SANITARY SEWER

EVALUATION & SURVEY

MENA WATER UTILITIES

MENA, ARKANSAS

January 2020

Prepared by:

A. L. FRANKS ENGINEERING

118 East Broad Street

Texarkana, Arkansas 71854

Ph: 870-216-1906

Certificate of Authorization No. 1681

A. L. FRANKS ENGINEERING

118 East Broad Street
Texarkana, AR 71854
PHONE 870.216.1906 • **FAX** 870.216.1907

January 10, 2020

Ms. Bailey Taylor
ADEQ – Office of Water Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118-5317

Re: Report for Sanitary Sewer Collection System Evaluation
Mena Water Utilities – NPDES No. AR0036692
ADEQ Consent Order LIS 18-046

Dear Ms. Taylor:

Please accept with this letter with the current SSES updated report for the Mena Water Utilities. The City is also receiving this report for their review and consideration.

If you have any questions or require additional information, please contact me at 870-216-1906 or by email at jhaley@alfranksengineering.com.

Sincerely,

A. L. FRANKS ENGINEERING, INC.

Jason C. Haley, P.E.
Project Manager

Cc: Charles Pitman, Mena Water Utilities

A. L. FRANKS ENGINEERING

118 East Broad Street
Texarkana, AR 71854
PHONE 870.216.1906 • **FAX** 870.216.1907

January 10, 2020

Charles Pitman, Manager
Mena Water Utilities
701 Mena St
Mena, Arkansas 71953

RE: SSES Report Submittal
Consent Order for NPDES Permit No.AR0036692
Mena, Arkansas

Dear Mr. Pitman:

Please accept with this letter the final submission of the SSES Report and findings regarding the sanitary sewer collection system for the Mena Water Utilities. This report has been produced in response to the current consent order regarding the NPDES Permit number as referenced.

The purpose of this study was to evaluate the sewer collection system in response to overflows that have occurred and determine a plan to perform corrective actions to achieve permit compliance by June 1, 2028 as defined by the consent order. The SSES does not include an evaluation of the treatment plant.

Upon evaluating field data collected during the study period we have prioritized areas where inflow and infiltration is known to occur. A comprehensive list of corrective actions including replacement has been developed to provide a plan to achieve compliance.

We would be glad to discuss this report in detail and assist as necessary. If you have any questions or require additional information, please contact me at 870-216-1906.

Sincerely,

A. L. FRANKS ENGINEERING, INC.

Jason C. Haley, P.E.

CC: Bailey Taylor, ADEQ, Enforcement Coordinator

MENA SSES REPORT

January 1, 2020

A. L. FRANKS ENGINEERING

Firm No. 1681

118 E BROAD STREET
TEXARKANA, ARKANSAS 71854
(870)216-1906

MENA SANTIARY SEWER STUDY PROGRESS REPORT

The City of Mena acting through the Mena Water Utilities authorized the sanitary sewer evaluation study in July of 2018. This work was considered to be supplemental to the previous study performed in 2010 and is further required as part of the Consent Order for NPDES Permit No.AR0036692 for wastewater treatment and collection facilities.

CONSENT ORDER

The Current Consent Order for NPDES Permit No.AR0036692 was required in part due to 62 sanitary sewer overflows (SSO's) reported and being in violation of the discharge permit. These violations occurred between 2014 and 2017 and constitute unpermitted discharges. Additional violations were noted in the Consent Order regarding treatment limit violations at the wastewater treatment plant. The purpose of this study is to evaluate the sewer collection system in response to the sewer overflows that have occurred, determine corrective actions required, and develop a plan for corrective actions to ultimately achieve compliance with the current NPDES Permit by June 1, 2028.

PERMIT LIMITS

The Design Flow for the wastewater treatment plant is 3.1 Million Gallons per day (MGD). The City of Mena provides sewer service to approximately 2,750 connections, which includes both commercial and residential connections. Monthly flow totals have been obtained from the treatment plant operator for review and over the past 17 months and is further shown herein. In consideration of the monthly flow total and corresponding daily average flow the plant design capacity was exceeded during 7 months. Many factors should be considered when reviewing sewer average flows such as time of year, groundwater table, and evaporation at the treatment plant. Aside from these variables the data clearly reveals the influence of I/I in the collection system.

As noted during the SSES study period there was above average rainfall during 2019 (65 inches compared to 59 average). Substantial rain events repeatedly resulted in increases in flow to the treatment plant. As ground conditions became very saturated the influence from infiltration is very significant.

	Average Daily Flow to the Sewer Treatment Plant	Monthly Rainfall Total
August 2018	1.79 MGD	6.45 Inches
September 2018	1.21 MGD	3.05 Inches
October 2018	1.74 MGD*	4.7 inches*
November 2018	2.44 MGD	1.25 inches
December 2018	3.14 MGD	8.85 inches
January 2019	3.3 MGD	3 inches
February 2019	3.2 MGD	5 inches
March 2019	2.83 MGD	2.5 inches
April 2019	3.16 MGD	8.2 inches
May 2019	3.36 MGD	10 inches
June 2019	3.93 MGD	11 inches
July 2019	2.1 MGD	4.5 inches
August 2019	0.83 MGD	0 inches
September 2019	1.03 MGD	3 inches
October 2019	2.5 MGD	8.2 inches
November 2019	3.3 MGD	6.8 inches
December 2019	2.0 MGD	2.4 inches

SSES STUDY PERIOD

The sewer system evaluation study (SSES) began in August of 2018 and has collected information through December 2019. The study as planned consisted of multiple phases of investigation work to determine sources of infiltration and inflow (I/I). To date a notable amount of study has been performed on the collection system and is further described herein.

The sewer collection system in the City of Mena includes approximately 340,000 linear feet (64 miles) of pipeline. The system also includes 1,130 sewer manholes and 4 sewer lift stations. USGS maps indicate the initial city sewer plant was installed before 1959. In 1972 when the sewer treatment plant was relocated to the current location, a majority of the city sewer collection system had been installed.

The system includes a variety of construction materials including concrete pipe, clay pipe, truss pipe, and more recent pvc pipe. The oldest sewer mains in the collection system are clay pipe and the system is estimated to have over 60,000 linear feet of clay pipe in place. The size of collection mains vary from 6" to 24" diameter. Concrete trunk mains of larger size (18" & 24" diameter are located directly upstream of the wastewater treatment plant and generally follow Prairie Creek and Ward Creeks.

Manholes are typically constructed with brick, poured in-place concrete, and precast concrete. A significant number of brick manholes have been rehabbed with cementitious lining over the past 10 years.

The lift stations are all constructed with concrete wetwells and have modern piping with submersible pumps. Each lift station was reviewed and no items of concern have been noted.

PHASE I - SMOKE TESTING OF SEWER SYSTEM

The first phase of the sewer investigation was to perform smoke testing of the sewer collection system. Sewer leaks can be detected by forcing nonlethal smoke into the sewer mains at manholes. Often smoke will rise to the ground surface where mains are broken, at manhole junctions, and at service lines.

Smoke testing in the Mena collection system began in August 2018 and ceased in mid-November 2018 due to excessive ground moisture. This work was performed by ICM of Arkansas in cooperation with A.L. Franks Engineering. The work initially began at the treatment plant and proceeded along main sewer trunk lines west and north of the plant. These locations include multiple creek crossings which could be major points of I/I if sewer mains are faulty. During this phase all manholes were mapped with GPS Coordinates as well as all observed sewer leaks. Through this study phase a total of 292,000 feet of sewer main was smoke tested.

The smoke study resulted in the mapping of roughly 128 leaks. Flagging and paint was also used to physically mark each leak location. Exhibit 1 includes the leak report with locations and further descriptions of the observed leaks. The majority of leaks found are classified as private line leaks meaning that they are located on private property and are the responsibility of the landowner to operate and maintain. The leaks often are the result of cleanout caps missing or broken service lines. In most observed instances the private service leaks will require minimal excavation and materials.

It is recommended that the City adopt a new ordinance to enforce sewer leak repairs. Business owners and home owners should receive notification from the City that a problem has been observed to the service line and repairs are necessary.

In several instances leaks were observed and appear to be sewer main and manhole leaks. In each case further review is required to determine the required repair. To better identify the problem televising of the main is recommended. During the review process leaks have been prioritized according to the potential for I/I into the collection system.

GPS MAPPING OF SYSTEM

During the field review and smoke testing of the collection system the sewer collection system has been largely mapped by utilizing GPS equipment. The maps included with this report show the locations of manholes, sewer mains, and observed leaks found during smoke testing. Exhibit 2 includes a sample page from the new sewer maps. With the availability of this data, the system has been further mapped into basins and sub basins for the purpose of this study. By utilizing the GPS coordinates with a handheld receiver the City has the ability to locate leaks within a reasonable accuracy. In many instances manholes are located in right-of-ways that are not easily accessible and the exact locations of the manhole can become hard to detect over time. For long-term use of this data we recommend the utility purchase a handheld GPS.

Through the course of the study, several manholes were not located due to excessive vegetation, being covered by pavement or dirt, or possibly having been removed. For these reasons the sewer maps have highlighted locations where manholes were not visible or detected. We recommend that the City further investigate each location to determine if the manhole is installed and what condition it is in. Televising of the sewer main is also recommended when manholes locations are unknown. Areas of missing data are further listed in Exhibit 3 to identify where further field review is necessary.

PHASE II – SEWER FLOW STUDY

The second phase of the SSES has included a flow study to provide an additional review of the impact of I/I in the collection system. This effort began in September and concluded in February of 2019 and was performed by ICM of Arkansas in cooperation with A.L. Franks Engineering. In analyzing the layout of the sewer collection system, a basin map was produced. A sewer basin may include a number of streets or subdivision that all contribute flow through a common sewer main or to a common endpoint such as a lift station (Exhibit 4). Upon determining the basins,

specific locations were identified for the placement of flow measuring equipment (flow trackers). The equipment was installed in manholes and provided continuous flow depth measurements through the manhole inverts. During each study period (typically 60 days) a total of ten flow trackers were installed at various locations.

As results from the flow study were reviewed, the trackers were then placed at new locations to further evaluate problem areas and to provide a broader study with better results. This flow study process was performed in three cycles that provided data for 30 different locations within the system. As a whole, this data has provided a method to prioritize problem areas that require further televising and/or repair.

Each flow report provided from the flow study analyzed the sewer with respect to normal daily flow patterns, surges in flow from rain events, and gradual increases in flow from infiltration. The results from this study have been used to prioritize where further sewer televising or smoke testing is necessary.

It is noteworthy to report that each flow tracker revealed increases in flow during rain events. This data does not reflect an entire sewer system flow study but is limited to the upper reaches of the system and areas of known older sewer infrastructure. In the lower reaches of the collection system it was not useful to review flow patterns in main trunk lines that may convey full pipe flows on a regular frequency.

- The following major basins were identified to convey significant I/I into the system:
    - Business district along Mena Street / South of the Hwy 71 (Sub-basin 2-H)
    - Mid-South Lift Station Basin (Sub-basins 3-A & 3-B)
    - Church Avenue / Reine St (Sub-basin 2-D)
    - Northernmost service area of De Queen St (Sub-basin 2-B)

PHASE III – SEWER SYSTEM TELEVISING

The third phase of the SSES has been to televise sewer mains that have been prioritized for further study. This task consists of plugging the sewer flow in mains at manholes, cleaning the sewer main in question, and then performing the camera operation through the main. This effort can be quite laborsome as several people may be required to perform various task in plugging, televising, and cleaning the sewer main. The Mena Water Utility personnel have performed this tasks as well as an independent contractor.

The televising study has been very effective in observing sewer main problems that have resulted in I/I. Through the duration of the current SSES approximately 15,000 linear feet of sewer main has been televised. The study has begun in the basins that were prioritized following the flow study. During each work period the study is recorded to disk and a log is written of the results that include locations of leaks, and services. The Mena Water Utilities also provided numerous video files of areas televised in the past 10 years that were also reviewed during this current study.

Several lines in the Mid-South Lift Station Basin (sub-basin 3-A) have been reviewed first and are generally located along W Boundary Rd, Locust St, and Wertz St among others. Collection mains in this basin include a large amount of 'Truss Pipe' that dates to the late 70s and early 80s. This pipe is a unique material that features a cement lining within a dual wall pvc pipe with a truss wall pattern. In general this pipe material appears to be in decent condition and has maintained its shape and good flow properties. However, a common occurrence has been infiltration into the main at service line connections. This appears to be from poorly performed connections without the use of gasketed joints (refer to pictures). In several instances the pipe was cracked and I/I was observed, as well.

Televising efforts have also been performed along an alleyway being south of Jansen Park and between 7th and 9th Streets (sub-basin 2-A). This sewer main was clay pipe construction and likely some of the original sewer main installed in the system. Upon televising the main severe leaking was observed at joints, cracks in the pipe, and severe root intrusion into the main. This section of pipe has been partially replaced by the Utility. Exhibit 5 indicates the typical report performed during televising of sewer mains. Reports have been utilized to note problem areas on the sewer maps where problems have been observed. Exhibit 6 further indicates a sewer main south of Ransom Rd with frequent root intrusions that is recommended for replacement. This provides an example of the great effectiveness in televising sewer mains to determine if corrective action is necessary.

PHASE II – MANHOLE INSPECTIONS

During the summer of 2019 the Mena Water Utility performed sewer manhole inspections throughout the collection system. The majority of the manholes in the collection system have been inspected and a summary is further provided in Exhibit 7. The system has a number of older brick manholes in the system that are recommended for rehabilitation to include removal of roots and cementitious coating. Other notes are provided which may include raising

manholes, or cleaning of debris as necessary. The manhole summary also includes the sub-basin locations of the manholes. This information has been utilized in prioritizing the need for improvements with respect to a specific basin.

SEWER BASIN SUMMARY

The collection system has been divided into basin and sub-basins for the purpose of the study. A total of 8 major basins have been considered based on topography, flow direction, and junctions that can serve as a break in the collection system. A total of 28 sub-basins have been further mapped to review smaller areas within the collection system. The review of sub-basins also coincides with areas reviewed during the flow study. In reaching conclusions and recommendations for further rehabilitative system repairs an overall summary is provided in Exhibit 8. The Sewer Basin Condition Summary into account the average manhole condition based upon construction type and inspection reports, the flow study results as available, the frequency of leaks noted during smoke testing, and a sewer main condition based upon pipe construction as well as results from televising. An overall average weighted score has then been determined to prioritize areas that have the highest probability of infiltration in the collection system. It is noteworthy to say the average score is based upon data obtained through the duration of this study. Flowstudy results are not available for every sub-basin, nor has every sewer main been televised. The top 5 sub-basins are further listed herein with the highest overall score representing the worst condition (scale of 1 to 4):

1) Sub-basin 2-H, Score: 3.00
2) Sub-basin 3-A, Score 2.88
3) Sub-basin 2-A, Score 2.75
4) Sub-basin 2-B, Score 2.75
5) Sub-basin 2-C, Score 2.75

CONCLUSIONS AND RECOMMENDATIONS

As agreed in the Consent Order between the City of Mena and Arkansas Department of Environmental Quality, corrective actions must be implemented to achieve compliance of the sewer system by June 1, 2028. To accomplish this goal several critical components must be performed as outlined below:

- **Capital Improvement Sewer Replacement Plan**

  To achieve compliance with the Consent Order it is necessary that a capital improvement plan be implemented to reduce I/I within the collection system. In consideration of all data acquired through this sewer system evaluation a list of high priority sub-basins has been identified with substantial I/I within the collection system. It is our recommendation that the City of Mena further develop a plan for securing financial means to implement improvements for the collection system. Exhibit 9 describes a preliminary list of areas that have been identified for replacement. The replacement plan as presented includes replacement of existing main, service line connections, and manholes. In most locations specified outdated 6" clay mains are proposed for replacement with 8" pvc mains in accordance with current standards.

  The large diameter 18" and 24" concrete sewer mains have had a notable amount of televising performed and have revealed repeated problems with joints and root intrusions. For these reasons we recommend replacing any buried creek crossing with PVC pipe. Concrete pipe will continue to degrade with time and therefore should be considered in a long-term replacement plan. This represents approximately 15,000 feet of pipeline. The creek crossings should be replaced in a short-time frame.

  The identified sewer mains represent an approximate construction total of $3.2 Million for a preliminary budget.

- **Implement an Ordinance / Plan for private service leaks** – The City of Mena should develop and implement an ordinance to enforce homeowners to maintain sewer services in good working condition. As previously noted well over 100 leaks have been documented from private side service lines.

The Utility should at a minimum began an evaluation of these to further clarify the source of the problem if it is a private service or main line leak. Simple items such as replacing cleanout caps should be completed considering extreme ease and minimal costs.

- **Televise High Priority Basins** – As noted this task is very labor intensive, however it has proven to be the most effective in reviewing point sources of I/I and general condition of mains. Sewer basins observed as having high priority should be fully evaluated first. Furthermore, priority should be given to mains constructed of clay, truss and concrete pipe. Written records of these events should be well documented and utilized for further repair notes.

- **Purchase GPS / Complete System Mapping** – To find previously mapped leaks and add additional data to the current maps GPS equipment will prove to be a very useful tool for the Utility. This equipment is relatively inexpensive and can be operated by utility personnel. The costs for this item is approximately $4,000. The GPS will provide the ability to continue mapping areas where manholes are buried or collapsed. The effort to find these lines/manholes will likely result in finding additional points of I/I.

- **Maintain Sewer Right-of-Ways** – As observed in recent study results, excessive vegetation along sewer mains can result in severe root intrusions. Clay and Concrete sewer mains are more likely to deteriorate at joints over time which can be caused by root intrusion. This task is best performed during summer months.

