
Footage includes line segments that were re-assessed due to SL-Rat® score following cleaning of lines.
- (5) Customers notified of lateral defects / Laterals repaired by customers and inspected by CWL or abandoned lateral capped by CWL.
- (6) Chemical root treatment footage for 2023 basins included in maintenance totals reported in Table 13-1.
- (7) Evaluation and resultant repair identification in progress.

As in past years, CWL began the 2023 SSES activities with 100% inspection of the manholes in each of the three basins selected. As of November 1, 2023, manhole inspections are complete. Detailed inspection results are available upon request.

In addition to the manhole inspections, CWL crews cleaned main lines within each basin. The segments cleaned were identified as having potential obstructions based on SL-Rat® evaluations and CCTV inspections. See Section 13.2 for further SL-Rat® information.

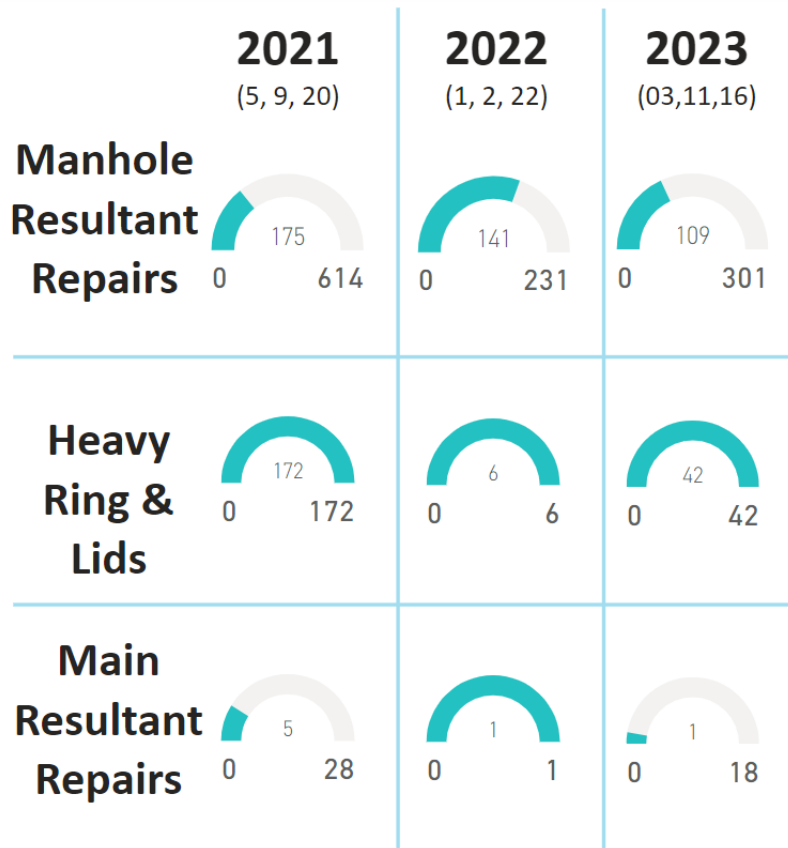
Smoke testing is also complete in each basin. Through this process, CWL replaced clean out caps and identified potential main line and additional manhole defects. Crews identified possible defects from smoke testing through CCTV inspection, with the aid of dye testing. As CCTV inspection footage is reviewed, CWL will determine appropriate rehab for main line defects identified and notify customers of lateral defects. All lateral defects are being coordinated through CWL’s Sewer Lateral Repair Program (Section 14). Detailed smoke testing and CCTV inspection results are available upon request.

6. Phase II SSES Resultant Repairs

As a portion of Milestone #2 of Phase III of CAP Addendum, CWL provided a target completion date of December 31, 2030 for achieving Phase II SSES Resultant Repairs. Graph 6-1 summarizes the

status of CAP Phase II resultant repairs, as of November 1, 2023. Sections 6.1 thru 6.4 briefly describe these repairs, including brick manhole cementitious lining.

Graph 6-1: Phase II SSES Resultant Repairs Status (As of November 1, 2023)



6.1. Manhole SSES Resultant Repairs

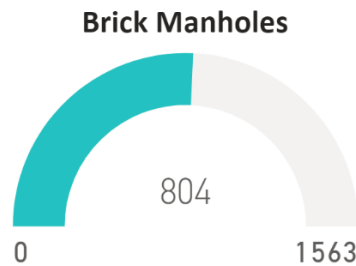
As presented in Section 5.1, CWL identified 301 manhole repairs in 2023. As reported last year, 614 and 231 manhole resultant repairs were identified in the 2021 and 2022 basins, respectively. CWL began the manhole resultant repairs in November 2022. Detailed spreadsheets regarding the repairs identified are available upon request and the status of repairs will be updated as applicable.

6.2. Brick Manhole Cementitious Lining Rehabilitation

As stated in previous reports, CWL conducted an evaluation of the brick manholes previously rehabbed in the late 1980s and early 1990s for updated rehab needs. CWL determined that the optimum course of action at this time, considering the current available information, is to contract out a complete rehabilitation of all brick manholes, both previously rehabbed and untouched, within each year’s studied basins. This decision was based on the evaluation and consultation with other utilities and engineering consultants.

For the 2023 basins, CWL has identified 91 brick manholes for rehabilitation. Detailed spreadsheets regarding the manholes identified are available upon request. CWL plans to let contracts for the cementitious lining of the 2020, 2021, and 2022 SSES brick manholes in the 4th quarter of 2023, contingent on the completion of any complimentary sewer main CIPP lining (Section 13.5) at the brick manholes. A contract for the 2023 SSES brick manholes will be let for bids after the sewer main rehab evaluation is complete. The status of the Phase I and II brick manhole lining initiative is shown in the following graph.

Graph 6-2: Phase I & II Brick Manhole Cementitious Lining (As of November 1, 2023)



6.3. Manhole Heavy Ring & Lid Replacements

As previously reported, CWL also determined that replacing the older-style, heavy ring and lids under the influence of sheet flow in rain events had the potential to significantly reduce I&I. As of November 1, 2023, CWL has utilized in-house personnel to complete the replacement of 220 heavy ring and lids in the Phase II SSES Basins. Detailed spreadsheets regarding these repairs are available upon request.

6.4. Main Line SSES Resultant Repairs

As shown in Table 5.1, CWL identified 32 potential main line defects in the 2023 SSES basins. Appropriate repairs for the main line defects will be assigned after further evaluation of CCTV footage. Detailed spreadsheets regarding the status of main line repairs are available upon request.

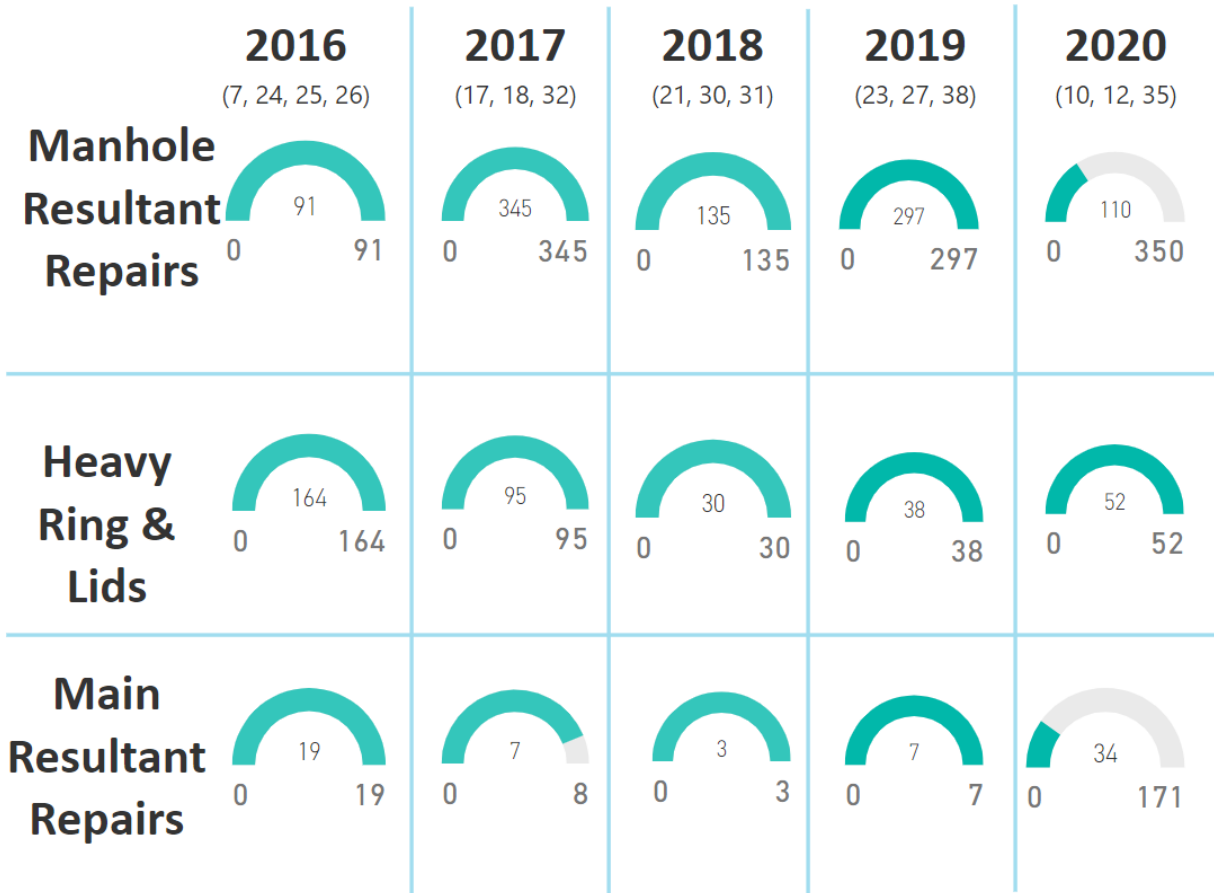
CWL continues to evaluate main line repairs for potential candidates for CIPP lining and pipe bursting. CWL keeps an ongoing list of prospective mains, which includes SSES basins' resultant main line repairs as well as additional mains outside of the SSES basins. See Section 13.5 for additional information.

7. Phase I SSES Resultant Repairs – Phase II Milestone

As a portion of Milestone #2 of Phase II of CAP Addendum, CWL provided a target completion date of December 31, 2025 for achieving Phase I SSES Resultant Repairs. With continued field review in

2023, the total required main line repairs were adjusted appropriately. The following graph summarizes the status of Phase I resultant repairs, as of November 1, 2023. Taking the current and planned contract work into account, these repairs are on schedule to be completed by the 2025 milestone date. Detailed spreadsheets regarding this information are available upon request.

Graph 7-1: Phase I SSES Resultant Repairs Status (As of November 1, 2023)



8. Phase I Corrective Action Plan Activities – Status

As identified in CWL’s CAP, Phase I milestones were actions targeted for completion from the 1st Quarter of 2016 thru the 4th Quarter of 2020. The following Sections 9 and 10 provide a summary of CWL’s remaining efforts, as of November 1, 2023, to finalize Phase I milestones.

9. Phase I Capital Improvements Status

In the 2017 CAP Progress Report, CWL summarized four capital improvement projects as part of Phase 1 of the CAP. CWL provided the completion of Phase I Capital Improvements as Milestone #5 of Phase I in the Addendum to CWL CAP. These projects were originally targeted for completion by December 31, 2020. As already stated, the iterative and ongoing process of these projects

prompted CWL in 2021 to redefine Phase I and Phase II (Section 4) Capital Improvements accordingly.

Although adjustments to some completion dates were also warranted, CWL is pleased to report that the final stages of construction for this Phase I goal are now finished. With the successful acquisitions of the final necessary easements, the Ridgecrest force main extension is now fully complete. Thus, the **Phase I Capital Improvements are finalized**.

As previously discussed with the DEQ and stated in this report, these mitigation efforts are dynamic in nature and, as such, target completion date adjustments were anticipated. With this said however, CWL considers overall mitigation improvements ahead of schedule, especially considering the status of Phase II Capital Improvement projects (Section 4).

Table 9-1 provides the updated final/current cost and project status for each improvement. The following section also briefly describes the Ridgecrest force main status. In addition, see Appendix D for conceptual maps summarizing the completed/in-progress improvements.

Table 9-1: Phase I Capital Improvements (As of November 1, 2023)

Capital Improvement	Updated Final/Current Cost	Current Status
Eastside WWTP Wet Weather Hydraulic Upgrade	\$15.06 million	Construction Complete
Midtown Interceptor	\$6.32 million	Construction Complete
Ridgecrest Lift Station & Force Main Upgrades	\$2.82 million	Construction Complete
Northwest (Main) Lift Station Replacement	\$7.82 million	Construction Complete

9.1. Ridgecrest Force Main Upgrade

To provide additional wastewater conveyance capacity for the upgraded Ridgecrest Lift Station and remove a potential hydraulic throttle, CWL contracted a force main extension of approximately 2,300' of 18"-diameter PVC pipe from the intersection of Harrisburg Rd and Garden Parkway to just north of Higginbottom Creek on Mead Drive, connecting to an existing gravity sewer. After CWL successfully acquired final easements, R.L. Persons Construction, Inc. returned to the job site and completed construction of the extension in December 2023. As of

November 1, 2023, CWL has invested over **\$736,000** to-date on the force main portion of the overall Ridgecrest project.

Factoring in both the lift station and force main improvements, CWL continues to evaluate any applicable gravity sewer upgrades that may be required to increase upstream conveyance capacity and/or address potential hydraulic throttles.

10. Finalized Phase I SSES Activities – Summary

As provided in the 2021 annual report, CWL was pleased to report achieving over 37% SSES of the CWL collection system and thus meeting that portion of Milestone #5 of Phase I of CAP Addendum. Table 10-1 provides a summary of Phase I SSES activities and Appendix C, Basin SSES Status, provides both the basins and years studied for CAP Phase I. In addition, the status of resultant repairs for Phase I is summarized in Section 7. Detailed reports are available upon request.

Table 10-1: Finalized Phase I SSES Activities – Summary

Service	Phase I Total Quantities
Manhole Inspections	3,834
Smoke Test (ft)	832,780
CCTV (ft)	218,422
Replaced/Repaired Clean Out Caps	629

11. 2020 & 2022 Public Utility System Revenue Bonds – Wastewater

As reported in 2020, CWL issued **\$26 million in Public Utility System Revenue Bonds** during July 2020 for the acquisition, construction, and improvement of CWL sewer and electric facilities. A portion of these funds were used toward the Main Lift Station replacement (Section 9) and four-mile Midtown Interceptor construction (Section 9). The issuance of these bonds freed up CWL reserve funds to be utilized for other sewer system improvements, particularly the Westside WWTP replacement (Section 4.1). CWL furthered this commitment in May 2022 with the issuance of **\$35.5 million in Public Utility System Revenue Bonds** to be used toward the Westside WWTP replacement. CWL feels these actions build on the company's commitment to sewer system improvements.

12. CMOM Software – GIS & CMMS Status

As reported in previous CWL Progress Reports, CWL now utilizes ESRI/ArcGIS for GIS-based mapping of the sanitary sewer system and continues to explore additional long-term solutions for CMOM data management. The goal, as previously reported, is to further develop internal databases and data collection processes that allow integration with CWL’s IBM i server and to identify/develop software and mapping solutions that would add value to CWL’s existing system and avoid duplication of many processes.

Since 2019, CWL has partnered with CDM Smith Inc. initially on the design and implementation of the sewer geodatabase and currently with the continued maintenance and evolution of the GIS-based mapping. These efforts also include the development of associated processes and applications, particularly to track sewer maintenance and SSES activities. With the assistance of CDM Smith, CWL is currently evaluating CMMS providers to identify, procure, and implement a solution to support asset management within the organization.

CWL has invested to-date over **\$539,000** toward this effort for consulting, software, and hardware, with over **\$18,000** spent in 2023.