EXHIBIT 1

SMOKE STUDY LEAK REPORT

EXHIBIT 1 - MAPPED SEWER SYSTEM LEAKS
Mena SSES Report

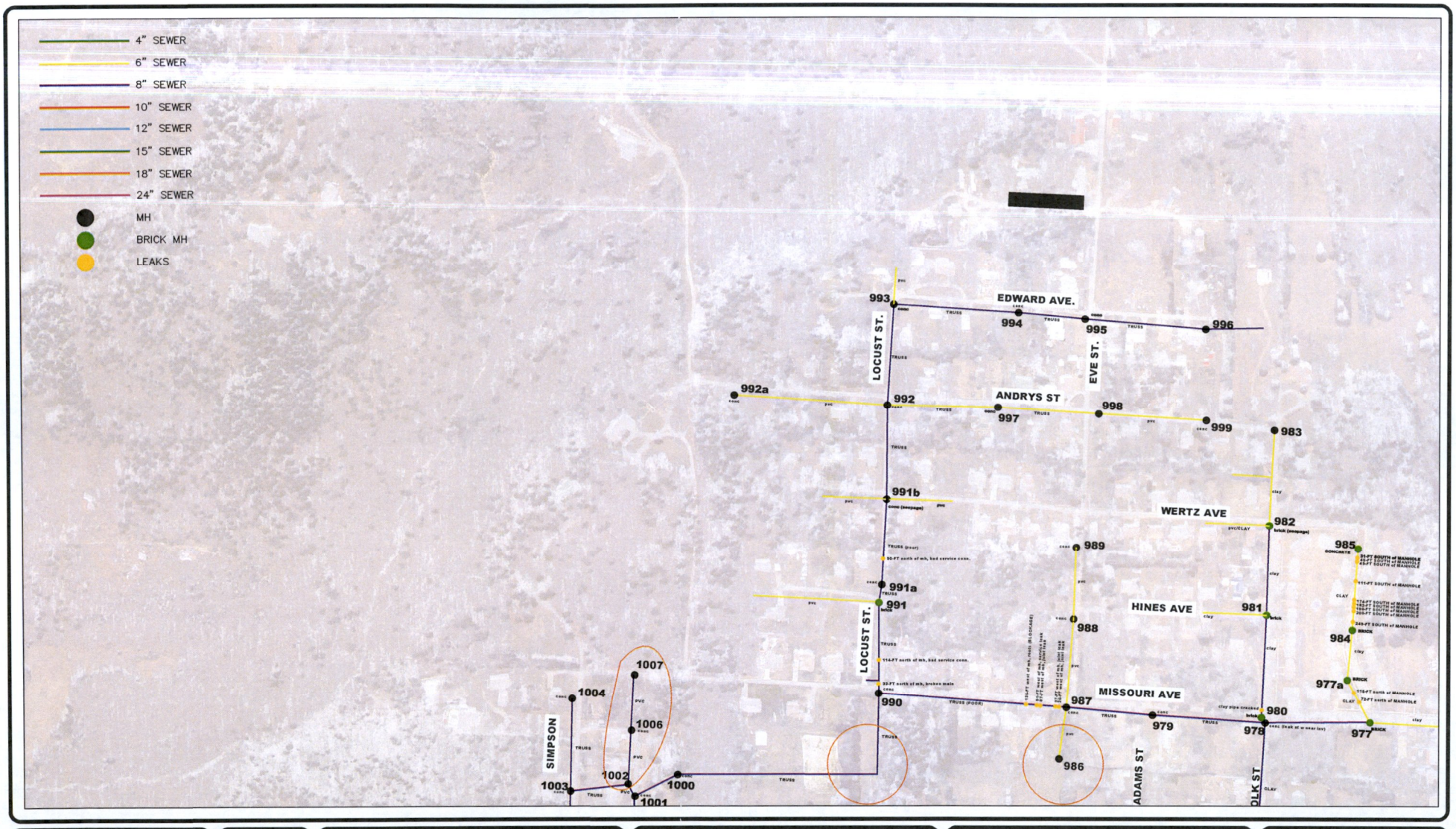
LEAK NO.	PUBLIC	PRIVATE	ADDRESS / LOCATION
1	X		At MH 597 West of Plant
2	X		MH
13	X		103' East of MH 717 (west of Hwy 375)
14		X	Business at NE Side of Maple Lane & Polk Rd 52
15		X	Business at NE Side of Maple Lane & Polk Rd 52
16	X		78' N of MH 615, N Side of Maple Lane
17	X		176' S of MH 617, Near Business at end of Taxiway
18		X	176' S of MH 617, East toward business bldg
19			
20		X	NE of MH 655, 78' from MH between houses
22		X	145' North of MH 284, on school property
23	X		AT MH 286, Dallas Ave at School
24		X	Lisa Way, North of MH 636
25		X	Lisa Way, East of MH 635
26		X	Lisa Way, East of MH 635
27		X	Lisa Way, East of MH 635
28		X	SW Corner of Lorelie Way and Lisa Way
30		X	SW of MH 633, Jolie Way
31		X	North of MH 633, private service top, N of Jolie Way
33		X	East of Southern Disposal Storage Units on Hwy 8
34		X	East of Southern Disposal Storage Units on Hwy 8
35		X	1305 Faye
36		X	1306 Faye
37		X	1401 Faye
38		X	1501 Faye
40		X	Near MH 734, 204 Bixler Ave
40		X	303 Lum
42		X	1607 Whispering Pine
43		X	400 Ridge Ave
44		X	506 Deridder
45		X	House due east of 506 Deridder
46		X	2nd House due east of 506 Deridder
47		X	2nd House due east of 506 Deridder
48		X	1001? Lincoln Ave, S of MH 690, W side of St
49	X		121' S of MH 690 in Lincoln Ave
49		X	1001 Lincoln
50		X	601 Forrest
51		X	1st house on s side of forrest, east of Cherry
52		X	North of Petros Near Vivian St (Old Service 78' NE of MH 299)
53		X	North of Petros Near Vivian St (Old Service 183' E of MH 299)
54	X		46' East of MH 296, Petros St
56		X	205 Cherry
58		X	W of MH 349, near Ally E of Martin / 2nd Inters.

EXHIBIT 1 - MAPPED SEWER SYSTEM LEAKS
Mena SSES Report

LEAK NO.	PUBLIC	PRIVATE	ADDRESS / LOCATION
59	X		N of MH 446, Sherwood & Fourth St
60	X		N of MH 381 along De Queen St, N of Holly
61	X		265' NE of MH 157 (North of Price Mobile Homes)
62	X		Stormdrain Near MH 373, Alley at Martin St E of De Queen St
63	X		Alley N of Martin between Mena / Fourth
64		X	N of MH 385, near Int of Holly St & Seventh St
65		X	N of MH 385, near Int of Holly St & Seventh St
66		X	Near Alley and Holly St, E of 9th St
67		?	E of MH 579 (126') along Sherwood, e of 8th St
68	X		MH 918, 12th St & Averitt Ave
69		X	173' N of (MH 916),N of INT of 12th St / Oak Grove Ave
71		X	68' SW of MH 572, E of Int of Reeves / 12th St
92		X	73' W of Int of Jansen / 9th St
94		X	Alley E of MH 540, E of 9th St, 80' from MH, alley south of Jansen
95		X	
96		X	W of MH 973, Gann St
97		X	Alley & Magnolia E of 7th St (s of Magnolia)
98		X	Alley & Magnolia E of 7th St (s of Magnolia)
99		X	Alley & Magnolia E of 7th St (s of Magnolia)
100		X	Dewey Near Campbell E of MH 472
101		X	Dewey Near Campbell E of MH 472
107		X	Service at House on S Side of Sutherland just west of INT of Simpson St
108		X	Near MH 3001, Casey's Way (Trailer Park)
109		X	Near MH 3001, Casey's Way (Trailer Park)
110		X	Near MH 3001, Casey's Way (Trailer Park)
113		X	Near MH 3005, Casey's Way (Trailer Park)
114		X	N of INT of Bert St / Tyler St (166' S of MH 912D)
118		X	Service near Manhole 260 along ditchline of Morrow St from Limetree Inn
119		X	Service near Manhole 260 along ditchline of Morrow St from Limetree Inn
120		X	Approximate Service Connection near Manhole 270 near creek, from Limetree Inn
121		X	Service Lines from Limetree Inn
122		X	Service Lines from Limetree Inn
123		X	Service Lines from Limetree Inn
X		X	Service Line near MH 247, at back of Walgreens (broken 4" riser)
124		X	Backside of old Papa Pablono Bldg
125		X	Backside of old Papa Pablono Bldg
126		X	SW Side of Peachtree Apartments
127		X	SW Side of Peachtree Apartments
128		X	NW Side of Peachtree Apartments

EXHIBIT 2

SEWER SYSTEM MAP EXAMPLE



Date	Revision	By

Designed	JCH
Checked	KAB
Drawn	JCH
Approved	ALF

A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.9192 ANTHONY L. FRANKS

Job No.:	MWU-01-18
Scale:	1"=300'
Date:	OCT 2018
Sheet	1

EXHIBIT 3

SEWER COLLECTION SYSTEM

AREAS FOR FURTHER FIELD REVIEW

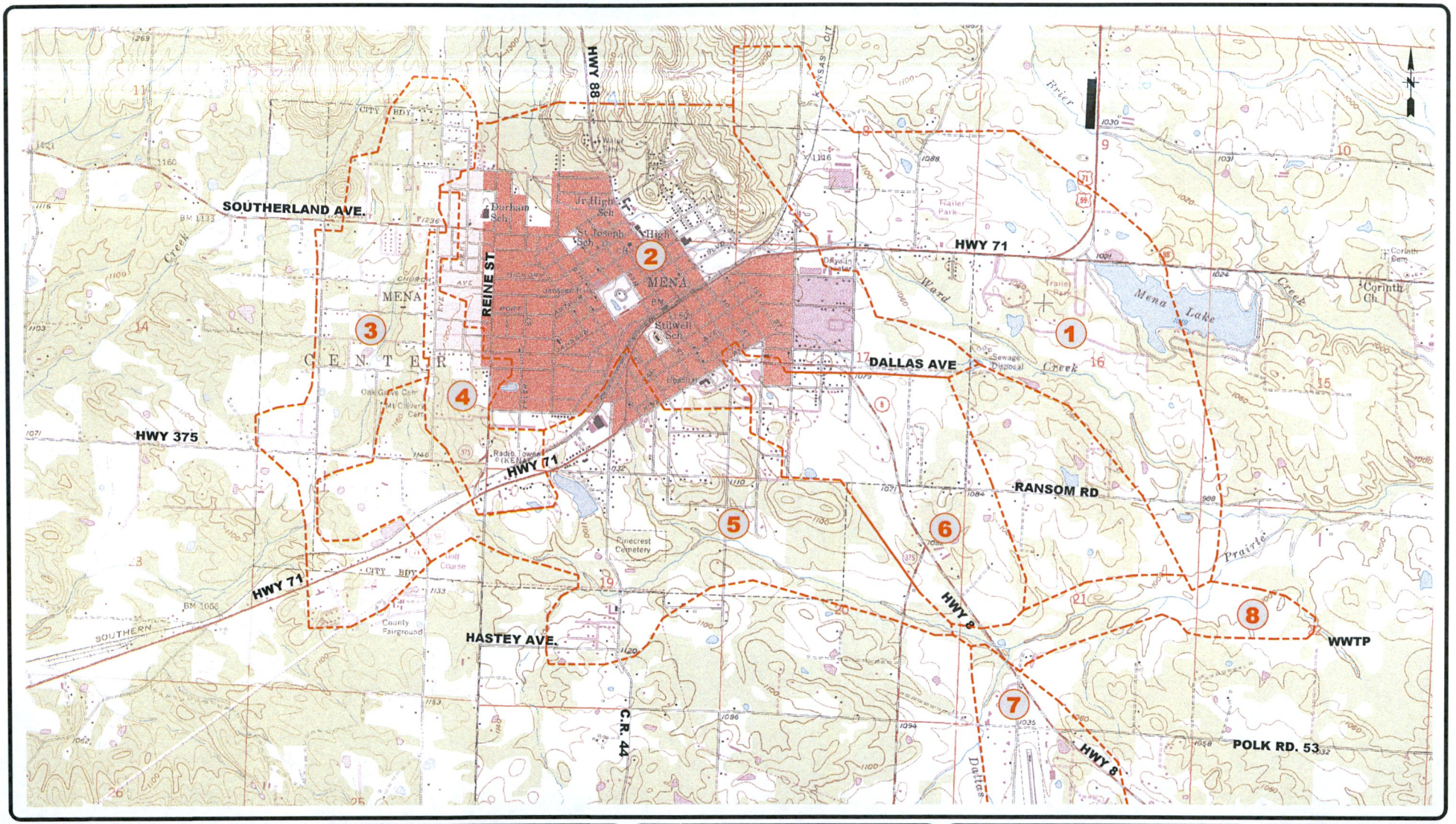
Mena Water Utilities

Collection System Field Review List

MH Number	Sub-basin	book sheet	Notes
990-1000	3-A	1	Locate Main and Manholes south of MH 990
422-428	2-C	2	Locate Main and Manholes east of Magnolia Ave to Craig St
1052	3-B	5	Televise main south of MH 1052 (Finks St)
1058	3-B	5	Televise main south of MH 1060 (Carder Ave)
526	2-D	5	Televise main south of MH 527 (Carder Ave / Reine St)
477-478	2-B	6	Televise main south of MH 479 (Mt View Dr / Sampson Ave)
420-421	2-C	6	Locate Main and Manholes north of MH 419
397-403	2-C	7	Locate Main and Manholes along Janssen St
252-272	1-A	7	Televise main from MH 252-272 through ditchline near leaks
152-156	1-B	8	Locate Main and Manholes between 152-156
1031	3-A	10	Locate MH South of 1030 near Reeves St
1051-1047	3-B	10	Televise main from manholes 1051 south to 1047
1051	3-B	10	televise main east from MH 1051 along Miller Ave
1050	3-B	10	televise main east from MH 1050along Reeves St
771-780	5-C	11	televise main south from 781 along Hwy to 771
193-196	1-C	13	Locate main and manholes south from Oaklawn Circle
860-862	5-A	15	televise main under pond along drainage path
765-767	5-C	16	locate manholes
739-744	5-D	17	locate main and manholes along Bullion St
724-727	5-F	17	locate main and manholes se of MH 727
689-684	6-A	17	televise, locate main and manholes south from Forest St
1102-1107	3-D	20	Televise, locate main and manholes west from storage bldgs
816-818	5-F	21	locate main and manholes east from MH 815
818-823	5-E	21	locate main and manholes North from MH 823 across creek
821, 754, 724	5-F	22	locate manholes
115-116	1-D	24	televise from 116-115 across creek

EXHIBIT 4

SEWER COLLECTION SYSTEM BASIN MAPS



Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

A.L. FRANKS ENGINEERING

118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

MAJOR SEWER BASIN MAP

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No.9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=2000'
Date: DEC 2019
Sheet 1

EXHIBIT 5

SEWER TELEVISING REPORT

Mena **INSPECTION SERVICES**

SANITARY SEWER INSPECTION REPORT

8TH ST. UPSTREAM TO MH 540

Distance	Clock Position	Cracked Pipe	Roots L,M,H	Debris L,M,H	Protruding Tap	Infiltration L,M,H	Offset Joint	PT. Repair	Broken Pipe	COMMENTS:
169.2										ROOTS IN JOINT.
177.1	1:00									SERVICE TAP. ROOTS IN JOINT.
200	1:00									SERVICE TAP.
213	1:00									SERVICE TAP
223	1:00									SERVICE TAP.
236		X								ROOTS IN JOINT.
247	1:00	X								SERVICE TAP
249	9:00	X								SERVICE TAP
272	1:00									SERVICE TAP ROOTS AROUND TAP.
320										ROOTS IN JOINT.
336										JOINT.
344										MANHOLE 540

Job No:

Project Name:City of Mena

City/State:

Crew/Operator: TV

Page No. 3

PIPE SIZE:

DATE TELEVISED:

NUMBER OF SERVICES:

DVD:

11/6/09 : **INSPECTION SERVICES,**

SANITARY SEWER INSPECTION REPORT

Distance	Clock Position	Cracked Pipe	Roots L,M,H	Debris L,M,H	Protruding Tap	Infiltration L,M,H	Offset Joint	PT. Repair	Broken Pipe	COMMENTS: 1019 - 1019 B.
6.2	9:00									SERVICE TAP.
19.0										BELLY 19.1' - 47.2' UNDERWATER.
62.6										BELLY 62' - 100.8' UNDERWATER
105.										BELLY 105' - 110'
118	9:00									SERVICE TAP.
165.8	9:00									SERVICE TAP.
298	3:00									POSSIBLE PATCH
310										BELLY 310 - 330' 1/2 UNDERWATER
391										STOPPED.
373										MANHOLE
										1019 - 1018 - 1017
10.8'										SPLIT JOINT
14.3'										SPLIT JOINT
16 -										" "
283		X								EVERY JOINT SPLIT.
363						X				
365		X								No Water coming in Splits

Job No:

Project Name:City of Mena

City/State:

Crew/Operator: TV

Page No. 3

PIPE SIZE:

DATE TELEVISED:

NUMBER OF SERVICES:

DVD:

Mena

INSPECTION SERVICES

SANITARY SEWER INSPECTION REPORT

8TH St. UPSTREAM TO #540

Distance	Clock Position	Cracked Pipe	Roots L,M,H	Debris L,M,H	Protruding Tap	Infiltration L,M,H	Offset Joint	PT. Repair	Broken Pipe	COMMENTS:
.5'	3:00									SERVICE TAP
~~20.8~~		X								ALONG TOP
20.8		X								BOTTOM & SIDES.
28'		X								SIDES & TOP.
52.7	3:00	X								SERVICE TAP
56.4	3:00									SERVICE TAP
57.1		X								ALL OVER
61.7		X				X				CRACKED & INFIL.
61-66		X								CRACKED ALONG BOTTOM
88.4										SERVICE TAP PLUGGED OFF
106.	1:00									SERVICE TAP.
108.										ROOTS IN JOINT.
111.5										ROOTS IN JOINT
113.6										ROOTS IN JOINT.
116.5										ROOTS IN JOINT.
122.										ROOTS IN JOINT.
123.6										ROOTS IN JOINT
124.9	3:00									ROOTS AROUND SERVICE TAP.
126.5										ROOTS IN JOINT
128.4	1:00									SERVICE TAP PLUGGED OFF
131.3		X								ROOTS IN JOINT.
139.1										ROOTS IN JOINT.
144										ROOTS IN JOINT
146.4										ROOTS IN JOINT
149.4										ROOTS IN JOINT
151.6		X								ROOTS IN JOINT
154.1										ROOTS IN JOINT.
156.7										ROOTS IN JOINT.
160.2										ROOTS IN JOINT
164		X								ROOTS IN JOINT