13. Collection System Maintenance

In addition to the SSES activities of the three 2023 basins and all SSES resultant repairs outlined in previous sections, CWL performed the SSO corrective actions summarized in Table 13-1 as part of the routine inspection and maintenance of the collection system in various other areas throughout the system.

Table 13-1: 2023 Routine Collection System Maintenance (November 1, 2022 thru October 31, 2023)

Service	Quantity
	Routine Maintenance
Manhole Improvements:	
Repair/Seal Manhole	17
Adjusted Manhole	11
Replace Manhole Ring	9
Line Testing and Repairs:	
Smoke Test (ft)	0
Dye Test	41
CCTV (ft)	150,095
Main Cleaned (ft)	301,669
Roots Cut (ft)	10,871
SL-Rat® (ft) (1)	1,932,667
Laterals Identified / Repaired (2)	60/55
Sewer Main Repairs:	
Point Patch	28

Table 13-1: 2023 Routine Collection System Maintenance (November 1, 2022 thru October 31, 2023)

Service	Quantity
Other Main Repairs	3
Chemical Root Treatment (ft) (3)	17,915
Capped Abandoned Laterals	0
CWL Point Patch Abandoned Laterals	56
Annual Inspections:	
Ditch Crossings Inspected	50
Air Relief Valves Inspected	7
Back-Lot Lines Inspected	50

Notes:

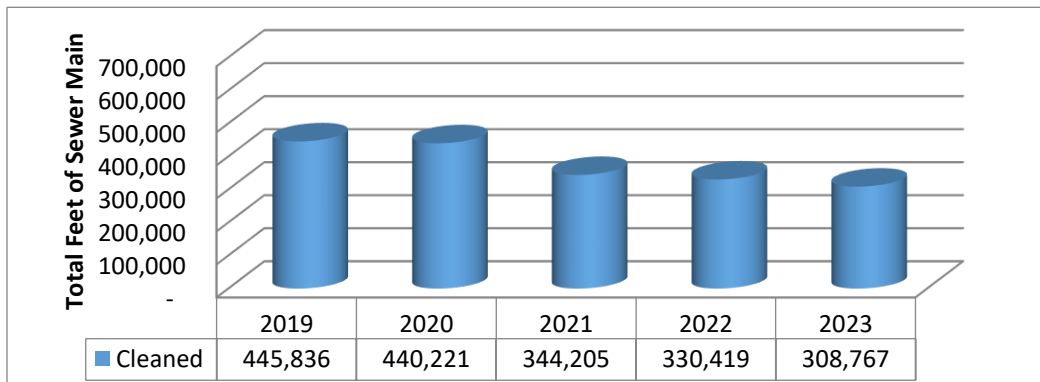
- (1) SL-Rat® assessments of 12" lines and smaller. Footage includes lines segments that were re-assessed due to SL-Rat® score following cleaning of lines.
- (2) Customers notified of lateral defects / Laterals repaired by customers and inspected by CWL.
- (3) Includes chemical root treatment footage in 2023 SSES basins.

The following sections briefly provide further details for some of these SSO corrective actions.

13.1. Sewer Mains Cleaned

As presented in the CAP, CWL sewer service trucks maintain the system through routine cleaning. Graph 13-1 provides a summary of the past 4 years' totals, along with the total footage cleaned for January 1st thru October 31st of 2023.

Graph 13-1: Sewer Mains Cleaned (2019 thru October 31, 2023)



Note:

In the 2022 Progress Report, Total Feet of Sewer Main Cleaned was reported as 308,729'. November (16,666') and December (5,024') 2022 is included in the 2022 total shown.

The reduced cleaning footage in recent years, as shown in Graph 13-1 above, can be attributed to the efficiencies CWL is realizing through use of the SL-Rat®. See the following Section 13.2 for additional details.

13.2. SL-Rat® Activities

As previously reported, CWL began utilizing the SL-Rat® for acoustic inspections in July of 2016 to increase efficiency of sewer line blockage assessment. Lines that score poor to blocked are

hydro cleaned and re-assessed. If the line continues to score poor to blocked for its size, the line segment is then inspected through CCTV to further evaluate the apparent blockage.

CWL has found this tool allows for more efficient hydro cleaning efforts and CCTV inspections and thus increased SSES productivity and SSO mitigation. The reduced cleaning footage in CWL's routine maintenance of the collection system illustrates how effective this tool is to concentrate cleaning efforts in locations warranting the effort.

Based on continued positive results, CWL again performed 100% SL-Rat® inspection of 12" and smaller mains in the three 2023 SSES basins, as well as in the rest of the collection system. Table 13-2 shows the ratings of the total line segments, including the approximately 131,180' in the 2023 SSES basin segments, tested with the SL-Rat® from November 1, 2022 thru October 31, 2023. A detailed report of the line segments tested in the 2023 SSES basins and a complete report of all line segments tested in 2023 are available upon request.

Table 13-2: SL-Rat® Sewer Line Assessment Results (November 1, 2022 thru October 31, 2023)

SL-Rat® Data for Total System	
Rating (1)	Quantity (line segments)
10-5	8,230
4-0	917
Footage= 2,063,847	

13.3. Root Control Activities

Through an existing root control contract with Duke's, approximately 17,915' of sewer mains were chemically treated in 2023. As previously reported, CWL continues proactive efforts to chemically treat identified mains as expeditiously as practical. A detailed report of the line segments, located throughout the collection system, chemically treated in 2023 is available upon request.

In addition to chemical treatment, CWL continues its practice of using a sewer rodding machine and sewer trucks equipped with jetter nozzles for controlling roots within the collection system. Approximately 10,871' of sewer mains were root cut throughout the 40 basins of the system November 1, 2022 thru October 31, 2023.

13.4. Hanley Drive Manhole Replacement

In March 2023 CWL contracted Cline NEA Underground, Inc. to demolish and install a new manhole on a major trunk line on Hanley Drive and directly upstream of the Main Lift Station. CWL coordinated with Bertrem Products, Inc. to bypass the sewer main, allowing Cline NEA to replace the manhole. The project was completed in May 2023 and demonstrates CWL's

dedication to collection system improvements and proactive efforts to mitigate potential SSOs. The project total cost was over **\$173,000**.

13.5.Sewer Main CIPP Lining/Pipe Bursting

CWL evaluates each main line defect as a potential candidate for CIPP lining and, as reported in 2022, now includes pipe bursting as a potential solution in evaluations. Therefore, the list of prospective mains, which includes both resultant repairs from SSES basins as well as additional mains identified for repairs, include both CIPP lining and pipe bursting solutions.

As previously reported, CWL let a contract for bids on main repairs in November 2021. The contract included approximately 8,000' of CIPP lining. This contract, awarded to Humbarb Contracting Inc. (Humbarb) of Green Forest, AR, was amended in October 2022 to include approximately 5,400' of CIPP lining and 2,600' of 6" to 8" pipe bursting.

Humbarb began CIPP rehabilitation in August 2022, with pipe bursting scheduled to begin in 2023. As of November 1, 2023, approximately 6,400' of CIPP lining has been installed and 2,800' of sewer mains have been pipe burst, with over **\$732,000** invested to-date.

In August 2023, CWL let contracts for bids on additional main repairs. The contracts included approximately 30,400' of CIPP lining and 29,300' of pipe bursting over a three-year contract. Humbarb was awarded both contracts and began work in October 2023. A detailed spreadsheet regarding the sewer mains identified and the rehabilitation selected for each main is available upon request.

13.6.Dead End Sewer Mains Manhole Installations

As a result of performing SSES in older basins during 2020, CWL began an effort to contract out the installation of manholes on existing dead end sewer mains. These improvements will not only facilitate any required rehabilitation on associated sewer mains but also future cleaning and inspecting needs.

Shannon Kee Construction, LLC is currently contracted for the installation of these manholes. A total of 61 locations have been identified for new manholes across the sewer system, with 16 installed to-date. CWL has invested almost **\$149,000** in this effort. Detailed information regarding manhole locations is available upon request.