Job No:

Project Name:City of Mena
City/State:
Crew/Operator: TV
Page No. 3

PIPE SIZE:
DATE TELEVISED:
NUMBER OF SERVICES:
DVD:

Mena : **INSPECTION SERVICES**

SANITARY SEWER INSPECTION REPORT

+87' from 381 – 382

Distance	Clock Position	Cracked Pipe	Roots L,M,H	Debris L,M,H	Protruding Tap	Infiltration L,M,H	Offset Joint	PT. Repair	Broken Pipe	COMMENTS:
142'		X								
166'	2:00	X								Service tap Pipe broke opposite of tap
215'	12:00									Service tap
246'		X								
268'		X	X							Roots in Joint
300'			X							Separated Joint
312'										manhole 382

Job No:

Project Name:City of Mena

City/State:

Crew/Operator: TV

Page No. 3

PIPE SIZE:

DATE TELEVISED:

NUMBER OF SERVICES:

DVD:

Mena

INSPECTION SERVICES

SANITARY SEWER INSPECTION REPORT

264-6267
264-354

Distance	Clock Position	Cracked Pipe	Roots L,M,H	Debris L,M,H	Protruding Tap	Infiltration L,M,H	Offset Joint	PT. Repair	Broken Pipe	COMMENTS:
9.6'	12:00	X								
13.2'	12:00	X							X	
14.3'	12:00	X							X	
16.9'	3:00									Service tap
19.5'	12:00	X								
54.9'	2:00	X							X	Plug Service tap
66.7'	all around	X								
125'	all around								X	
134.4'	12:00								X	
136.4										Fernco Joint to PVC
71.6'	12:00								X	all around
80.4	12:00								X	at Joint
133.1	12'00									old tap
156-167		X								
176	9:00	X								Service tap
253										manhole -354

Job No:

Project Name:City of Mena
City/State:
Crew/Operator: TV
Page No: 3

PIPE SIZE:
DATE TELEVISED:
NUMBER OF SERVICES:
DVD:

SANITARY SEWER INSPECTION REPORT

497 B.

Distance	Clock Position	Cracked Pipe	Roots L,M,H	Debris L,M,H	Protruding Tap	Infiltration L,M,H	Offset Joint	PT. Repair	Broken Pipe	COMMENTS:
1'	3:00									TAP S.T.
22'	12:00									JOINT SPREAD APART.
26.3	11:00									2
29	3:00									PLUGGED TAP.
35.3	9:00									TAP S.T.
44.1	3:00									S.T.
46	12:00									S.T.
51.2	12:00									S.T. PLUGGED
76.6	11:00									S.T. PLUGGED.
79.2	1:00									S.T. PLUGGED.
87.0	12:00									S.T.
98.8	1:00									S.T.
100'										ROOTS IN JOINT
102	9:00									S.T. PLUGGED.
103										ROOTS IN JOINT
105.7										ROOTS IN JOINT
110.3										ROOTS IN JOINT
112.8										ROOTS IN JOINT.
115.6										ROOTS IN JOINT
118.2										ROOTS IN JOINT
120.5										ROOTS IN JOINT
122.2	9:00									S.T.
122.9										ROOTS IN JOINT.
125.7										ROOTS IN JOINT
128.3										ROOTS IN JOINT
130	3:00									TAP S.T. PLUGGED
130.9										ROOTS IN JOINT
133.1										ROOTS IN JOINT
135.5										ROOTS IN JOINT
137.6	1:00									S.T.

Job No:

Project Name: City of Mena

City/State:

Crew/Operator: TV

Page No. 3

PIPE SIZE:

DATE TELEVISED:

NUMBER OF SERVICES:

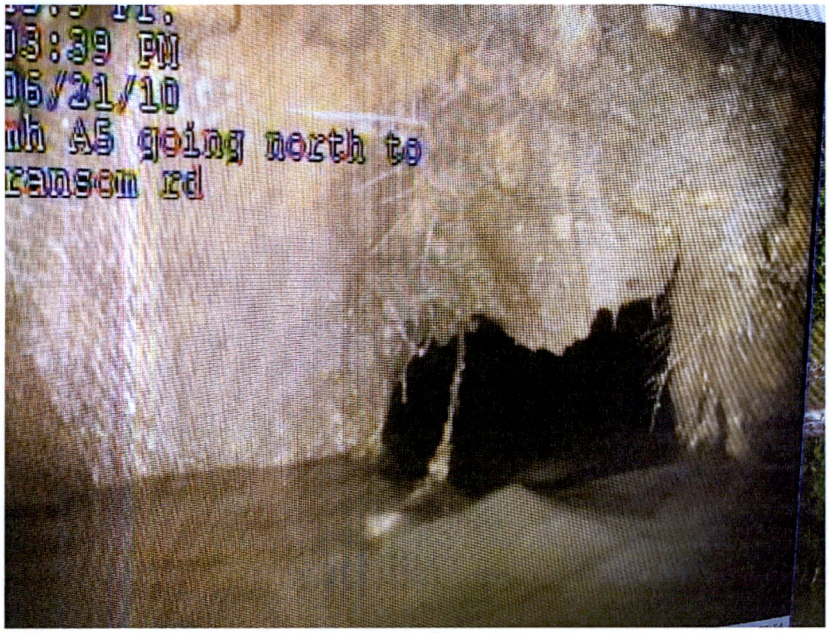
DVD:

EXHIBIT 6

SEWER TELEVISING REPAIR REPORT

1) Ranson Rd Line going north from manhole A5 (115?) toward Ransom Rd

18" concrete main, 45-ft north of manhole line has severe root intrusion at joint, urgent leak to be repaired.

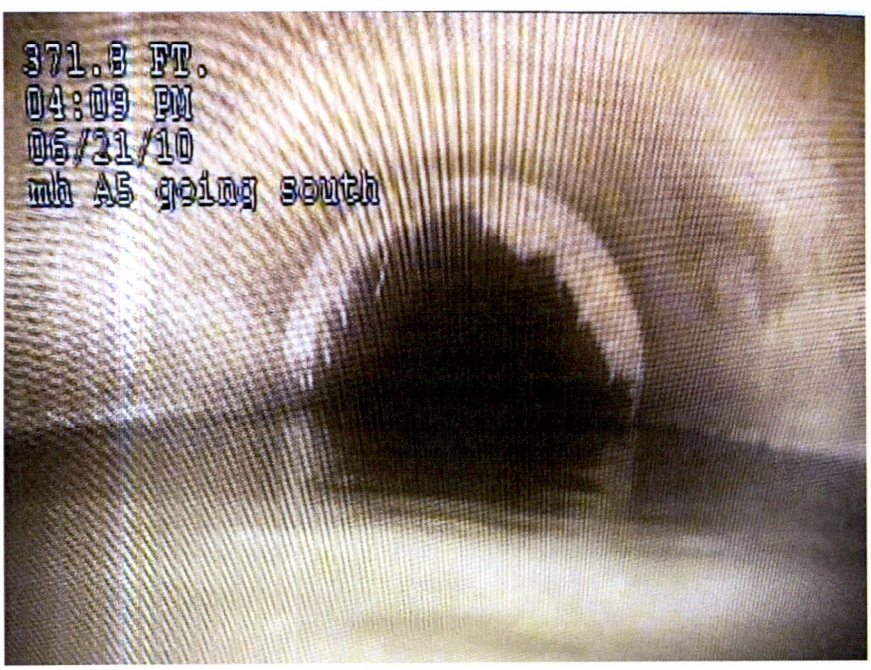


2) Manhole A5 going south (perhaps mh 115)

18" concrete main, 196-ft south of manhole, severe root intrusion at joint, urgent leak to be repaired

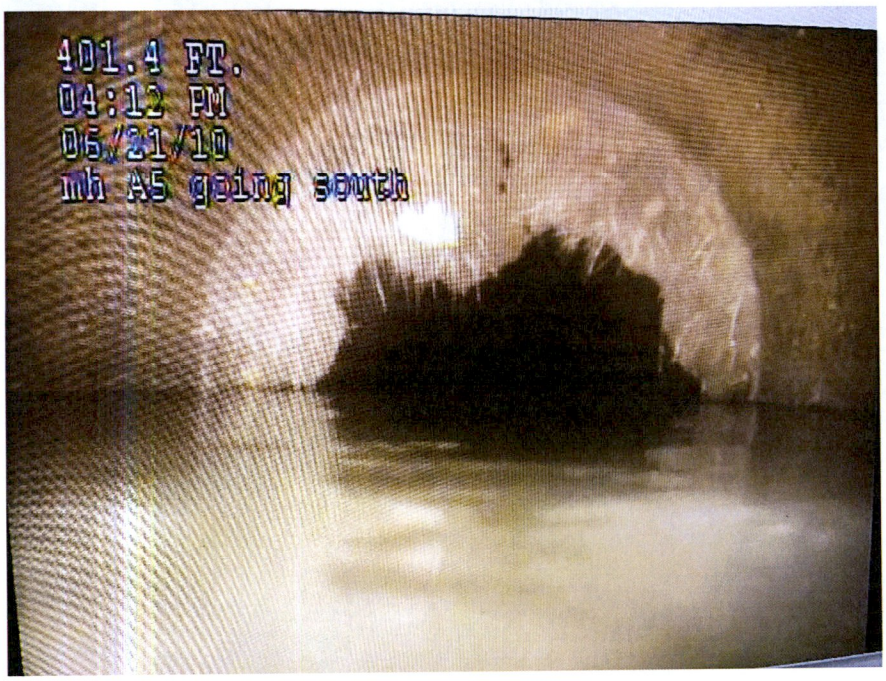
18” concrete main, 262-ft south of manhole A5, severe root intrusion at joint, urgent leak to be repaired

18” concrete main, 375-ft south of manhole A5, moderate root intrusion at joint



18” concrete main, 397-ft south of manhole A5, roughly 13-ft south of manhole 114, severe root intrusion at joint, urgent repair

18” concrete main, 403-ft south of manhole A5, roughly 19-ft south of manhole 114, severe root intrusion at joint, urgent repair



18" concrete main, 414-ft south of manhole A5, roughly 30-ft south of manhole 114, severe root intrusion at joint

18" concrete main, 567-ft south of manhole A5, roughly 183-ft south of manhole 114, severe root intrusion at joint

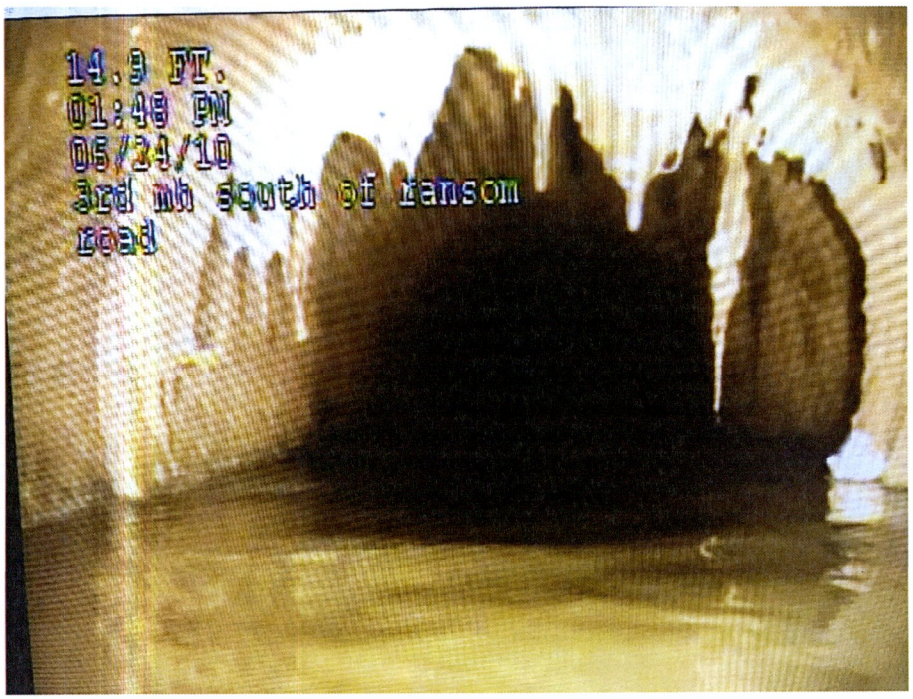
18" concrete main, 630-ft south of manhole A5, roughly 246-ft south of manhole 114, severe root intrusion at joint (150-ft north of manhole 113)

18" concrete main

- Minor roots at joint, 700-ft south of Manhole A5
- Minor roots at joint, 713-ft south of Manhole A5
- Minor roots at joint, 773-ft
- Manhole at 780-ft (MH 113)
- Minor roots at joint, 787-ft
- Minor roots at joint, 800-ft
- Minor roots at joint, 848-ft

3) Ransom Rd 18" concrete sewer main heading south from manhole 113

15-ft from manhole, root intrusion at joint



- 47-ft from manhole, joint leaking
- 273-ft from manhole, root intrusion at joint
- 291-ft from manhole, root intrusion at joint
- 380-ft from manhole, joint leaking
- 388-ft (next manhole south)
- 407-ft from manhole, root intrusion at joint
- 467-ft from manhole, root intrusion at joint
- 486-ft from manhole, root intrusion at joint
- 509-ft from manhole, leaking joint
- 593-ft from manhole, minor roots at joint
- 605-ft from manhole, leaking joint
- 636-ft (next manhole south) 112

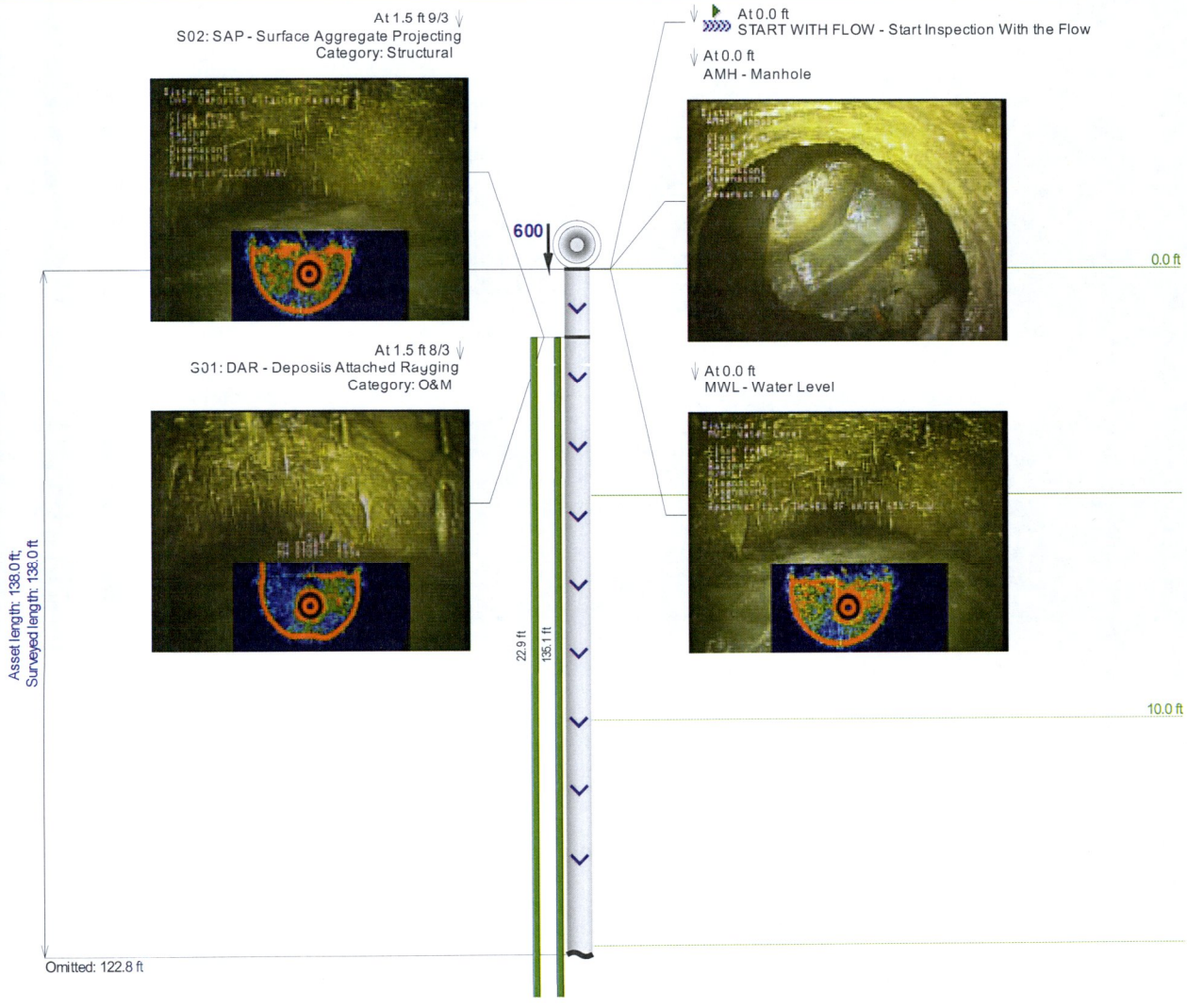
Compliance EnviroSystems, LLC
1401 Seabord Drive
Baton Rouge, LA 70810
Phone: (225) 769-2933
www.ces-sses.com

COMPLIANCE ENVIROSYSTEMS

Main Inspection with Pipe-Run Graph and Images

MENA, AR

Pipe ID:	600_599A		Drainage Area:	MENA	
UpsMH / Depth:	600		Address / Street:	HWY 8 (OFF)	
DnsMH / Depth:	599A	10.9	Date / Time:	20191217102418	
Material:	RCP		Surveyor:	AHOWELLS_CES	
Shape:	C		Pre-Cleaning / Date:	N	
Joint Length:	8		Diameter:	18	
Pipe Length:	138		Length surveyed:	138	Downstream
Comment:	SURVEY COMPLETE				



Compliance EnviroSystems, LLC
1401 Seabord Drive
Baton Rouge, LA 70810
Phone: (225) 769-2933
www.ces-sses.com