13.7.Sewer Combination Truck and Inspection Camera Purchase

To better facilitate CWL's ongoing SSO mitigation efforts, CWL purchased a new sewer combination truck in January 2022 and a new sewer inspection camera in October 2022. These purchases will continue to enhance CWL's ability to properly maintain and inspect sewer mains both within the SSES basins and across the entire sanitary sewer system. It is also in keeping with CWL's philosophy of ensuring personnel have the appropriate tools for the tasks required of

them. CWL’s final costs were approximately **\$458,000** on the new sewer combination truck and approximately **\$8,000** on the push camera. Both were delivered and paid for in 2023.

13.8.Sewer Jetter Nozzle Purchase

CWL proactively purchased a new sewer jetter nozzle in 2023 for approximately **\$3,000**. The increased power and efficiency of the 1” nozzle, along with the new sewer combination truck, breaks up and removes debris/sediment (potential blockages) more quickly and effectively. A wider cleaning swath makes the process more proficient in cleaning large-diameter trunk lines.

13.9. Sewer Camera Van Purchase

CWL purchased a new sewer camera van in October 2023 to replace an existing van that was requiring excessive maintenance downtime. This investment will enhance CWL’s ability to properly identify sewer main defects both within the SSES basins and across the entire sanitary sewer system. CWL invested approximately **\$30,000** in this purchase.

14.Sewer Lateral Repair Program Status

Formally started in 2013 and refined in 2016, CWL’s Sewer Lateral Repair Program is utilized to address identified sewer lateral defects both inside and outside of the SSES basins being evaluated each year. The program consists of detailed lateral defect records and associated customer interactions. Upon confirmation of a private lateral defect, the property owner is notified, and appropriate follow-up is then performed and tracked through the program. The following Table 14-1 summarizes CWL’s efforts since 2016 by laterals identified and current repair status totals for all basins. Detailed spreadsheets regarding these repairs are available upon request.

Table 14-1: Total Lateral Defects Identified & Current Repair Status (As of November 1, 2023)

Total	Identified	Repaired	Precent Complete
2016	94	82	87%
2017	37	36	97%
2018	58	48	83%
2019	33	21	64%
2020	168	90	54%
2021	143	90	63%
2022	66	53	80%
2023	181	113	62%
Total	780	533	68%

15.FOG Management Program Status

As presented in the CAP, CWL’s FOG Management Program monitors FSEs through quarterly grease interceptor inspections while also conducting FOG public outreach by means of educational brochures, company website, customer billing, newspaper, television, and/or other media outlets such as Facebook, Twitter, and Instagram. Since the initial CAP, CWL has made significant efforts to further enhance its FOG Management Program, as presented in previous Progress Reports, with the expansions of quarterly grease interceptor inspections and FOG outreach to public schools; development of several FOG brochures and postcards; and enhancement of FSE monitoring activities within the collection system.

CWL’s FOG Management Team is comprised of representatives from the following departments: Water and Sewer Service/Maintenance, Water and Wastewater Treatment, Laboratory, Engineering and General Operations. The Team meets routinely to review and evaluate current FOG Management Program elements, identify potential ways to enhance the program, and ensure implementation of the previously mentioned inspection and outreach activities.

The FOG Management Team continues to work diligently to further enhance and expand its outreach efforts through increased monitoring and sampling efforts and door hanger and postcard distributions. As previously reported, increased monitoring and sampling within the collection system has allowed CWL opportunities to collaborate with FSEs and distribute outreach material concerning the proper disposal of FOG.

The Team began holiday postcard deliveries focused on FOG and “sewer trash” in 2020 and continued these efforts through 2023, with the development of a spring inspired postcard (Appendix E) focused on FOG. These were delivered in June 2023 to approximately 44,000 residential and post office box customers.

The on-going efforts of the FOG Management Team allows CWL to continually evaluate and improve, as identified, the current components of the FOG Management Program, with a goal of heightening its effectiveness in SSO mitigation. Please see the FOG Management Program Activity table below for a summary of these efforts.

Table 15-1: FOG Management Program Activity

FOG Management Program Activity			
Activity	Years		
	2021	2022	2023 ¹
FSE Inspections	1143	1275	1330
FSE FOG Samples	19	17	14
Postcards	Approx. 44,000	Approx. 44,000	Approx. 44,000

Table 15-1: FOG Management Program Activity

FOG Management Program Activity			
Activity	Years		
	2021	2022	2023 ¹
Door hangers	1594	712	38
Billboards	3	2	2
Social Media	4	11	15
Television		1	12
Radio	1		2
School Programs	1	2	1
Employee Newsletter		2	1
Customer Billing	1		
Kids Activity Books	1100	100	225
Public Outreach ²	2	3	2
FSE Education/ Outreach		7	35

¹January 2023 thru October 2023

²Public Outreach includes booths at job fairs and expositions within the community.

16. Lift Station Maintenance and Improvements

CWL currently has knowledge of the potential decommission of the Sage Meadows #1 (Southern Hills) Lift Station and the potential relocation of the Beaver Creek, Colony Park, and Wimpy Lane Lift Stations as positive results of pending residential developments. In general, CWL will ensure any relocation incorporates CWL’s enhanced specifications for developer installed lift stations, which as previously reported includes a flow meter, emergency generator, and protective coating on the discharge manhole.

In late 2022, CWL completed an upgrade of the Sage Meadows #2 (Hwy 351) Lift Station. The station was previously equipped with Ebara submersible pumps and the force main material at the station was Schedule 80 PVC. CWL replaced the Ebara pumps with a repurposed Smith and Loveless above-ground lift station and replaced the force main with C900 PVC pipe. These upgrades increased dependability and decreased incidental maintenance activities at the lift station. A flow meter was also added during the station upgrade.

Beyond the improvements and potential decommissioning or relocations described above, CWL continues to evaluate and prioritize future lift station needs. This will allow CWL to determine if additional lift station projects should be scheduled for 2024 in conjunction with the completion of the Dorton Road Lift Station improvements and the Wimpy Lift Station evaluation, discussed in the following Sections, and the Sports Complex Lift Station, discussed in Section 4.3.

16.1. Dorton Road Lift Station Improvements

In 2021, CWL also began further assessment of the Dorton Road Lift Station (Appendix F), serving the Jonesboro Industrial Park. CWL determined that the following improvements were warranted:

- (1) Replace existing wet well piping.
- (2) Coat the wet well walls.
- (3) Add VFDs to pumps.
- (4) Upgrade electrical equipment to mitigate arc flash concerns.
- (5) Increase ventilation through the building to combat corrosive gases.

Dorton Road Lift Station work was divided into a two-stage project: Stage 1 (Wet Well Rehabilitation) and Stage 2 (Electrical Upgrade). Wet well rehabilitation was completed in 2022 and included:

- Sandblasting, priming, and coating the wet well pipe.
- Sandblasting, cementitious lining, and coating the wet well wall and baffle.
- Installing new pipe in the wet well.

Stage 2 involves procuring and installing the updated/new electrical equipment for arc flash mitigation and enhanced efficiency/reliability, including but not limited to: new main breaker, new generator, updated automatic transfer switch, termination enclosure, and four VFDs. This stage also includes the installation of an exhaust fan in the vertical ventilation stack for increased ventilation. Stage 2 began in 2022 with material procurement and is scheduled for completion by June of 2024. The complete project is estimated at a total cost of **\$1 million**. CWL has invested over **\$446,000** to date in these very important improvements.

16.2. Wimpy Lift Station Basin Evaluation & Force Main Upgrades

As part of the previously reported Lift Station and Force Main Evaluation (2022 Progress Report), CWL Engineering identified the Beaver Creek, Wimpy Lane, Valley View & Oak Park lift station system for further hydraulic analysis. The evaluation of this system continues, which includes discussions with local developers regarding improvements and potential new lift stations in the Wimpy Lane basin. Additionally, improvements on the Wimpy Lane force main, that consisted of the installation of an air release valve were completed in 2023 at a cost of approximately **\$4,000**. Releasing any entrained air, the valve serves to maximize the Wimpy Station performance.

17. Conclusion

CWL is pleased to present the activities outlined in this report as evidence of CWL's ongoing efforts in SSO mitigation. Due to the creative and resilient efforts of CWL personnel, these activities were achieved even while navigating the ongoing supply chain impacts/disruptions.

As stated in the CAP, CWL fully understands the iterative, ongoing nature of this process and is committed to continual improvement of the management and operation of the collection system and maintaining adequate capacity of the system. This commitment was, in CWL's opinion, even more fully demonstrated in the uncommon and dynamic events of the past four years. CWL believes that these ongoing proactive efforts and associated capital costs, as well as the future corrective actions identified in CWL's CAP Addendum, demonstrate CWL's dedication to collection system improvements.

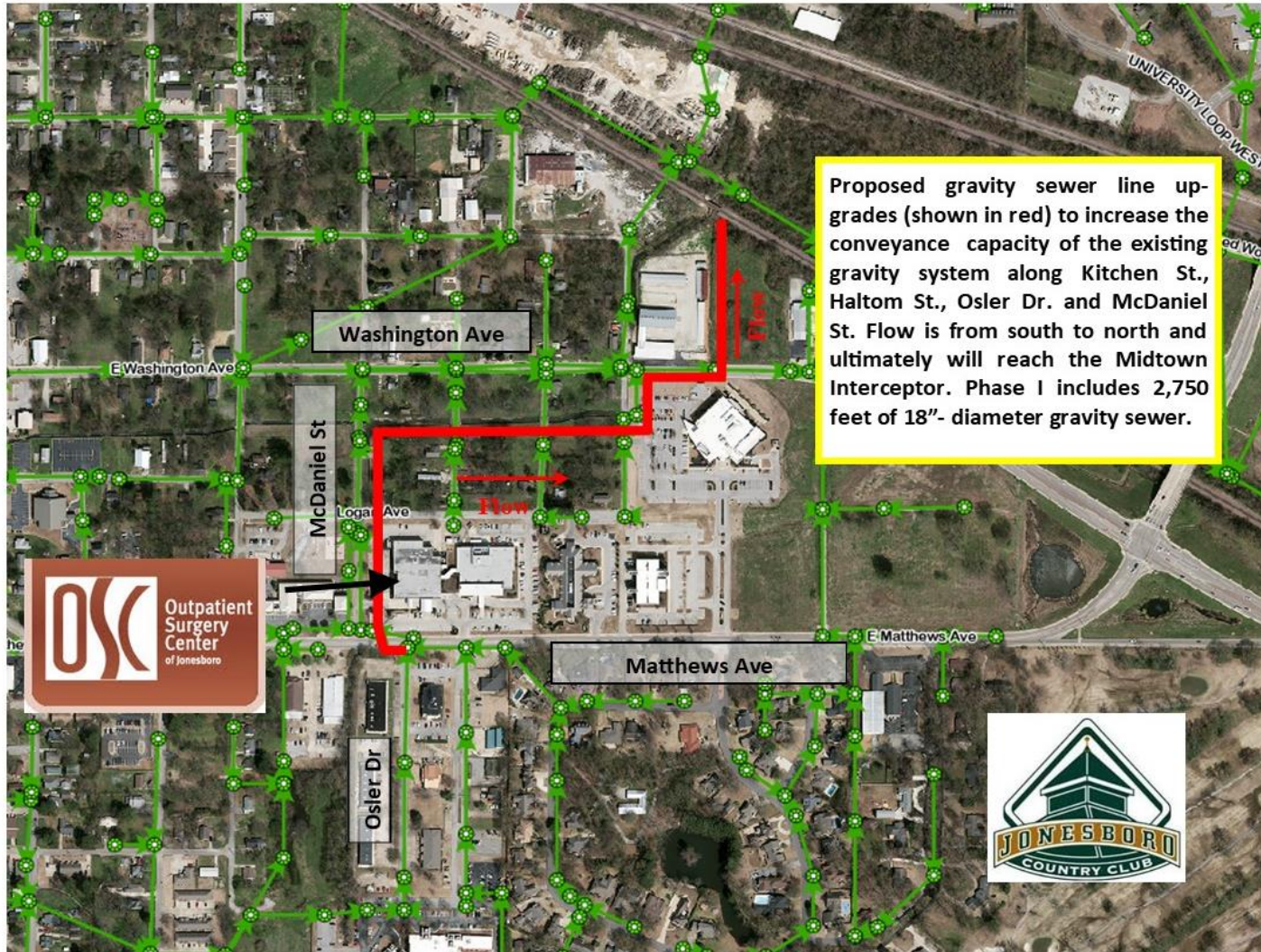
This CAP report represents CWL's fulfillment of DEQ's request for an annual progress report and constitutes CWL's sincere interest in ongoing and transparent communication with the DEQ beyond the fulfillment of our voluntary commitment of a Progress Report every two years, as presented in item IV of the Addendum to CWL CAP.