MENA, AR

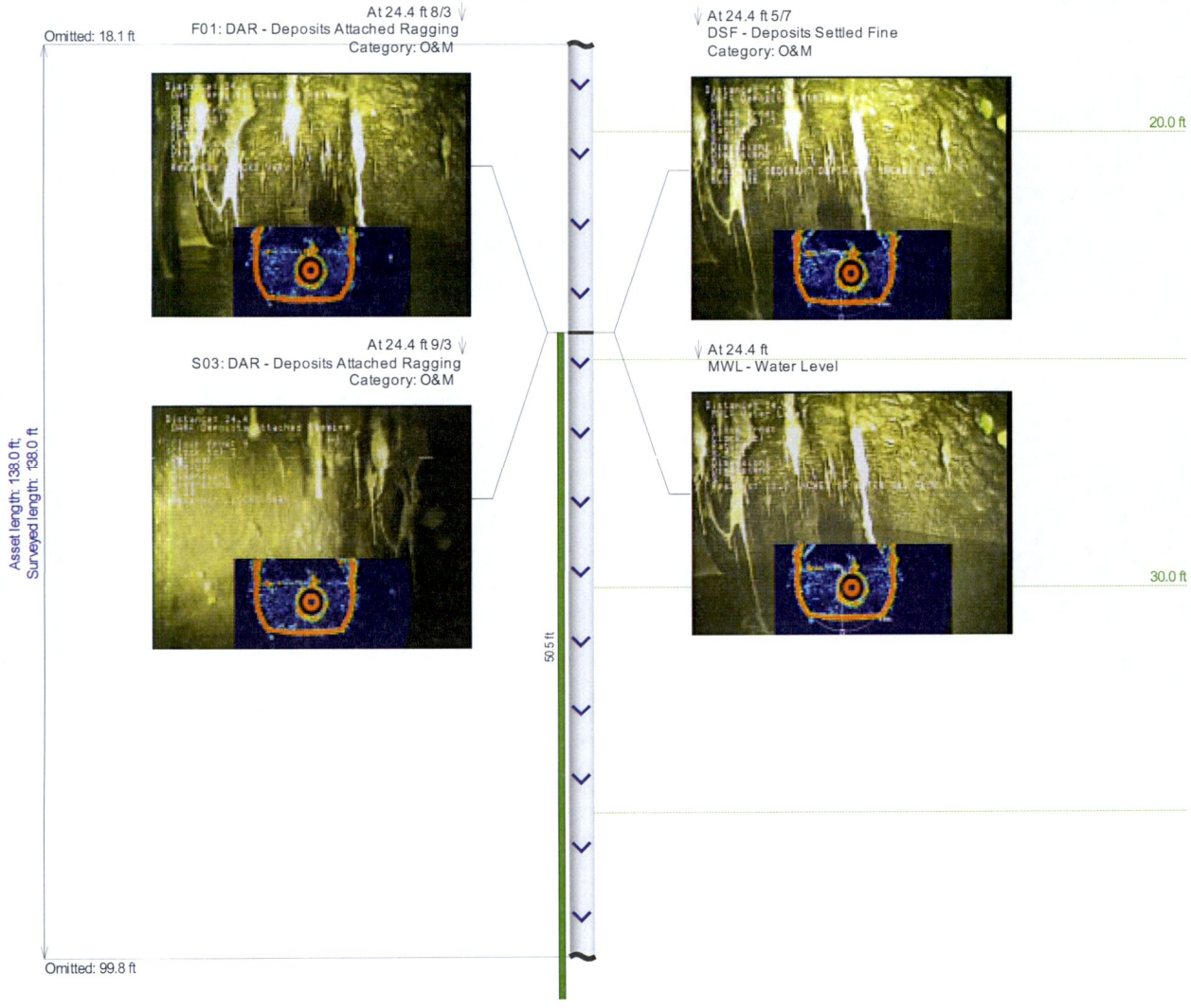
Pipe ID:	600_599A		Drainage Area:	MENA	
UpsMH / Depth:	600		Address / Street:	HWY 8 (OFF)	
DnsMH / Depth:	599A	10.9	Date / Time:	20191217102418	
Material:	RCP		Surveyor:	AHOWELLS_CES	
Shape:	C		Pre-Cleaning / Date:	N	
Joint Length:	8		Diameter:	18	
Pipe Length:	138		Length surveyed:	138	Downstream
Comment:	SURVEY COMPLETE				

Compliance EnviroSystems, LLC
1401 Seabord Drive
Baton Rouge, LA 70810
Phone: (225) 769-2933
www.ces-sses.com

COMPLIANCE ENVIROSYSTEMS

MENA, AR

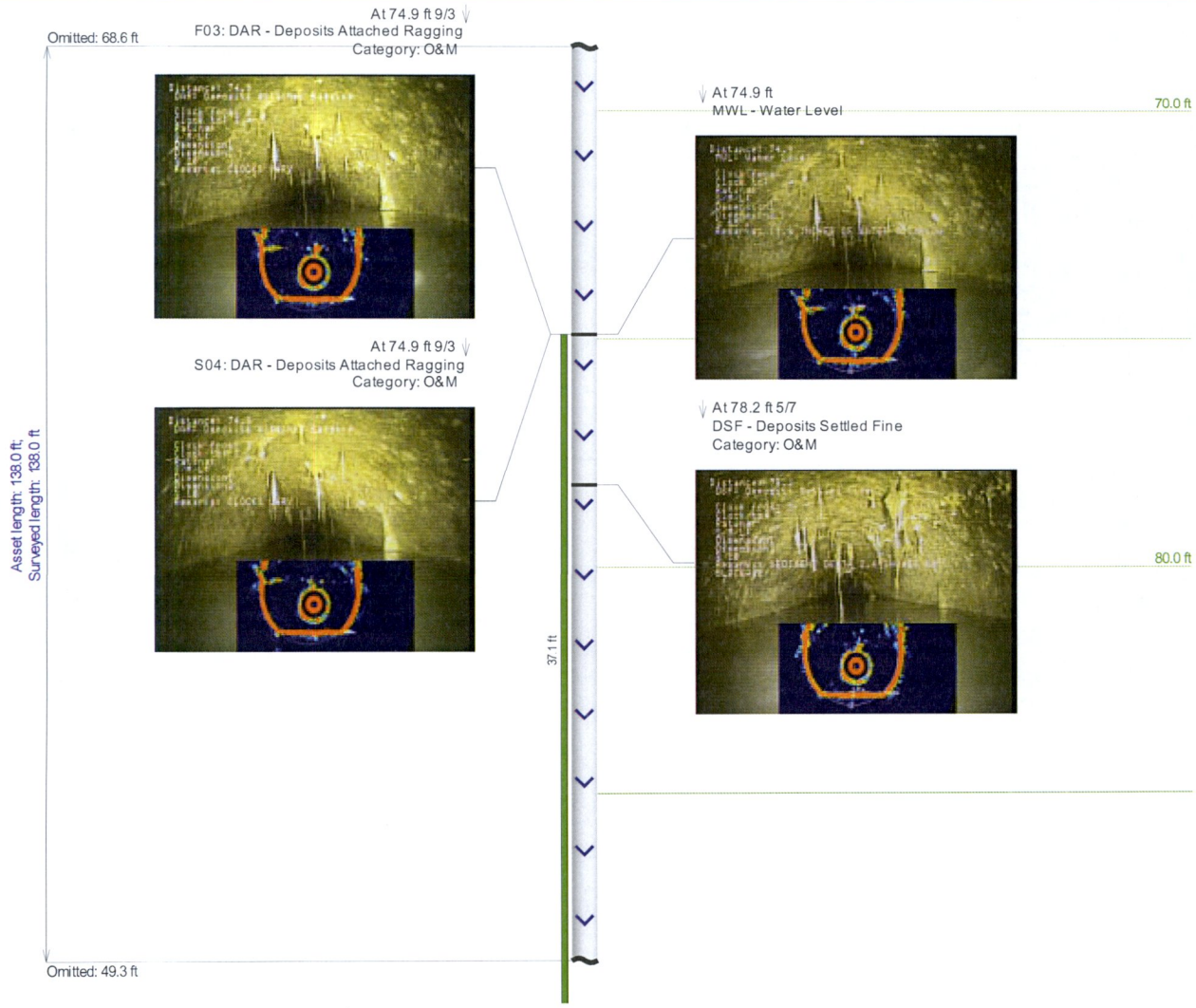
Pipe ID:	600_599A		Drainage Area:	MENA	
UpsMH / Depth:	600		Address / Street:	HWY 8 (OFF)	
DnsMH / Depth:	599A	10.9	Date / Time:	20191217102418	
Material:	RCP		Surveyor:	AHOWELLS_CES	
Shape:	C		Pre-Cleaning / Date:	N	
Joint Length:	8		Diameter:	18	
Pipe Length:	138		Length surveyed:	138	Downstream
Comment:	SURVEY COMPLETE				



Compliance EnviroSystems, LLC
1401 Seabord Drive
Baton Rouge, LA 70810
Phone: (225) 769-2933
www.ces-sses.com

MENA, AR

Pipe ID:	600_599A		Drainage Area:	MENA	
UpsMH / Depth:	600		Address / Street:	HWY 8 (OFF)	
DnsMH / Depth:	599A	10.9	Date / Time:	20191217102418	
Material:	RCP		Surveyor:	AHOWELLS_CES	
Shape:	C		Pre-Cleaning / Date:	N	
Joint Length:	8		Diameter:	18	
Pipe Length:	138		Length surveyed:	138	Downstream
Comment:	SURVEY COMPLETE				



Compliance EnviroSystems, LLC
1401 Seabord Drive
Baton Rouge, LA 70810
Phone: (225) 769-2933
www.ces-sses.com

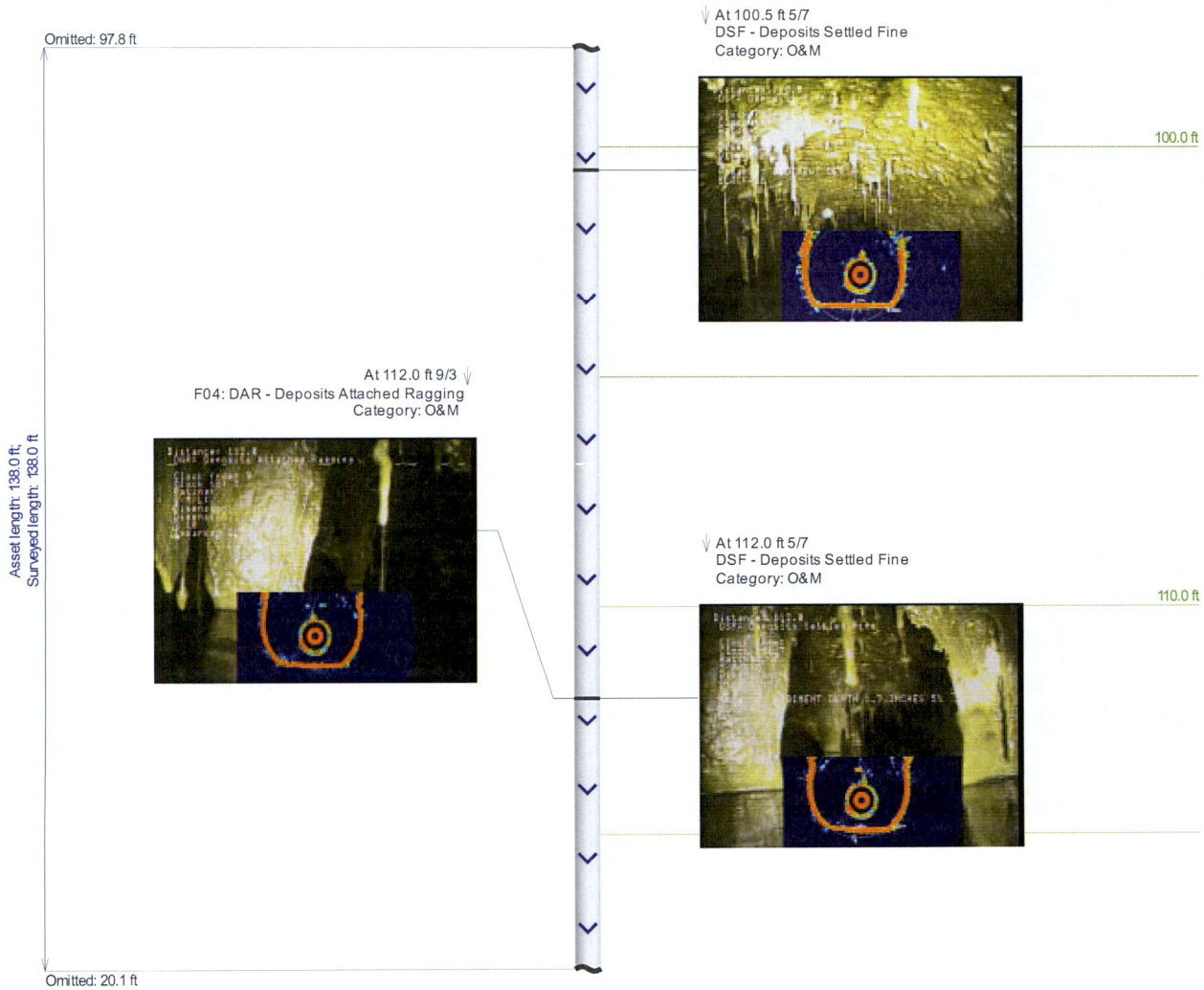
MENA, AR

Pipe ID:	600_599A		Drainage Area:	MENA	
UpsMH / Depth:	600		Address / Street:	HWY 8 (OFF)	
DnsMH / Depth:	599A	10.9	Date / Time:	20191217102418	
Material:	RCP		Surveyor:	AHOWELLS_CES	
Shape:	C		Pre-Cleaning / Date:	N	
Joint Length:	8		Diameter:	18	
Pipe Length:	138		Length surveyed:	138	Downstream
Comment:	SURVEY COMPLETE				

Compliance EnviroSystems, LLC
1401 Seabord Drive
Baton Rouge, LA 70810
Phone: (225) 769-2933
www.ces-sses.com

MENA, AR

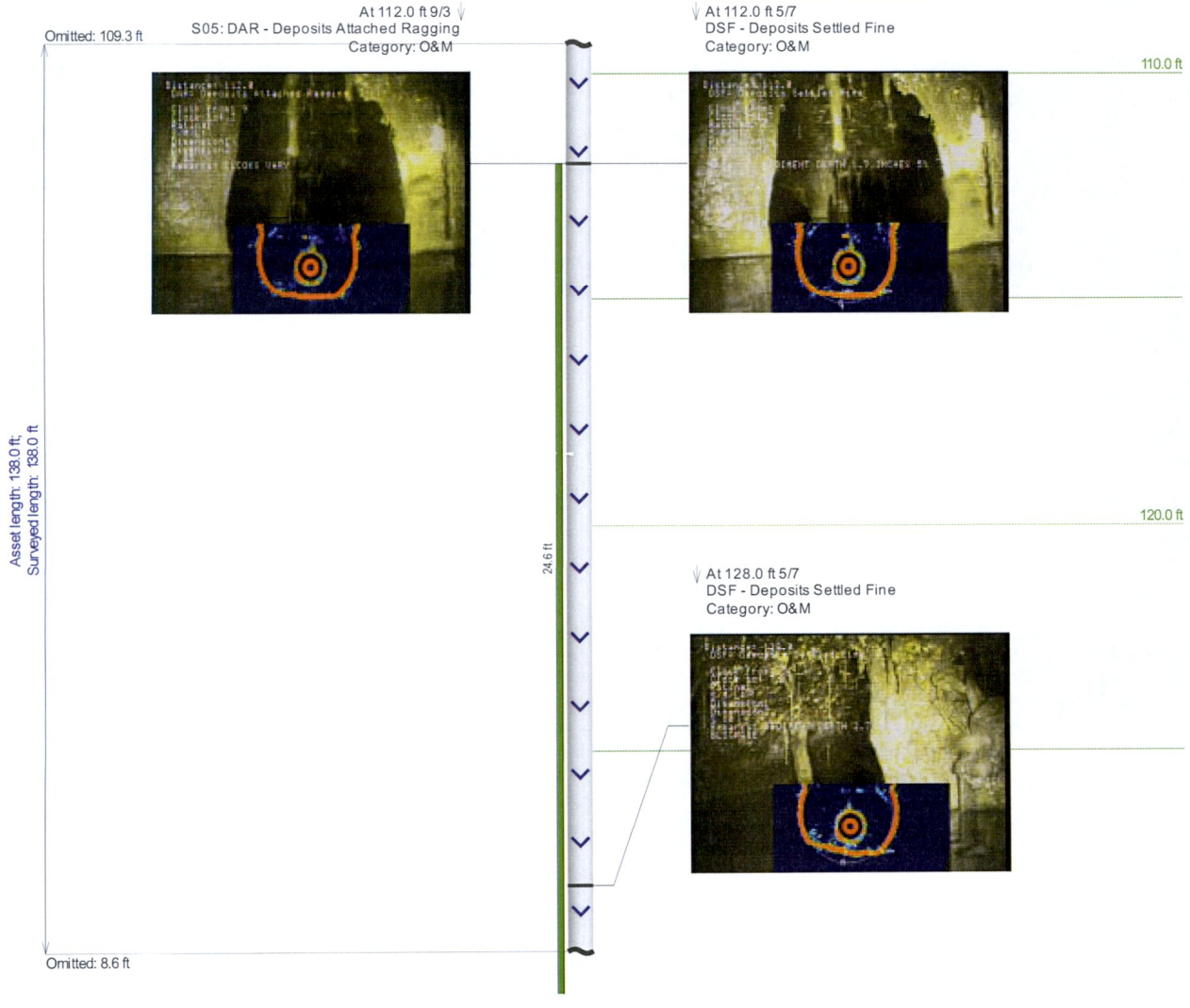
Pipe ID:	600_599A		Drainage Area:	MENA	
UpsMH / Depth:	600		Address / Street:	HWY 8 (OFF)	
DnsMH / Depth:	599A	10.9	Date / Time:	20191217102418	
Material:	RCP		Surveyor:	AHOWELLS_CES	
Shape:	C		Pre-Cleaning / Date:	N	
Joint Length:	8		Diameter:	18	
Pipe Length:	138		Length surveyed:	138	Downstream
Comment:	SURVEY COMPLETE				



Compliance EnviroSystems, LLC
1401 Seabord Drive
Baton Rouge, LA 70810
Phone: (225) 769-2933
www.ces-sses.com

MENA, AR

Pipe ID:	600_599A		Drainage Area:	MENA	
UpsMH / Depth:	600		Address / Street:	HWY 8 (OFF)	
DnsMH / Depth:	599A	10.9	Date / Time:	20191217102418	
Material:	RCP		Surveyor:	AHOWELLS_CES	
Shape:	C		Pre-Cleaning / Date:	N	
Joint Length:	8		Diameter:	18	
Pipe Length:	138		Length surveyed:	138	Downstream
Comment:	SURVEY COMPLETE				



Compliance EnviroSystems, LLC
1401 Seabord Drive
Baton Rouge, LA 70810
Phone: (225) 769-2933
www.ces-sses.com

MENA, AR

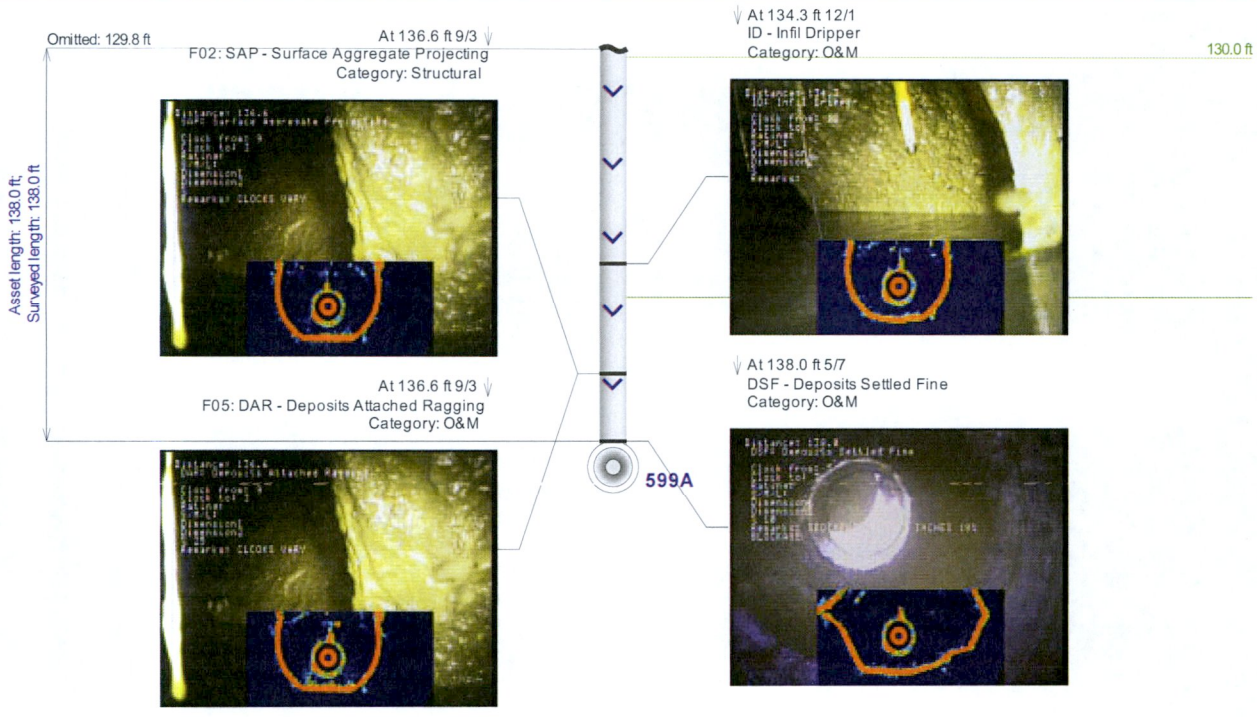
Pipe ID:	600_599A	
UpsMH / Depth:	600	
DnsMH / Depth:	599A	10.9
Material:	RCP	
Shape:	C	
Joint Length:	8	
Pipe Length:	138	
Comment:	SURVEY COMPLETE	

Drainage Area:	MENA	
Address / Street:	HWY 8 (OFF)	
Date / Time:	20191217102418	
Surveyor:	AHOWELLS_CES	
Pre-Cleaning / Date:	N	
Diameter:	18	
Length surveyed:	138	Downstream

Compliance EnviroSystems, LLC
1401 Seabord Drive
Baton Rouge, LA 70810
Phone: (225) 769-2933
www.ces-sses.com

MENA, AR

Pipe ID:	600_599A		Drainage Area:	MENA	
UpsMH / Depth:	600		Address / Street:	HWY 8 (OFF)	
DnsMH / Depth:	599A	10.9	Date / Time:	20191217102418	
Material:	RCP		Surveyor:	AHOWELLS_CES	
Shape:	C		Pre-Cleaning / Date:	N	
Joint Length:	8		Diameter:	18	
Pipe Length:	138		Length surveyed:	138	Downstream
Comment:	SURVEY COMPLETE				



Compliance EnviroSystems, LLC
1401 Seabord Drive
Baton Rouge, LA 70810
Phone: (225) 769-2933
www.ces-sses.com

MENA, AR

Pipe ID:	600_599A		Drainage Area:	MENA	
UpsMH / Depth:	600		Address / Street:	HWY 8 (OFF)	
DnsMH / Depth:	599A	10.9	Date / Time:	20191217102418	
Material:	RCP		Surveyor:	AHOWELLS_CES	
Shape:	C		Pre-Cleaning / Date:	N	
Joint Length:	8		Diameter:	18	
Pipe Length:	138		Length surveyed:	138	Downstream
Comment:	SURVEY COMPLETE				

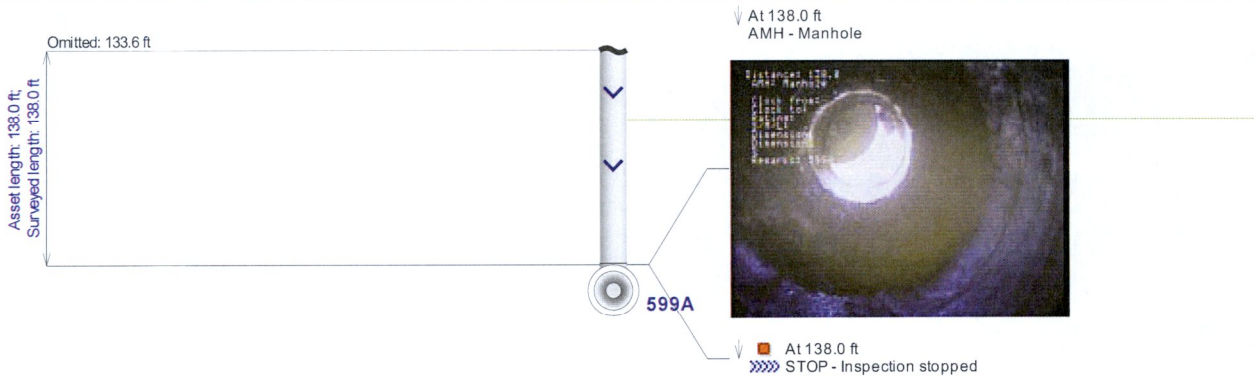


EXHIBIT 7

MANHOLE INSPECTION SUMMARY

Mena Water Utilities

MANHOLE INSPECTION SUMMARY

MH NUMBER	CONST TYPE	CONDITION	DEPTH	Sub-basin	DEFECTS	NOTES
unknown	brick	poor	4	2-B	gravel	behind old school on Mena St
unknown	brick	poor	4.5	3-A		2700 Cassell Drive
134	concrete	good	6	1-D		hwy 88b Mena Lake
135	concrete	good	6	1-D		Hwy 88
136	concrete	good	6	1-D		2571 Hwy 88 east
136A	concrete	good	5.5	1-D	pipe to cut out	Hwy 88 / 2571 btw drives
137	concrete	good	6	1-D	pipe to cut out	hwy 88 / across from 2371 driveway
137A	concrete	good	10	1-D		hwy 88 / mormon church
138	concrete	good	5	1-D		144 bonner circle (backyard)
139	concrete	good	9.5	1-D		112 bonner lane (in field)
139a	concrete	good		1-D		123 Bonner Circle
139b	concrete	good	6	1-D		136 bonner circle
141	concrete	good	4	1-D		155 bonner circle
141A	concrete	good	4	1-D		164 bonner circle
142	concrete	good		1-D		174 bonner circle
143	concrete	good	5	1-D		305 strandberg circle
144	concrete	good	3.5	1-D		2301 mama mia lane
146	concrete	good		1-D		2512 bonner circle
147	concrete	good	6.5	1-D		hwy 88 & hwy 89
148	concrete	good	8	1-D		hwy 88 & field in front of trlr park
179	concrete	good	5	1-B		polk 77 south of allens garage
180	concrete	good	4	1-B		polk 77 south of allens garage
183	concrete	good	4	1-B		Polk 77 & Kenwood
198	concrete	good	4	1-C		1830 Oaklawn backyard
199	concrete	good		1-C		1830 Oaklawn

MH NUMBER	CONST TYPE	CONDITION	DEPTH	Sub-basin	DEFECTS	NOTES
200	concrete	good	5	1-C		1859 Oaklawn
202	concrete	good		1-C		1820 Oaklawn
203	brick	poor	2.5	1-C	roots	1808 Oaklawn
203a	concrete	good	4	1-C		1816 Oaklawn
205	concrete	poor	5	1-C	visible I&I	Rogers Addition Entrance
210	concrete	good	6	1-C		304 Lakewood / backyard
211			4	1-C		210 Lakewood backyard
213	concrete	good	4	1-C		1806 Wayne Circle (in circle)
244	concrete	good	7	1-A		sonic / hwy 71 s
245	concrete	good	4	1-D		hwy 71 btw exxon & sonic
246	concrete	good	5	1-D		901 hwy 71 / exxon
247	concrete	good	5	1-D		hwy 71 walgreens
248	concrete	good	3	1-D		behind walgreems
249	brick	good	7.5	1-D	coated	703 e behind cleaners
250	concrete	good	6.5	1-D		sonic / hwy 71 n
252	brick	fair	7	1-A		In U-Lock-it
255	concrete	good	20	1-A		morrow st / behind dr pepper on hill
256	concrete	good	11	1-A		davis bro auto / behind hospital
257	brick	fair	8	1-A		hospital by heli pad
257a	concrete	good	3	1-A		carlos rocha / mena surgery clinic
257b	concrete	good	5	1-A		davita dialysis
258	concrete	good	7	1-A	near ditch?	college & crestwood by street
258a	concrete	good	8	1-A		college & crestwood by parking lot
259	brick	fair	7.5	1-A		Near Morrow St & U-Lock-it
260	brick	good	6.5	1-A	coated	600 morrow st
261	brick	fair	6	1-A		Morrow St near ballfield
262	brick	fair	7	1-A		Morrow St
262a	brick	good	6	1-A	coated	Morrow st / e side of rd
265	concrete	fair		1-A	RAISE MH	SW of armory
267	concrete	good	6.5	1-A		Field behind armory
268	concrete	fair		1-A	RAISE MH	east of RR near creek
272	brick	good	7	1-A	coated / debris	walmart grocery side back of store

MH NUMBER	CONST TYPE	CONDITION	DEPTH	Sub-basin	DEFECTS	NOTES
305	brick	fair	6.5	2-J		Eagle Gap west of PCDC
306	brick	good	5	2-J		eagle gap & blake
306A	brick	fair	4	2-J		307 Blake Dr
306b	brick	fair	3.5	2-J	debris	318 Blake Dr
307	brick	fair	6.5	2-J		Eagle Gap(601P)
308	brick	fair	9.5	2-J		Cherry & Eagle Gap
308B	brick	fair	6	2-J		Eagle Gap & Jenny Lind
309	concrete	good	7	2-J		cherry st south of cruizers
310	concrete	good	6	2-J		hwy 71 & Cherry
311	concrete	good	6	2-J		hwy 71 cruizers
314	concrete	good	2	2-J		auto zone
315	brick	fair	5.5	2-J		Eagle Gap behind bank tellers
316	brick	fair	5	2-J	debris	Eagle Gap & Scott St
317	brick	fair	5.5	2-J		Eagle Gap behind southern auto
332	concrete	good	4	2-J	broken lid	1200 1st st / backyard near treeline
349	brick	fair	3	2-H		Martin btw 1st & 2nd
352	brick	fair	3.5	2-H	debris	behind 10 min Lube in alley
364	brick	poor	3.5	2-H	*Rehabbed	JB Supply
375	brick	poor	3	2-H		behind mena mattress
376	brick	poor	3.1	2-H	*Rehabbed	DeQueen & First Financial
378	brick	poor	3.5	2-H	gravel	Gilham & Elshire
379	brick	poor	3.5	2-H		Dequeen & Gilham
387	brick	fair	6	2-J		1st & Gillham
388	brick	fair	6.5	2-J		1st & Martin St
391	concrete	good	8.5	2-J	new	Jansen St / AT&T pedestal 282 by RR
392	concrete	good	8.5	2-J	new	Jansen St / AT&T pedestal 282 by RR
393	brick	fair	9.5	2-C	part coated	Jansen 106
396	brick	fair	6.5	2-C	coated / gravel	Cantebury & Maple

MH NUMBER	CONST TYPE	CONDITION	DEPTH	Sub-basin	DEFECTS	NOTES
404	brick	fair	8	2-C	part coated	maple & 1st
406	brick	poor	5.6	2-C	*Rehabbed	1st & Church
407	concrete	good	7	2-C		91 Church
445	concrete	good			clean out brush	behind foundry
450	brick	poor	4	2-A	*Rehabbed	Maple by Ligon Oil
452	brick	poor	3	2-A	*Rehabbed	Church behind old School
455b	brick	poor	5	2-B	*Rehabbed	Sampson & Grandview Heights
463	brick	poor	4	2-B		109 Mena St
464	brick	poor	4.5	2-B	gravel	Magnolia St and Mena St
467e	concrete	good	6	2-B		209 grandview heights?
471	brick	poor	4.5	2-B		603 Dewey
474	brick	poor	6	2-B	*rehabbed	800 Sampson
475	brick	poor	5.5	2-B		708 Warner behind house
490	brick	poor	3.5	2-A		502 Port Arthur in Road
490b	brick	poor	3.5	2-A		502 Port Arthur in Alley
497	brick	poor	3	2-A		8th & Walnut

MH NUMBER	CONST TYPE	CONDITION	DEPTH	Sub-basin	DEFECTS	NOTES
508	brick	poor	3	2-E		300 11th St on Hickory
511	brick	poor	3	2-E		1309 Hickory
516	brick	poor	4.5	2-D		Church & Tyler St
546	brick	poor	4	2-A		Alley behind 200 10th St
547	brick	poor	2	2-A		Magnolia behind 101 9th St in Alley
550	brick	poor	4	2-A		Alley behind Catholic Church
563a	concrete	good	6.5	2-E		Reine & Reeves (NE CORNER)
563b	concrete	good	5.5	2-E		Reine & Reeves (NW CORNER)
564	brick	good		2-E		Reine & Hamilton
566	concrete	good	4	2-E		1709 miller st
578	brick	poor	12.5	2-F		9th St behone old D.H.S.

MH NUMBER	CONST TYPE	CONDITION	DEPTH	Sub-basin	DEFECTS	NOTES
606	concrete	good	6	8-A		139 Hwy 8
607	concrete	good	7	8-A		108 Hwy 8
608	concrete	good	6	8-A		Hwy 8 near creek x-ing
609	concrete	good	4	7-A		toward airport near creek
610	concrete	good		7-A		toward airport near creek
611	concrete	good	6	7-A		toward airport near creek
612	concrete	good	5.5	7-A		toward airport near creek
613	concrete	good	4.5	7-A		CR 627
614a	concrete	good	5	7-A		CR 627
614	concrete	good	5	7-A		CR 627
615	concrete	good		7-A		Maple Ln / Amos aircraft painting
616	concrete	good	7.5	7-A		Priority Aviations
617	concrete	good	5	7-A		field near airport (north side)
618	concrete	good	4	7-A	broke ring	runway & rose aircraft service
620	concrete	good	6	7-A	ring offset	runway
621	concrete	good	5	7-A	ring offset	runway
622	concrete	good	7	7-A		runway
623	concrete	good	7	7-A		Airport Lane & runway
623a	concrete	good	4.5	7-A		runway
623b	fiberglass?	good	5	7-A		runway
623c	concrete	good	6.5	7-A		runway
623d	concrete	good	6	7-A		runway near college welding shop
623e	concrete	good	7	7-A		parking lot of college welding shop
623f	concrete	good	7	7-A		Corn of Bldg at Max Hall Lane
623g	concrete	good	7	7-A	ring is cracked	S of Mav Hall Ln
625	concrete	good	6	7-A		980 S Airport Lane
625a	concrete	good	4.5	7-A	review	132 Airport Lane
626	concrete	good	4.5	7-A		Airport Lane and Planeview
627	concrete	good	5	7-A		Airport Lane & Aviation Lane
628	concrete	good		7-A		120 Aviation Lane

MH NUMBER	CONST TYPE	CONDITION	DEPTH	Sub-basin	DEFECTS	NOTES
631	concrete	good	6.5	6-B		2510 Hwy 8
632	brick	poor	3	6-B	roots	211 Jolie Lane
633	brick	fair	5	6-B		203 Jolie Way
634	brick	poor	2.5	6-B	clogg	Jolie Way & Lorelei Ave
636	brick	fair	4	6-B		313 Lisa Way
636a	concrete	good	4	6-B		313 Lisa Way (s side)
637	concrete	good	7	6-B		entrance to heavenly acres
647a	concrete	good	5	6-B		
648	concrete	fair	4	6-B		
651	concrete	good	6	6-B		Hidden Valley & Oak View
651a	concrete	fair	4.5	6-B	roots	s of hidden valley rd
652	concrete	good	5	6-B		1700 Hidden Valley
652a	concrete	good	5	6-B		1804 Hidden Valley
654	concrete	good	4.5	6-B		2106 valley view
657	concrete	good	4	6-B		1900 Valley View
658	concrete	good	4	6-B		1902 Valley View
659	concrete	good	5	6-B		1805 Valley View
660	concrete	good	5	6-B		1804 Valley View
661	concrete	poor	5	6-B	visible I&I	1704 Valley View
673	concrete	fair		6-A	raise	west of Hwy 8 & Ranson Rd along drive
674	concrete	good	8	6-A		Ransom rd & Hwy 8
676	concrete	good	9	6-A		Ransom rd & Morgan
677	concrete	good	8	6-A		1600 Morgan
677A	concrete	good	5.5	6-A		1502 Morgan
678	concrete	good	11	6-A		Ransom Rd & Faye
679	concrete	good	10.5	6-A		1511 Faye
680	concrete	good	5	6-A		1503 Ransom
681	concrete	good	4	6-A		1609 Ransom
698	concrete	good	8	6-A		cherry & jerry gaston