Appendix A

Phase II Capital Improvements



CWL Westside WWTP Replacement 



Kitchen Interceptor Phase I





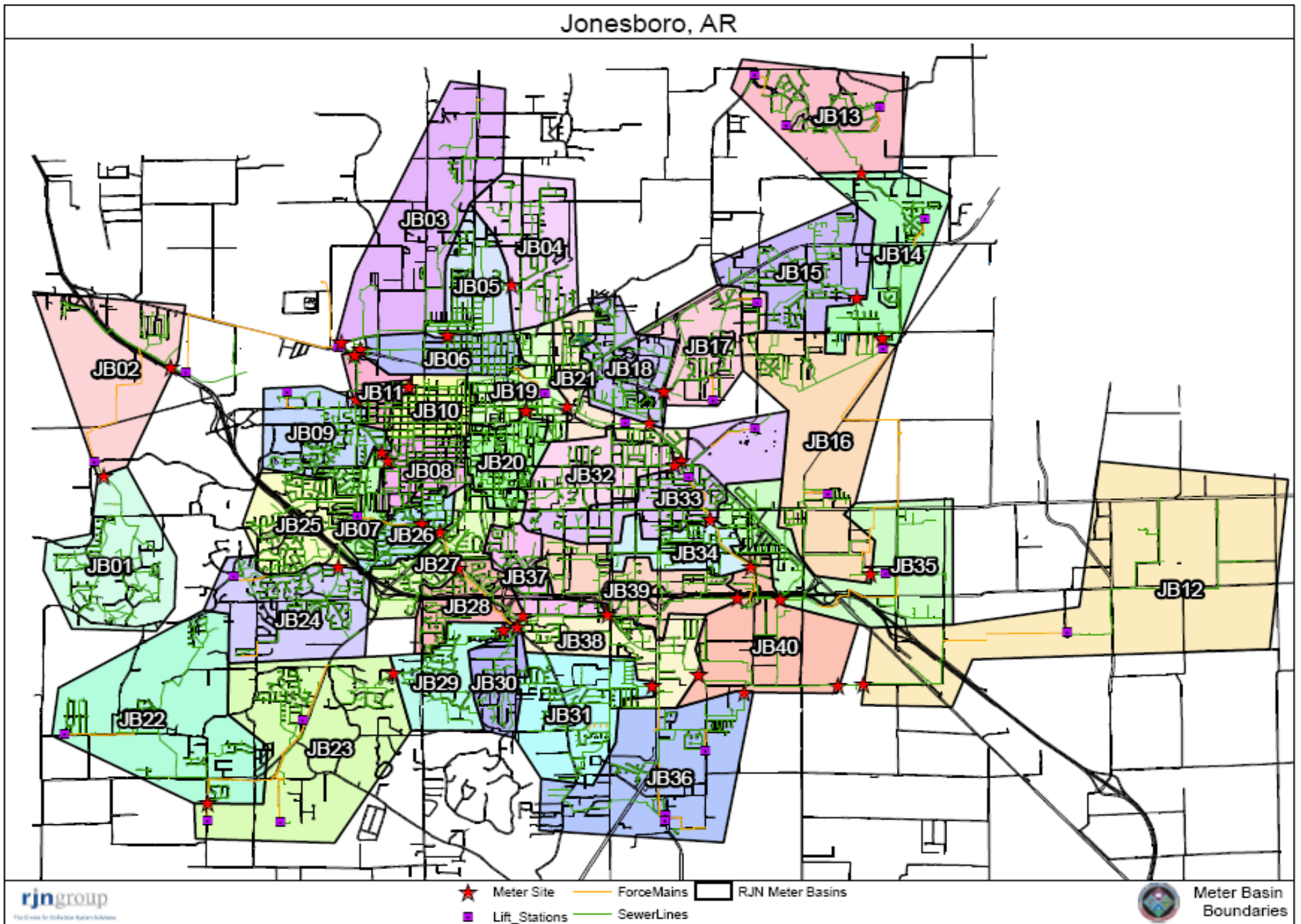
Sports Complex Lift Station



Appendix B

Basin Delineation

Jonesboro, AR



Appendix C

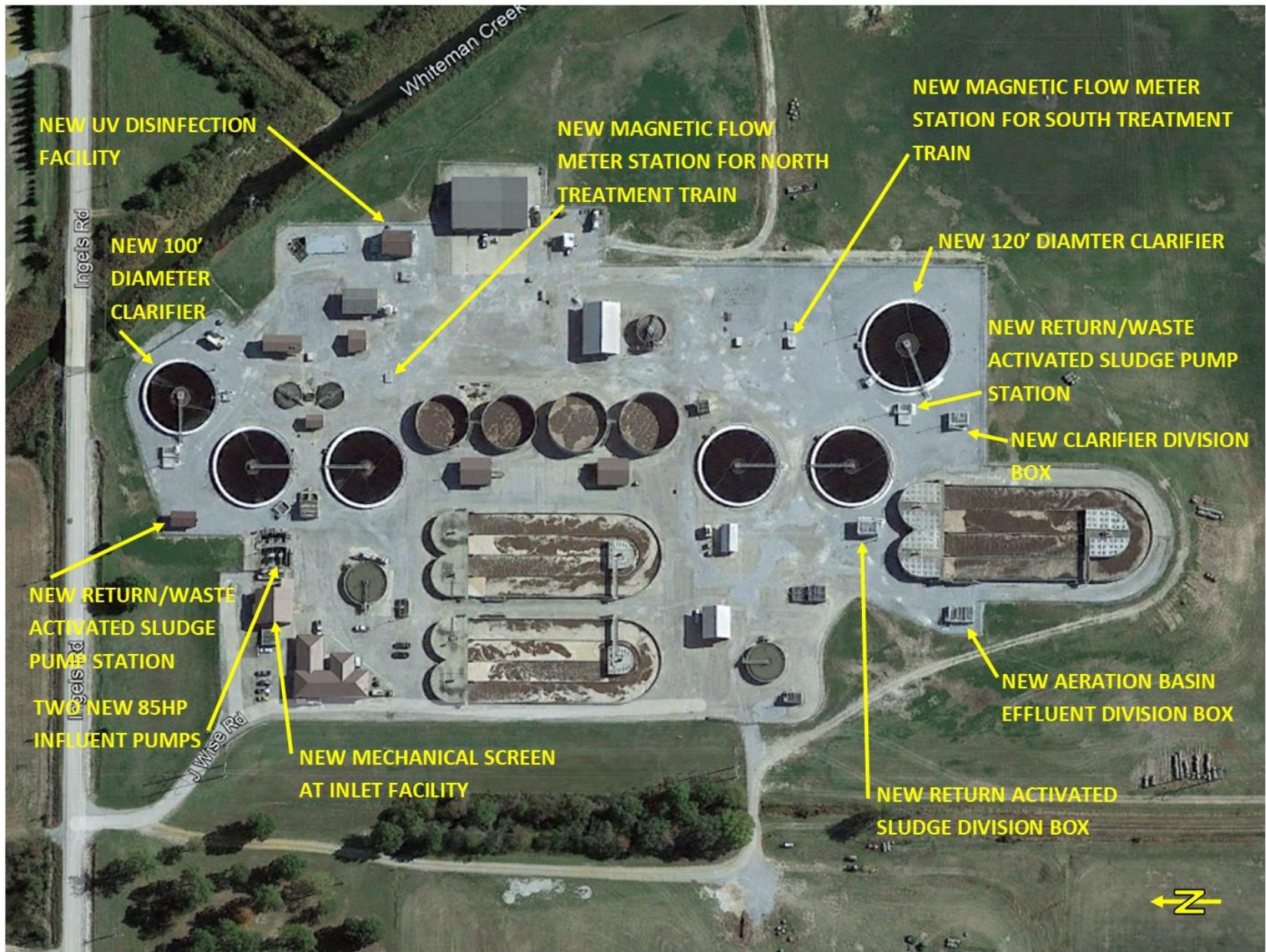
Basin SSES Status

SSES Work by Year/Phase

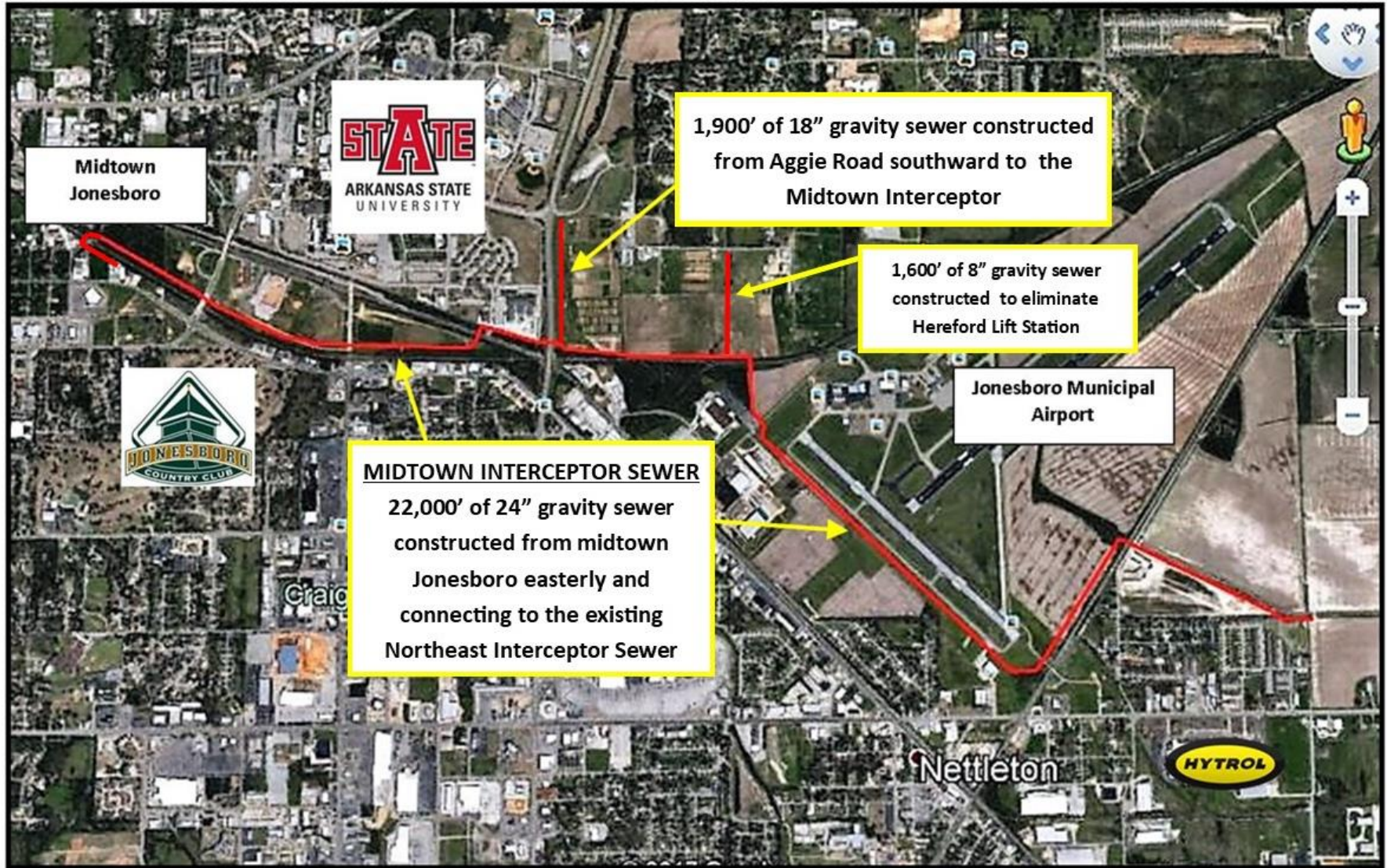
Basin	Year of SSES
JB 01	2022
JB 02	2022
JB 03	2023
JB 04	
JB 05	2021
JB 06	
JB 07	2016
JB 08	
JB 09	2021
JB 10	2020
JB 11	2023
JB 12	2020
JB 13	
JB 14	
JB 15	
JB 16	2023
JB 17	2017
JB 18	2017
JB 19	
JB 20	2021
JB 21	2018
JB 22	2022
JB 23	2019
JB 24	2016
JB 25	2016
JB 26	2016
JB 27	2019
JB 28	
JB 29	
JB 30	2018
JB 31	2018
JB 32	2017
JB 33	
JB 34	
JB 35	2020
JB 36	
JB 37	
JB 38	2019
JB 39	
JB 40	
	Phase I SSES
	Phase II SSES