MH NUMBER	CONST TYPE	CONDITION	DEPTH	Sub-basin	DEFECTS	NOTES
701	concrete	good	7	6-A		cherry st & field across from Jerry Gastor
737	concrete	good	4	5-D		Amsterdam & Bixler
745	concrete	good	4	5-D		1809 Amsterdam
747	concrete	good	4.5			Ridge & Amsterdam
748	concrete	good	8	5-D		Ridge & Whispering Pines
749	brick	good	4	5-D	coated	1600 Whispering Pines
753	concrete	good	6	5-D		Amsterdam near Elev Tank
756	brick	poor		5-F	roots	Sherwood Forest
757	brick	poor		5-F	roots	Sherwood Forest
757B	brick	poor		5-F	roots	Sherwood Forest
764A	brick	fair	8	5-C		700 Meadow Brooke
764B	brick	fair	6	5-C	roots	708 Meadow Brooke
764C	brick	poor	5	5-C	roots	718 Meadow Brooke
766	concrete	good	7	5-C		Ridge Rd east side of channel
766a	concrete	good	8	5-C		Ridge & Armour
776	brick	fair	5.5	5-C	roots	Bethesda North of 71 by church
789	brick	fair	5.5	5-C		713 Ridge behind house
790	brick	poor	11	5-C	roots/clogg	
791	brick	fair	8.5	5-C	part. Coated	800 Ridge Rd
792	brick	fair	5.5	5-C	part. Coated	Ridge & Bethesda
793	brick	fair	6	5-C	part. Coated	1604 Bethesda
794	concrete	good	5	5-C		1156 S 71 behind chopping blk in woods
796	brick	fair	4.5	5-C	part. Coated	1011 Ridge Rd
798	concrete	good	4.5	5-B	gravel	1709 Bethesda
798a	concrete	good	4.5	5-B		1800 Bethesda
799	concrete	good	10	5-B		Bethesda & Lakeside

MH NUMBER	CONST TYPE	CONDITION	DEPTH	Sub-basin	DEFECTS	NOTES
800	concrete	good	6	5-B		809 Lakeside
801	concrete	good	4	5-B		914 Lakeside
802	concrete	good	3	5-B		Lakeside & Walker
803	concrete	good	5	5-B		Walker btw Houses on s side of rd
804	concrete	good	4	5-B		1005 Lakeside
805	concrete	good	3	5-B		1013 Lakeside
806	concrete	good	4	5-B		Ridge & Lakeside
807	concrete	good	5	5-B		1182 S Hwy 71 (back of bldg)
809	concrete	good	6.5	5-B		1118 S Hwy 71
809a	concrete	good	8	5-B		1179 S Hwy 71
810	concrete	good	6	5-B		1167 S Hwy 71
811	concrete	good	5	5-B		1161 S Hwy 71
812	concrete	good	5	5-B		rd btw car wash & select reality
813	concrete	good	4	5-B		1153 S Hwy 71
850	brick	poor	4.5	5-F	roots	2111 Cordie in backyard
855	concrete	good	5	5-F		in woods
857	concrete	good	4	5-B		S Reine
858	concrete	good	4	5-A		S Reine w ROW
872	brick	poor	5.5	5-A		1405 Wildwood in grass circle
873	concrete	good	10.5	4-B		110024 S Reine
874	concrete	good	4.5	4-B		1500 S Hwy 71 (back)
875	concrete		4.5	4-B	raise mh	1500 S Hwy 71 (back)
876	concrete	good	4.6	4-B		field near propane store
877	concrete	good	8	4-B		1402 S Hwy 71 (south off private dr)
880	concrete	good		4-B		1812 Cordier Dr
881	concrete	good	5	4-B		1509 Hwy 71 S
883	brick	fair	5	4-B		1401 S 71
885	concrete	good	6	4-B		Reine & Hwy 375
886	concrete	good	6	4-B		1519 Reine (near woodline)
887			4.5	4-B		Hwy 375 (150' from Reine)
889	concrete	good	4	4-B		1511 Reine (off private drive)
894	concrete	good	2.5	4-B		1903 Thaila
897	concrete	good	3	4-B		1401 Eve St
898	concrete	good	6	6-B		1301 Eve / Cemetery

MH NUMBER	CONST TYPE	CONDITION	DEPTH	Sub-basin	DEFECTS	NOTES
900	brick	poor	7	4-B	roots	1415 Tyler backyard inside tree line
901	brick	fair	3	4-B		1415 Tyler
902	brick	fair	4.5	4-B		1408 Tyler
903	concrete	good	6	4-B		Reine & Texas
904	brick	fair	6	4-B		1309 Texas
905	brick	fair		4-B		1300 Texas
907	brick	fair	7	4-B		1301 Reine
907A	concrete	good	7.5	4-B		Reine & Thalia
907B	concrete	good	5.5	4-B		1503 Reine
907C	concrete	good	5	4-B		1604 Reine
908	concrete	good	6	2-F		1512 Oak Grove
913	brick	poor	9	2-F	roots	100 yrds past Cole St in Woods
915	brick	fair	4.5	2-F		1509 Cole Ave
930	brick	fair	7	4-B		1201 Reine
931	brick	fair	9	4-B		1101 Reine
932	brick	fair	12.5	4-A		spring & Reine
933	brick	fair	14	4-A	coated	spring & texas
934	brick	fair	8.6	4-A	coated	909 Texas (backyard)
935	brick	fair	10.5	4-A		Reeves & Polk
936	brick	fair	5.5	4-A	partiall clogg	1809 Reeves
937	brick	fair	7	4-A	coated brick	1903 Reeves
938	brick	fair	8	4-A		Eve & Reeves
939	brick	fair	5.5	4-A		Eve & Hamilton
940	brick	fair	6	4-A		Eve & Miller
945	brick	fair	12.5	4-A		Hamilton & Polk
946	brick	good	5	4-A	gravel	1604 Hamilton
947			2.5	4-A		1809 Reeves (backyard)
949	concrete	good	3.5	4-A		1809 Hamilton
950	concrete	good	4.5	4-A		1808 Miller
951	concrete	good	4.5	4-A	gravel	1910 Miller
953	concrete	good	7.5	4-A		Miller & Polk St
954	brick	good	5	4-A	coated	1901 Pineview Circle
962	brick	poor	4	2-A		Sutherland & Jones
963	brick	poor	5	2-A		304 Jones
973	brick	poor	4	2-A		204 Gann
974	brick	poor	5	2-A		213 Gann
975	brick	poor	5.5	2-A		Reine & Bolton
976	brick	poor	4	2-A	*Rehabbed	N Reine & Missouri
981	brick	poor	5	3-A		Polk & Hines St
982	brick	poor	5	3-A	seepage	Parks & N Polk
985	concrete	poor	2	2-A	*Rehabbed	523 Rodgers
991	brick	poor	3	3-A		Hines & Locust St

MH NUMBER	CONST TYPE	CONDITION	DEPTH	Sub-basin	DEFECTS	NOTES
1024	concrete	good	20	3-A		2611 Ozark (backyard)
1025	concrete	good	19	3-A		2700 Ozark
1028	concrete	good	19.5	3-A		2706 Miller
1029	concrete	good	6	3-A	Replaced Lid	Miller & Ozark
1030	concrete	good	15	3-A		In Field btw Miller & Reeves
1032	concrete	good	16.5	3-A		Vermillion & Reeves
1035	brick	fair	3.5	3-A		Miller & Blake
1036	brick	good	14	3-A	coated	Vermillion just n of Hensley
1038	brick	good	10	3-A	coated	Vermillion near Hensley
1038A	brick	fair	3.5	3-A	gravel	2610 Hensley Ave
1039	brick	good	7	3-A	coated	Vermillion
1041	brick	good	8	3-A	coated	alley between hensley & averitt
1041a	brick	good	4	3-A	coated	alley near vermillion / averitt / hensley
1042	brick	fair	3.5	3-A		Alley between Hensley & Reeves
1043	concrete	good	6	3-A		Averitt & Vermillion
1044	concrete	good	5.5	3-A		2504 Averitt
1046	concrete	good	7.5	3-C		2504 Averitt
1047	concrete	good	7	3-B		Averitt & Finks
1047C	concrete	good	10	3-B		1202 Brandon
1049	concrete	good	5	3-B		2007 Averitt
1050	concrete	good	8	3-B		Reeves & Finks
1058	concrete	good	3	3-B		2102 Reeves
1069	concrete	good	5	3-B		Eve N of Sutherland
1070	concrete	good	8	3-C		near creek
1072	concrete	good	8	3-C		end of crescent across creek
1073	concrete	good	6	3-C		end of crescent st
1075	concrete	good	3	3-C		1119 Crescent Dr
1076	concrete	good	2.5	3-C		1104 Cresent Dr
1079	concrete	good	7	3-C		1302 Finks
1079A	concrete	good	6	3-C		1302 Finks (across st in field)
1080	concrete	good	5	3-C		1310 Finks
1096	concrete	good	6.5	3-C		1403 Flora St
1092	concrete	good	5			1400 W Boundary
1097	concrete	good	5.5	3-C		3617 hwy 375
2011	concrete	fair	6	1-A	*Rehabbed	208 Dogwood West Side
2012	concrete		6.5	1-A	*Rehabbed	106 Dogwood

EXHIBIT 8

SEWER BASIN CONDITION SUMMARY

SEWER BASIN CONDITION SUMMARY

MENA WATER UTILITIES

(1-4 Low to High)

BASIN ID	MANHOLE CONDITION AVG	SEWER MAIN CONDITION AVG	FLOW TEST STUDY RESULT	SMOKE TESTING LEAKS	OVERALL AVG. SCORE
1-A	1	2	3	3	**2.25**
1-B	1	1	1	3	**1.50**
1-C	1	2.5	N/A	1	**1.50**
1-D	1	4	N/A	1	**2.00**
2-A	2	4	3	2	**2.75**
2-B	2	4	3	2	**2.75**
2-C	2	4	3	2	**2.75**
2-D	2	4	3	1	**2.50**
2-E	2	4	2	1	**2.25**
2-F	1.5	2.5	N/A	2	**2.00**
2-G	2	4	1	1	**2.00**
2-H	2	4	4	2	**3.00**
2-J	2	3.5	3	2	**2.63**
3-A	1.5	4	4	2	**2.88**
3-B	1.5	3	4	2	**2.63**
3-C	1	1.5	N/A	1	**1.17**
3-D	1	1.5	N/A	1	**1.17**
4-A	2	3.5	2	1	**2.13**
4-B	1.5	3	N/A	2	**2.17**

SEWER BASIN CONDITION SUMMARY

MENA WATER UTILITIES

(1-4 Low to High)

BASIN ID	MANHOLE CONDITION AVG	SEWER MAIN CONDITION AVG	FLOW TEST STUDY RESULT	SMOKE TESTING LEAKS	OVERALL AVG. SCORE
5-A	1	1	N/A	1	**1.00**
5-B	1	2	N/A	1	**1.33**
5-C	1.5	3	3	1	**2.13**
5-D	1.5	2.5	1	1	**1.50**
5-E	1	1	N/A	1	**1.00**
5-F	1	2	N/A	1	**1.33**
6-A	1	2	1	4	**2.00**
6-B	1	1.5	N/A	4	**2.17**
7-A	1	1	N/A	4	**2.00**
8-A	1	4	N/A	1	**2.00**

EXHIBIT 9

CAPITAL IMPROVEMENT PLAN

MENA WATER UTILITIES

Captial Improvement Recommenations for Sewer Collection System Rehabilitation

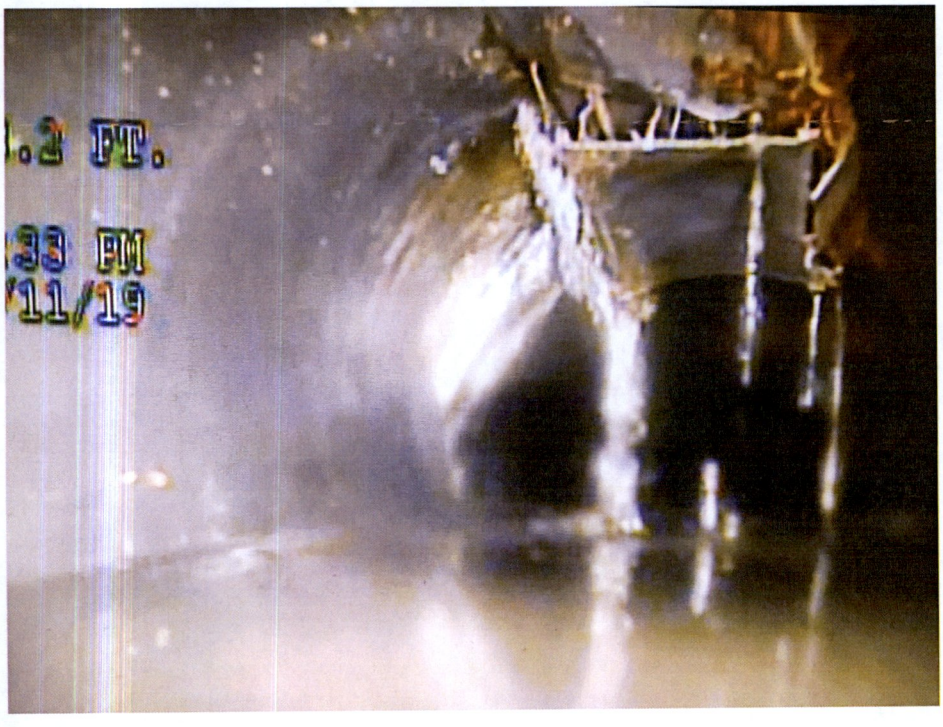
ITEM	DESCRIPTION	PRELIMINARY BUDGET
A	**Sub-basin 2-H**	
1	Replacement of 8" Main from MH 356 to MH 358 (620 LF)	$40,000.00
2	Replacement of 8" Main from MH 354 to MH 371 (600 LF)	$70,000.00
3	Replacement of 8" Main from MH 354 to MH 366 (840 LF)	$70,000.00
4	Replacement of 8" Main from MH 368 to MH 370 (400 LF)	$40,000.00
5	Replacement of 8" Main from MH 373 to MH 376 (410 LF)	$50,000.00
6	Replacement of 8" Main from MH 373 to MH 382 (1,900 LF)	$170,000.00
	Sub-Total	**$440,000.00**
B	**Sub-basin 3-A**	
1	Replacement of 8" Main from MH 1043 to MH 1031 (1,000 LF)	$80,000.00
2	Replacement of 8" Main from MH 1014 to MH 990 (2,250 LF)	$180,000.00
3	Replacement of 8" Main from MH 990 to MH 987 (620 LF)	$50,000.00
4	Replacement of 8" Main from MH 990 to MH 993 (1,320 LF)	$106,000.00
5	Replacement of 8" main from MH 980 to MH 983 (1,000 LF)	$80,000.00
	Sub-Total	**$496,000.00**
C	**Sub-basin 2-A**	
1	Replacement of 8" Main from MH 964 to MH 985 (2,700 LF)	$220,000.00
2	Replacement of 8" Main from MH 491 to MH 964 (3,100 LF)	$248,000.00
3	Replacement of 8" Main from MH 540 to MH 554 (1,700 LF)	$136,000.00
4	Replacement of 12" Main from MH 45 to MH 578 (2,500 LF)	$300,000.00
	Sub-Total	**$904,000.00**
D	**Sub-basin 2-B**	
1	Replacement of 8" Main from MH 453 to MH 457 (1,000 LF)	$80,000.00
2	Replacement of 8" Main from MH 460 to MH 478 (2,000 LF)	$160,000.00
	Sub-Total	**$240,000.00**
E	**Sub-basin 2-C**	
1	Replacement of 8" Main from MH 393 to MH 416 (1,800 LF)	$144,000.00
2	Replacement of 12" Main from MH 391 to MH 393 (380 LF)	$41,800.00
	Sub-Total	**$185,800.00**
F	**Sub-basin 3-B**	
1	Replacement of 8" Main from MH 1047 to MH 1052 (2,000 LF)	$160,000.00
	Sub-Total	**$160,000.00**
G	**Sub-basin 1-D, 8-A**	
1	Replacement of 18" Main at creek crossings (4,000 LF)	$600,000.00
2	Replacement of 24" Main at creek crossings (400 LF)	$64,000.00
	Sub-Total	**$664,000.00**
H	**Sub-basin 5-C**	
1	Replacement of 8" Main from MH 771 to MH 780 (830 LF)	$91,300.00
	Sub-Total	**$91,300.00**
	TOTAL	**$3,181,100.00**

EXHIBIT 10

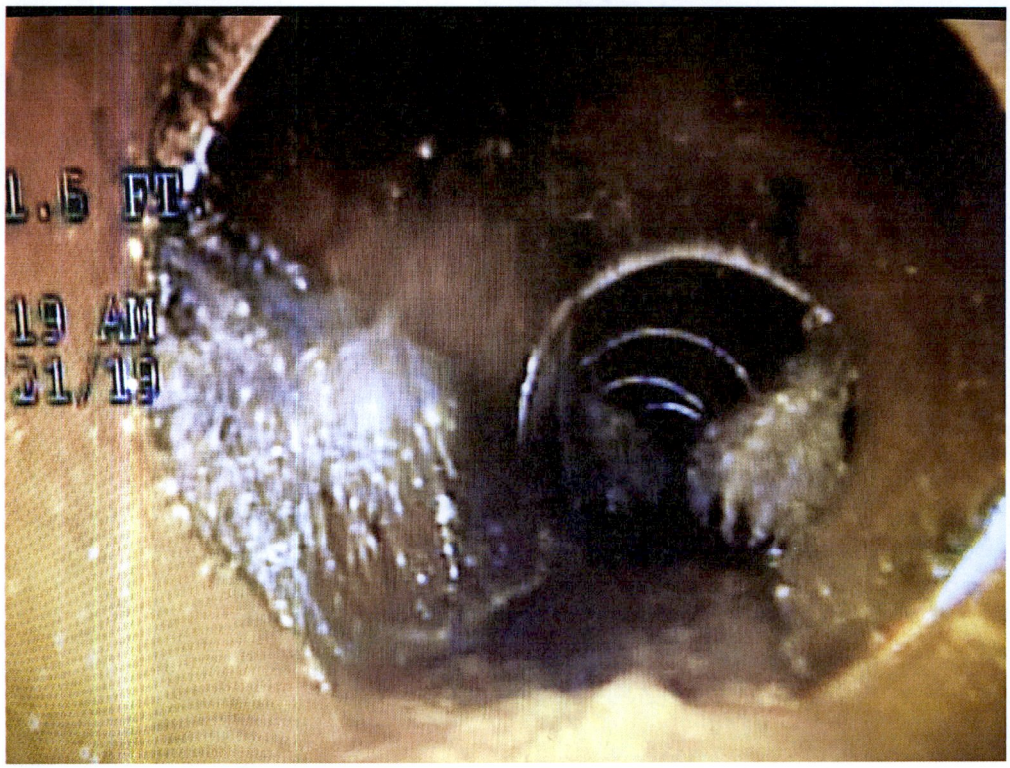
COLLECTION SYSTEM PICTURES

Brick Manhole Types in the Collection System (age and condition varies).

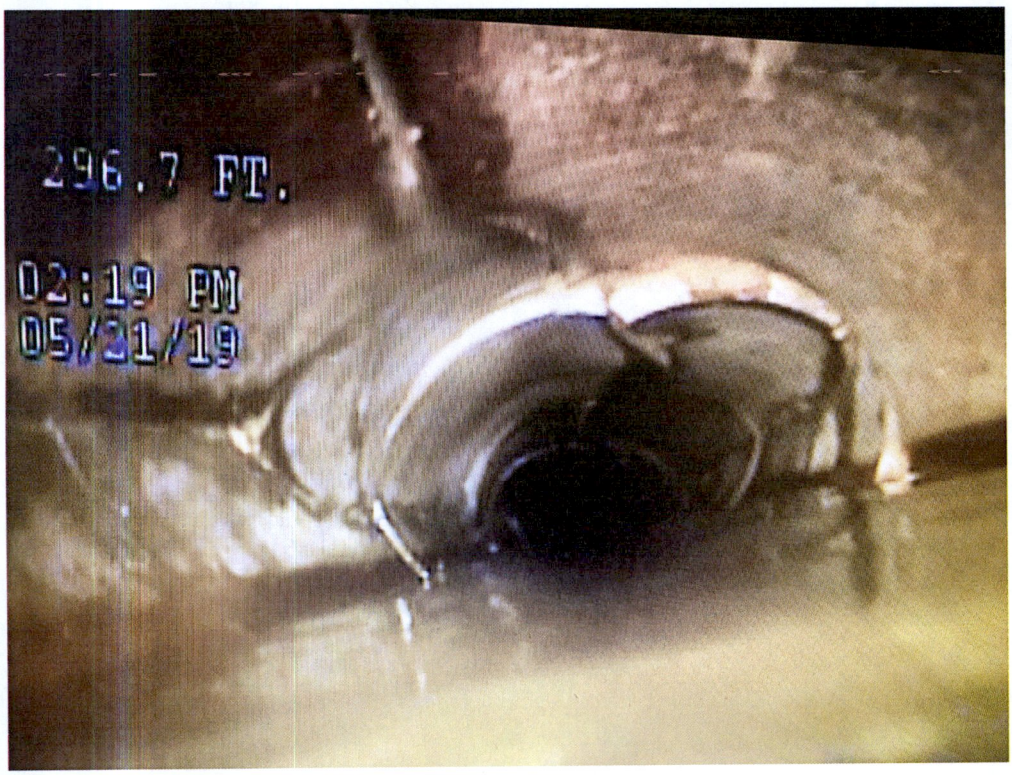
Service Line Tap into Truss pipe sewer Main, note the gap and failure to seal the joint



A break in the top of a Truss pipe sewer main, groundwater infiltration is occurring.



Clay Sewer Main with root intrusion at each joint



Clay Sewer Main with broken pipe, severely deformed, likely to collapse.

Typical Private Service Line Leaks that are easily corrected.

Private Service Line leaks that will require additional effort for repair.

COLLECTION SYSTEM MAPPING

MENA WATER UTILITIES

MENA, ARKANSAS

January 2020

Prepared by:

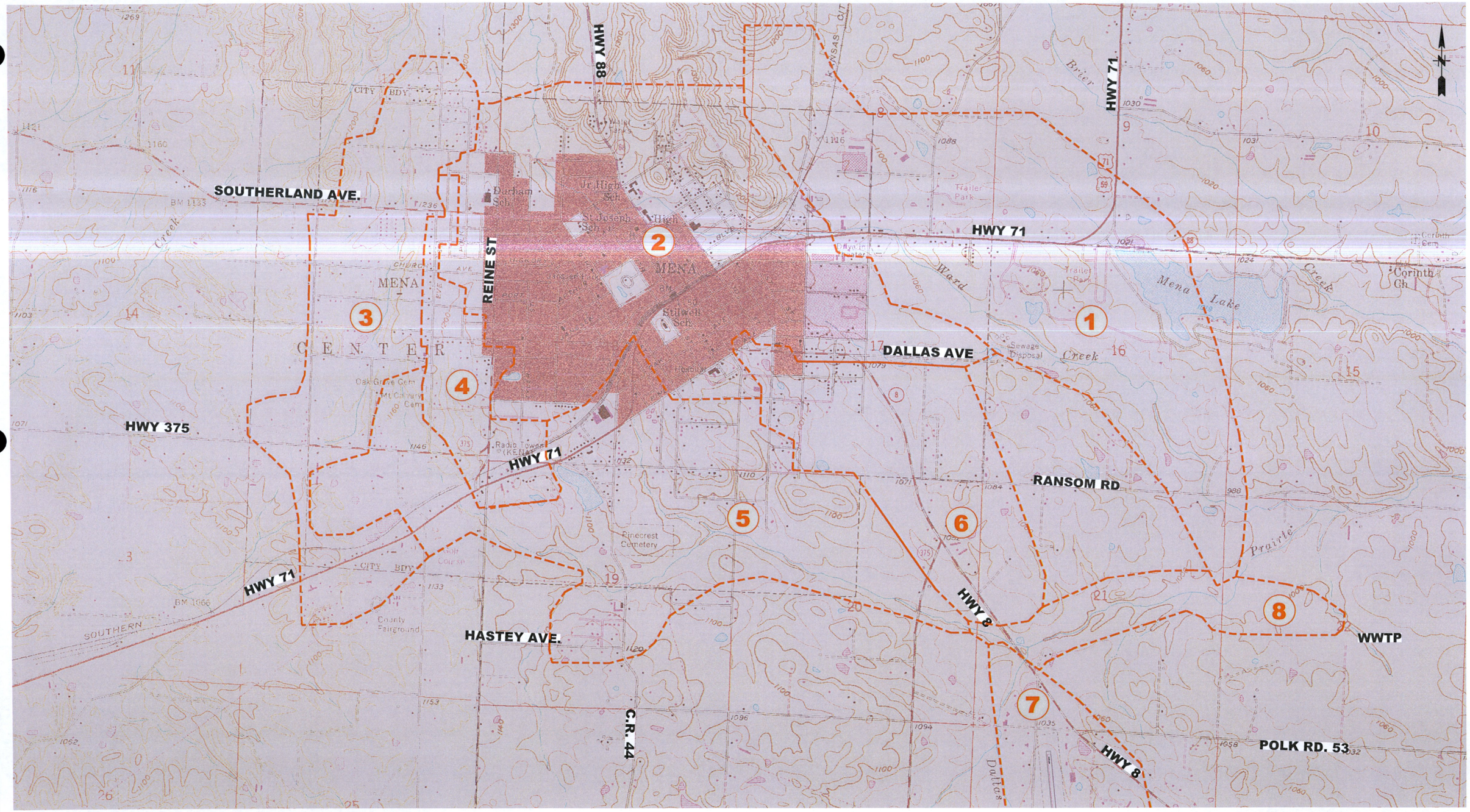
A.L. FRANKS ENGINEERING

118 East Broad Street

Texarkana, Arkansas 71854

Ph: 870-216-1906

Certificate of Authorization No. 1681



Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

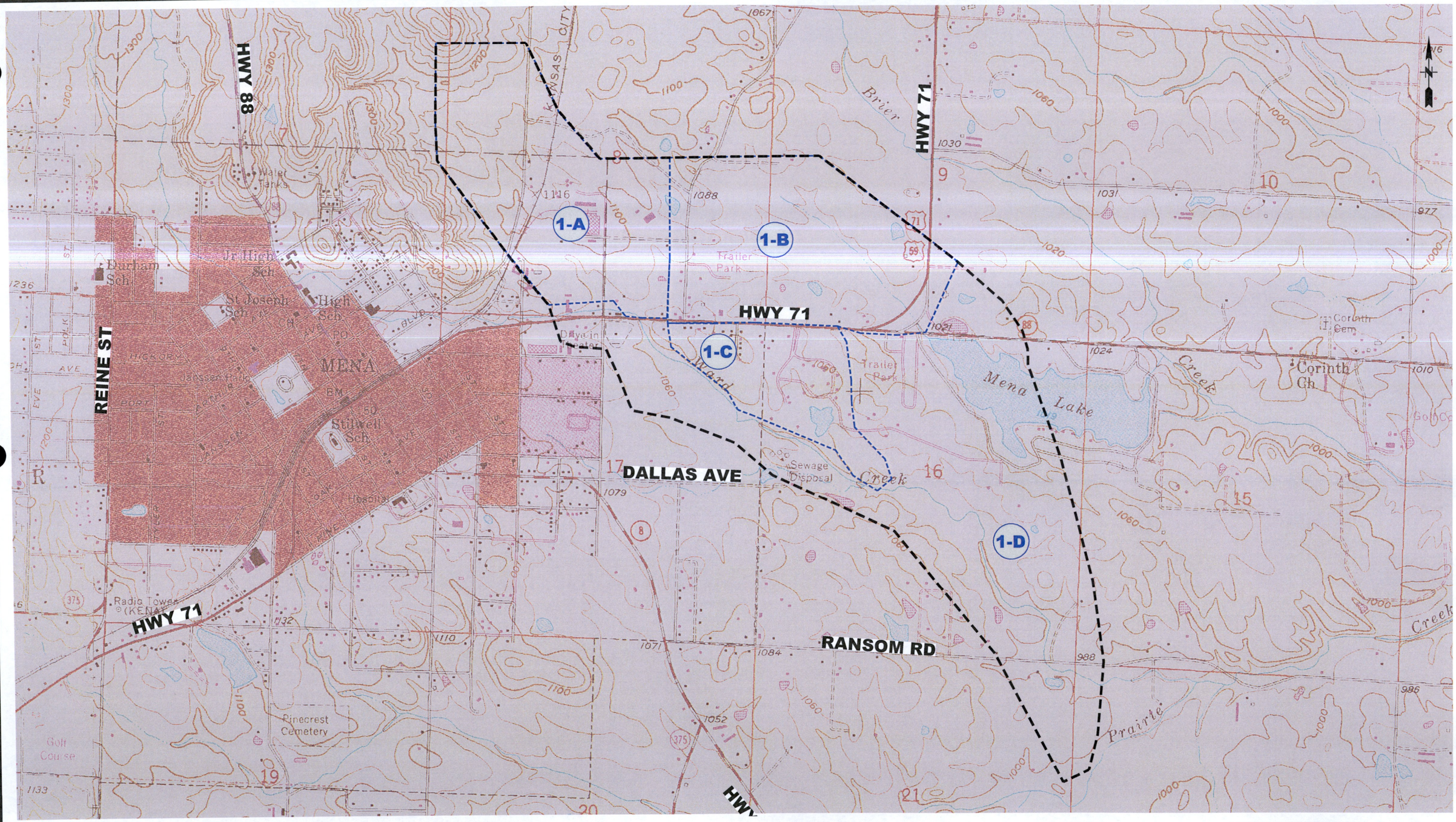
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

MAJOR SEWER BASIN MAP

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=2000'
Date: DEC 2019
Sheet 1



Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

A.L. FRANKS
ENGINEERING

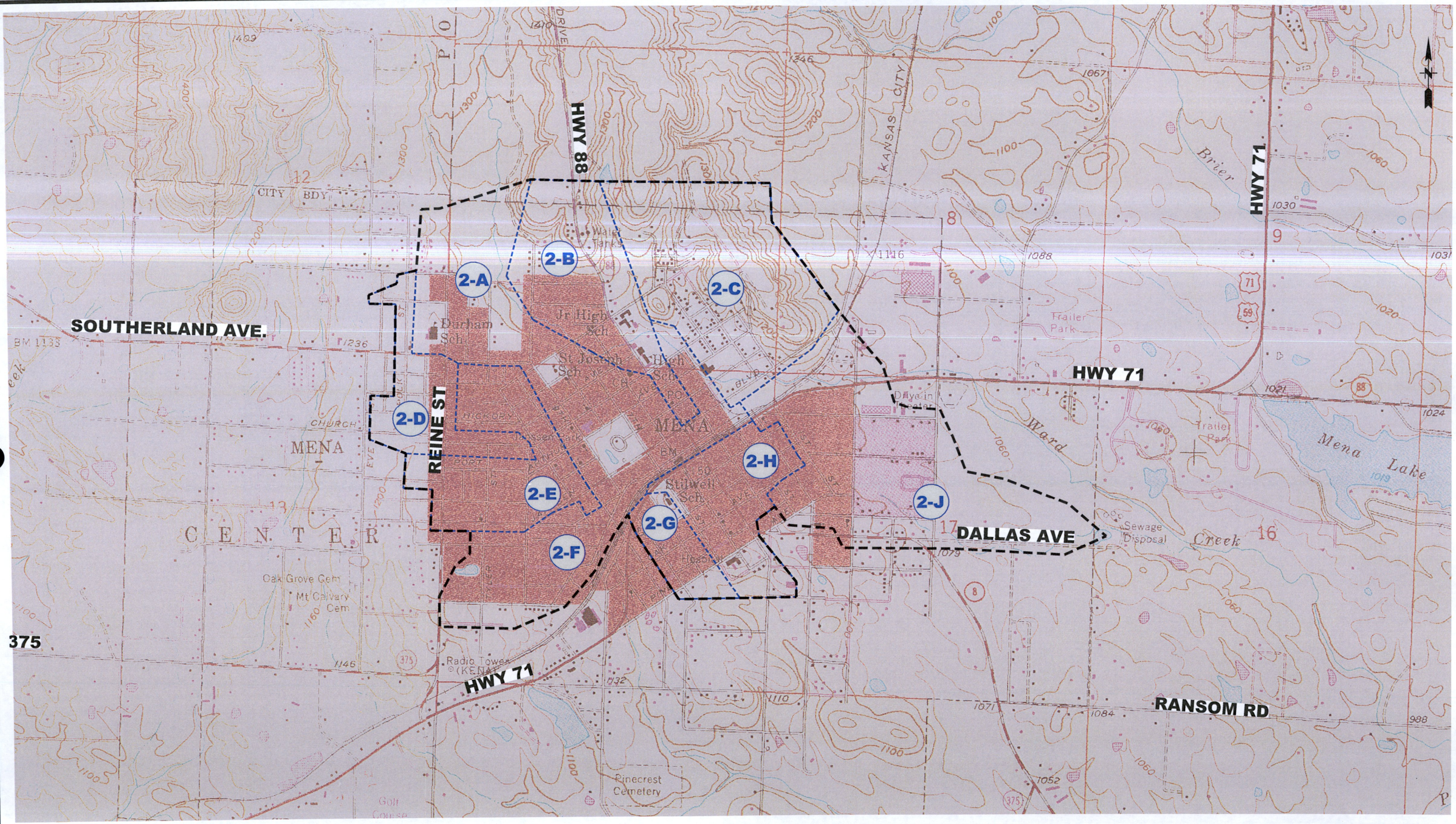
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

MINOR SEWER BASIN 1

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No.9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=1500'
Date: DEC 2019
Sheet 2



Date	Revision	By

Designed	JCH
Checked	KAB
Drawn	JCH
Approved	ALF

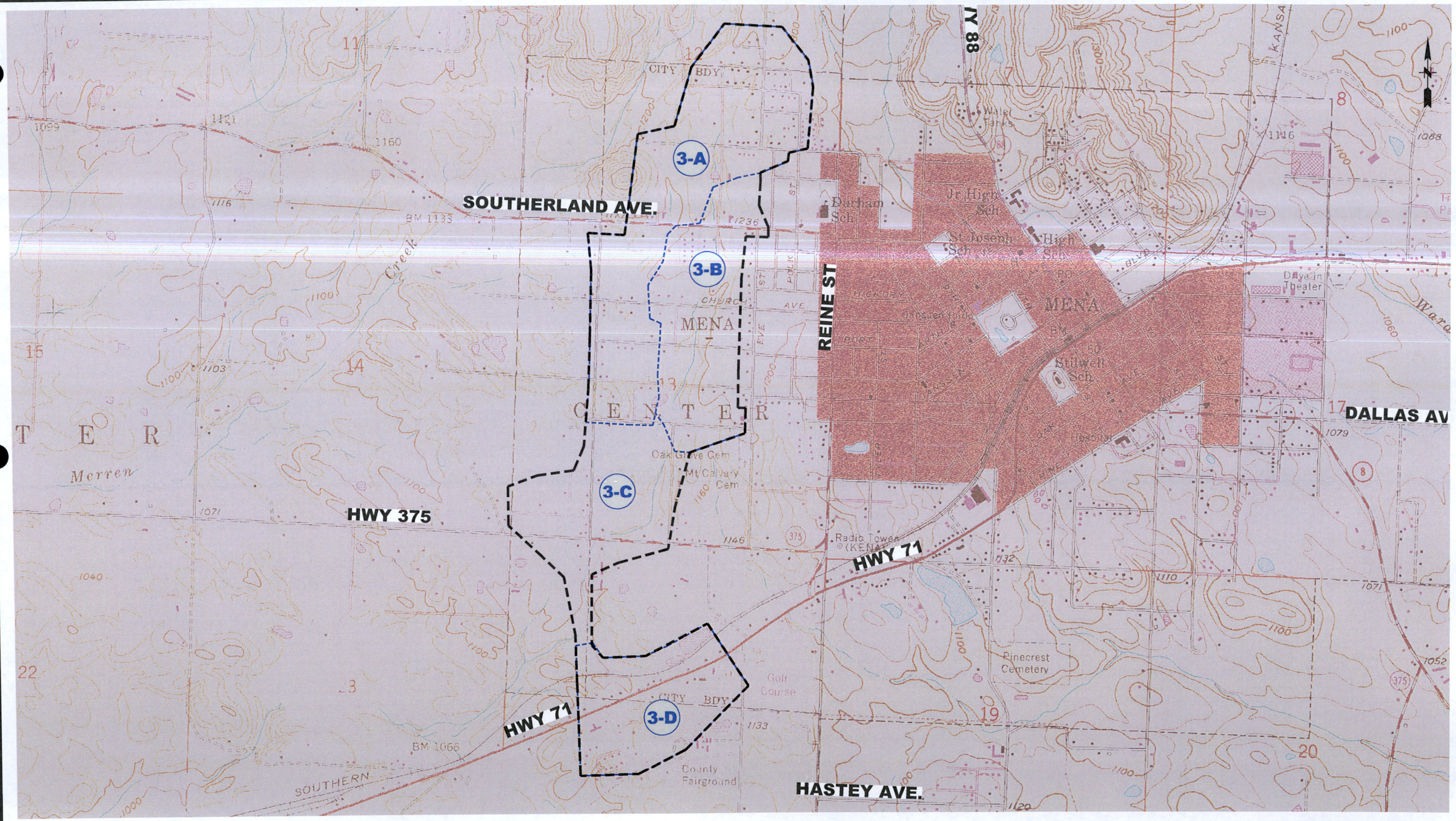
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