Appendix D

Phase I Capital Improvements

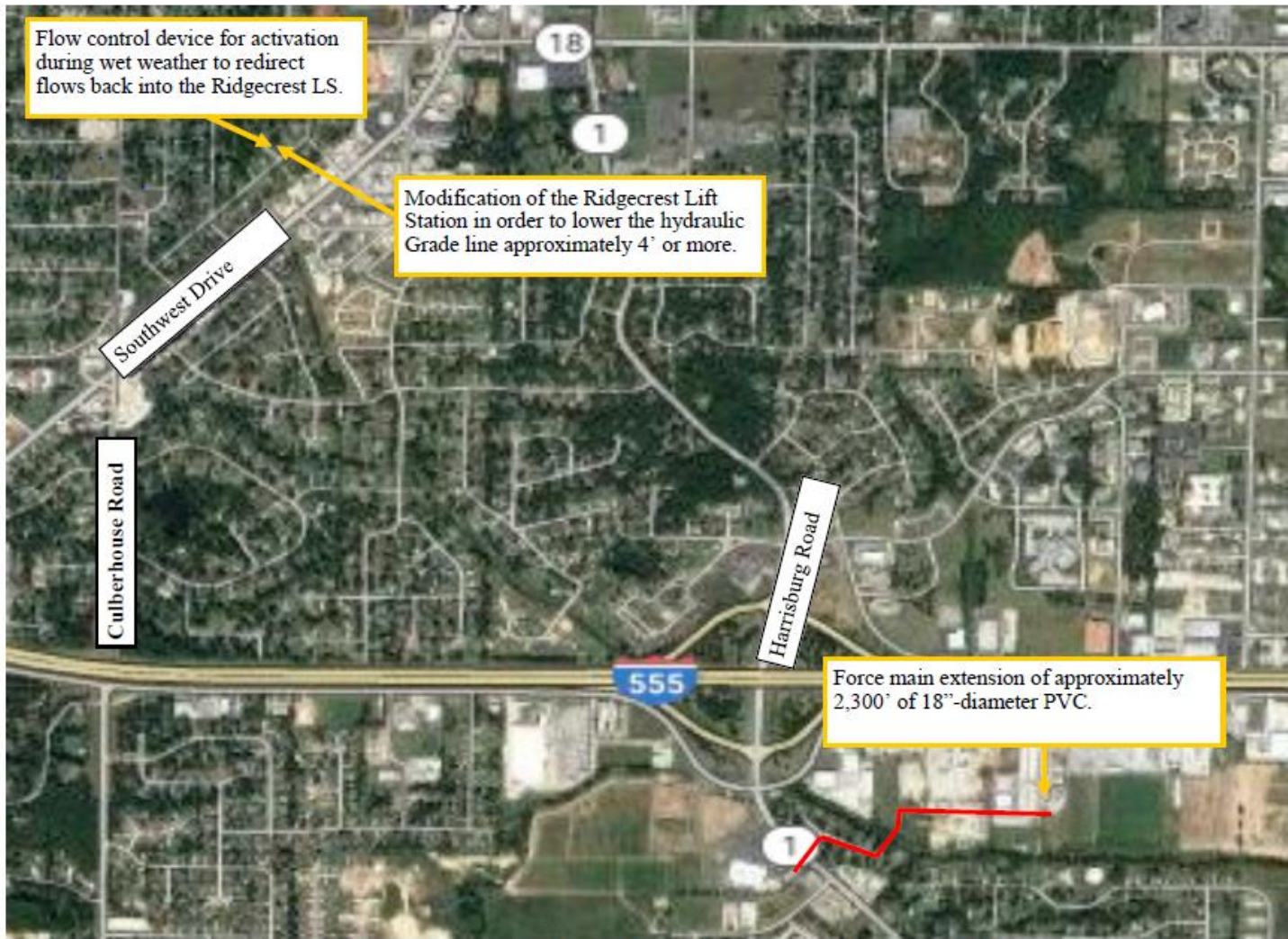


EASTSIDE WASTEWATER TREATMENT PLANT IMPROVEMENTS



Midtown Interceptor Sewer

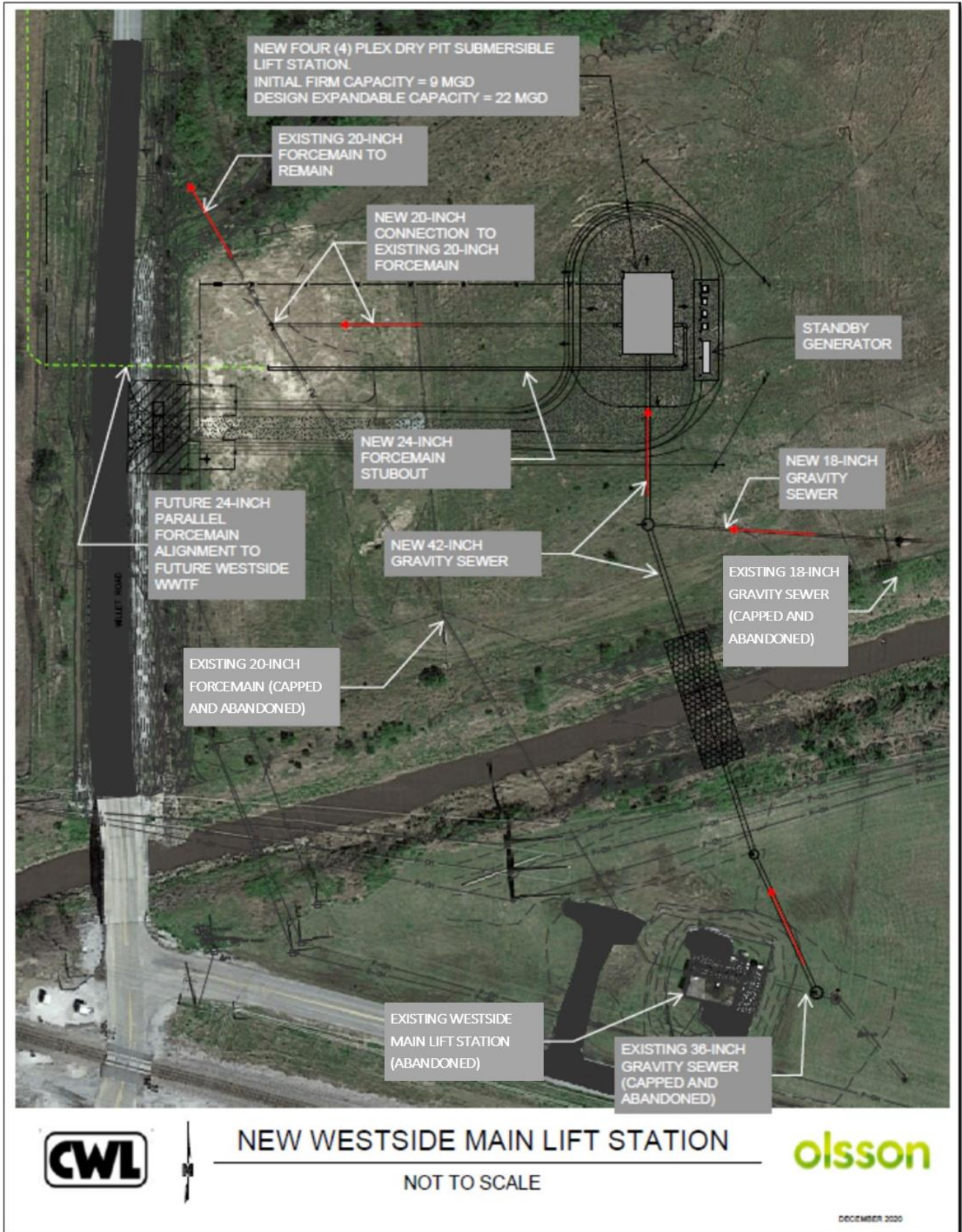




Ridgecrest Lift Station and Force Main

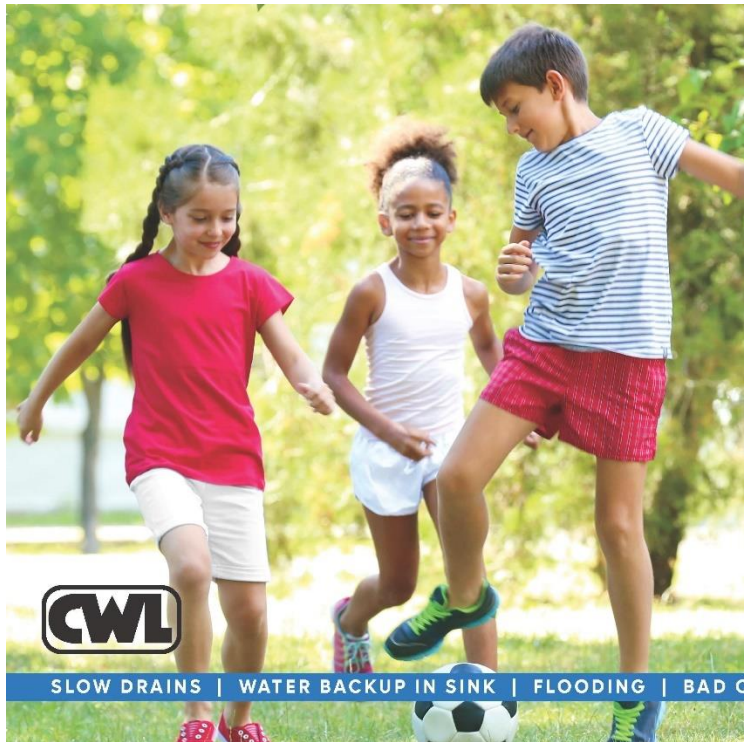


No Scale



Appendix E

FOG Spring Postcard



DON'T LET THE F.O.G. MONSTER RUIN YOUR SPRING TIME FUN!

SLOW DRAINS | WATER BACKUP IN SINK | FLOODING | BAD ODORS | SEWER BACKUP | COSTLY REPAIRS

What is F.O.G.?

F.O.G. is **Fats, Oils, and Grease** and is found in food and food ingredients such as: meat, butter, cooking oils, mayonnaise, salad dressings, gravies, and food scraps.



Why is F.O.G. bad for your pipes?

If you pour **F.O.G.** down the drain, it will cool and build up in the sewer pipes causing the system to back up.



SCRAPE. DON'T RINSE.



City Water & Light
400 E. Monroe, P.O. Box 1289
Jonesboro, AR 72401



*****ECRWSEDDM****

Postal Customer

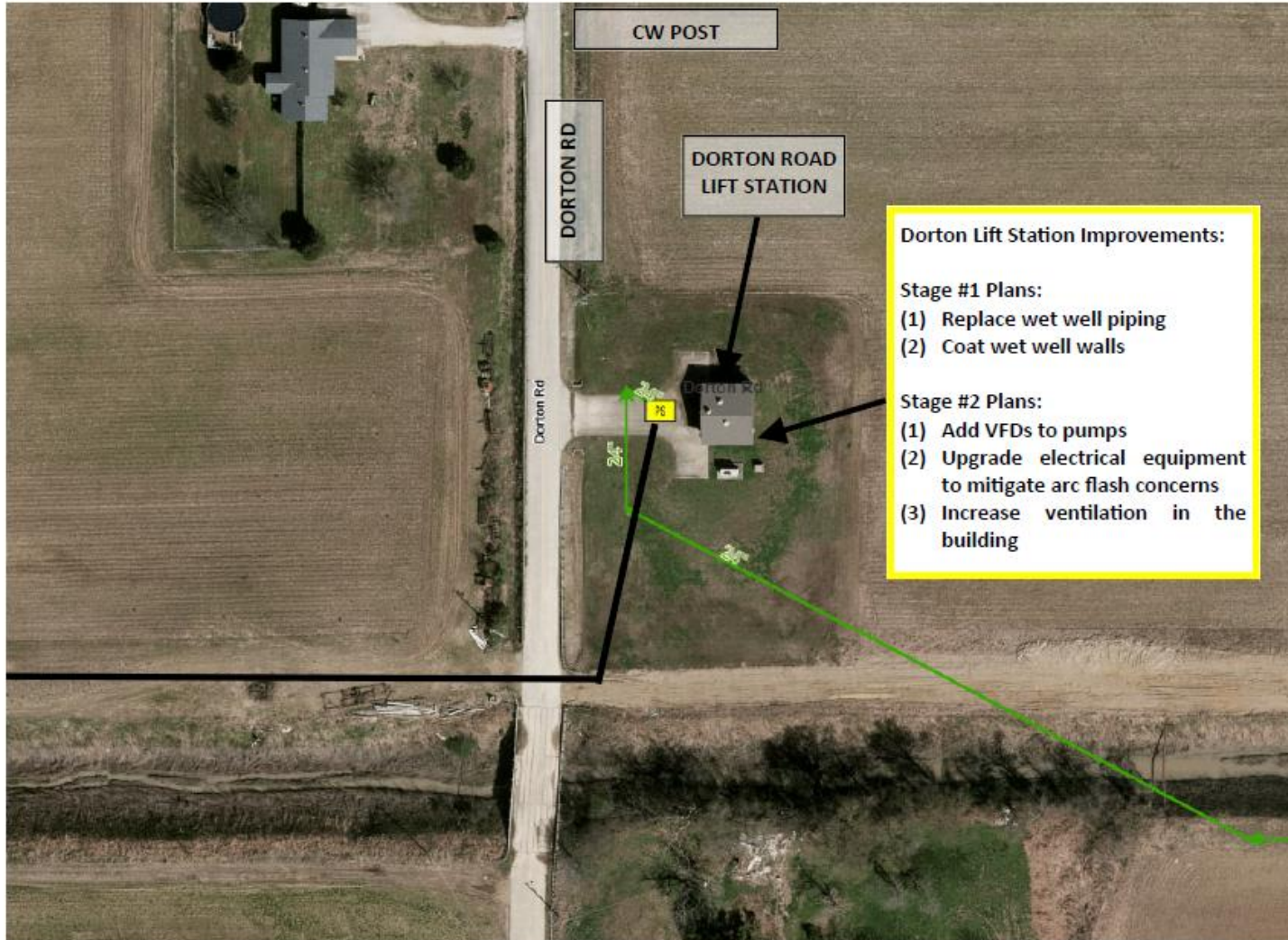
WE ARE HERE FOR YOU!

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jonesborocwl.org
400 E. Monroe Avenue • P.O. Box 1289
Jonesboro, AR 72401



Appendix F

Dorton Road Lift Station Improvements



Dorton Road Lift Station