MINOR SEWER BASIN 2

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9192
ANTHONY L. FRANKS

Job No.:	MWU-01-18
Scale:	1"=1500'
Date:	DEC 2019
Sheet	3



Date	Revision	By

Designed	JCH
Checked	KAB
Drawn	JCH
Approved	ALF

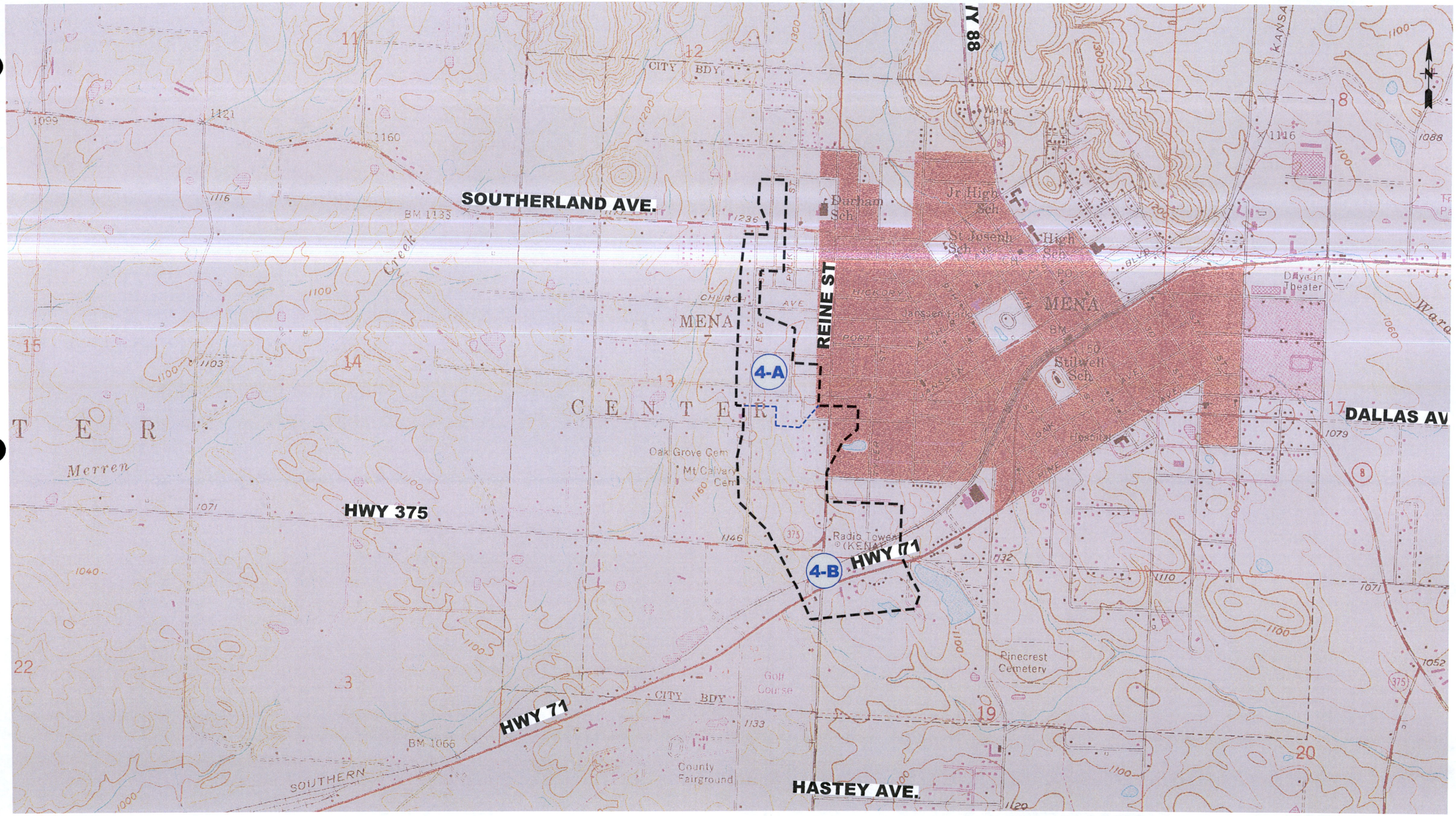
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

MINOR SEWER BASIN 3

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9192
ANTHONY L. FRANKS

Job No.:	MWU-01-18
Scale:	1"=1500'
Date:	DEC 2019
Sheet	4



Date	Revision	By

Designed	JCH
Checked	KAB
Drawn	JCH
Approved	ALF

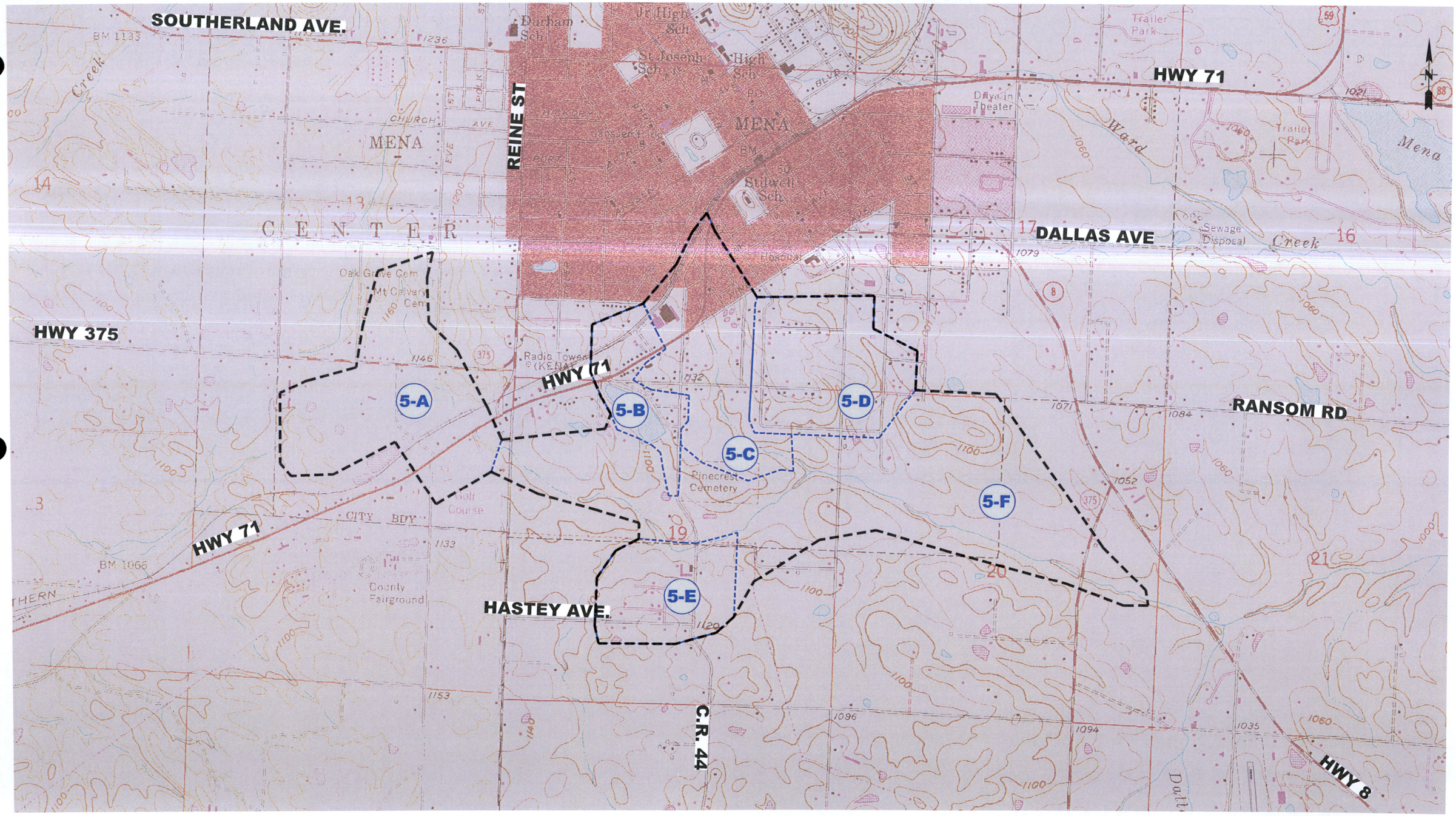
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

MINOR SEWER BASIN 4

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9192
ANTHONY L. FRANKS

Job No.:	MWU-01-18
Scale:	1"=1500'
Date:	DEC 2019
Sheet	5



Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

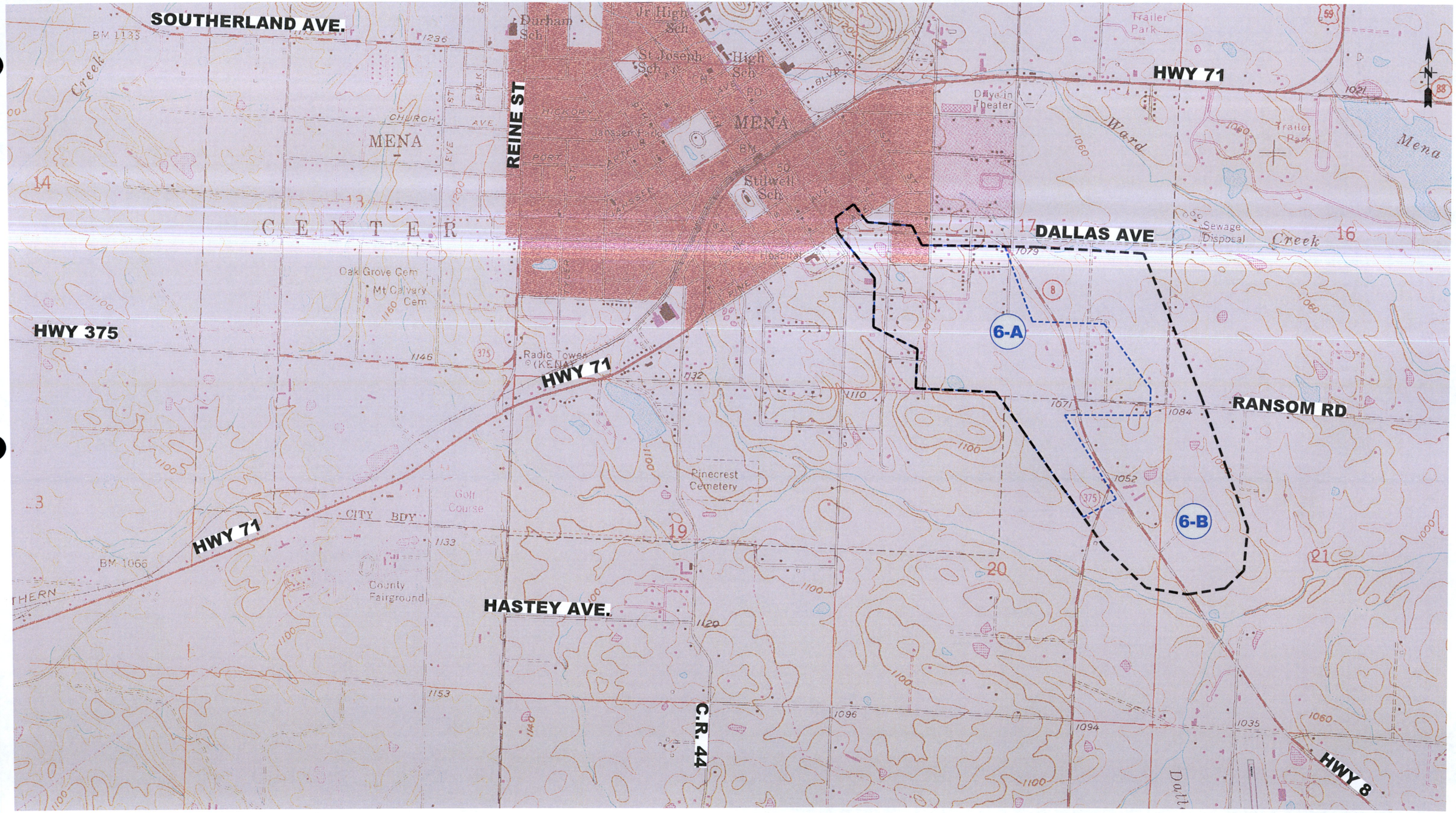
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

MINOR SEWER BASIN 5

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=1500'
Date: DEC 2019
Sheet 6



Date	Revision	By

Designed	JCH
Checked	KAB
Drawn	JCH
Approved	ALF

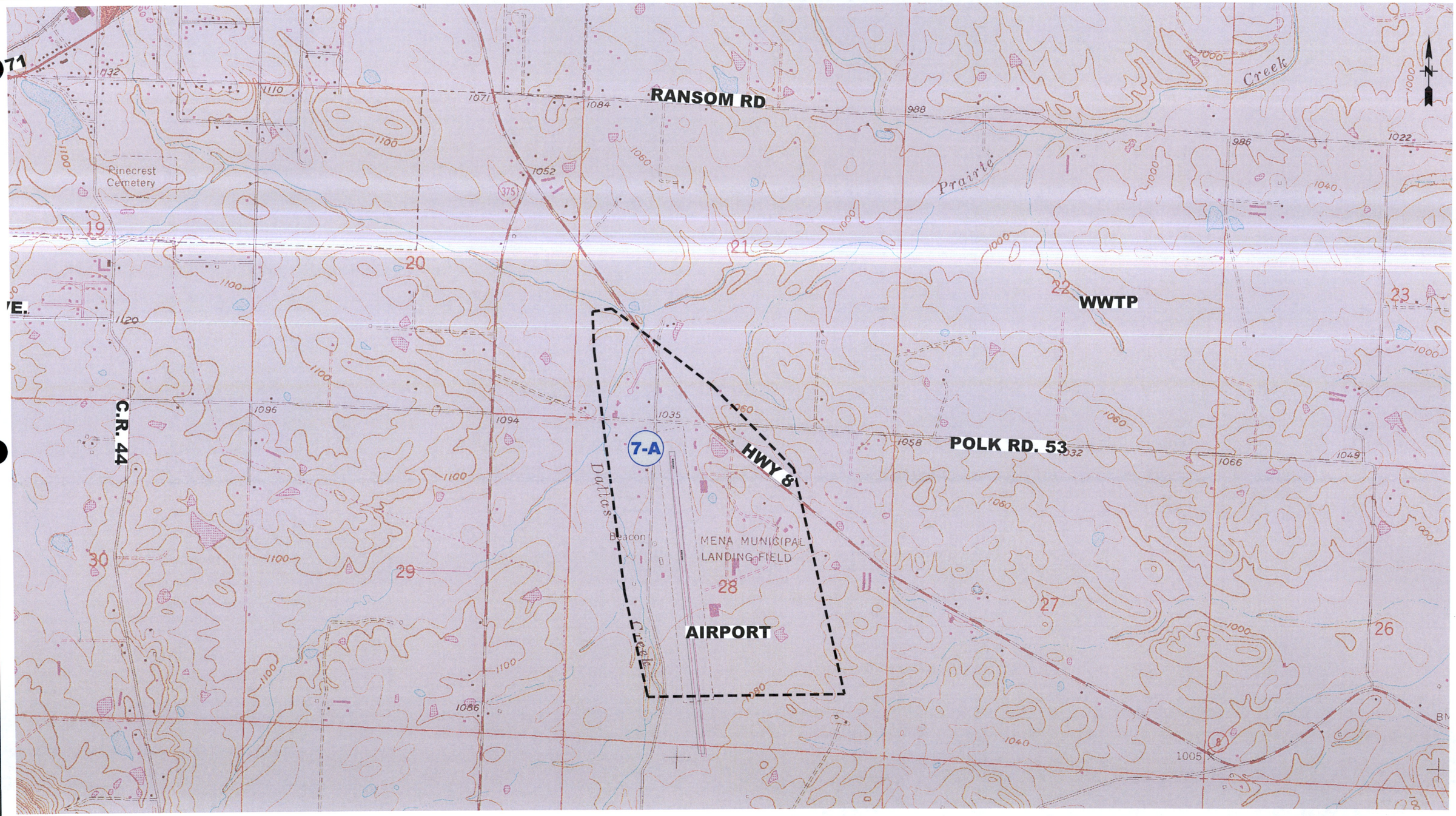
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

MINOR SEWER BASIN 6

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No.9192
ANTHONY L. FRANKS

Job No.:	MWU-01-18
Scale:	1"=1500'
Date:	DEC 2019
Sheet	7



Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

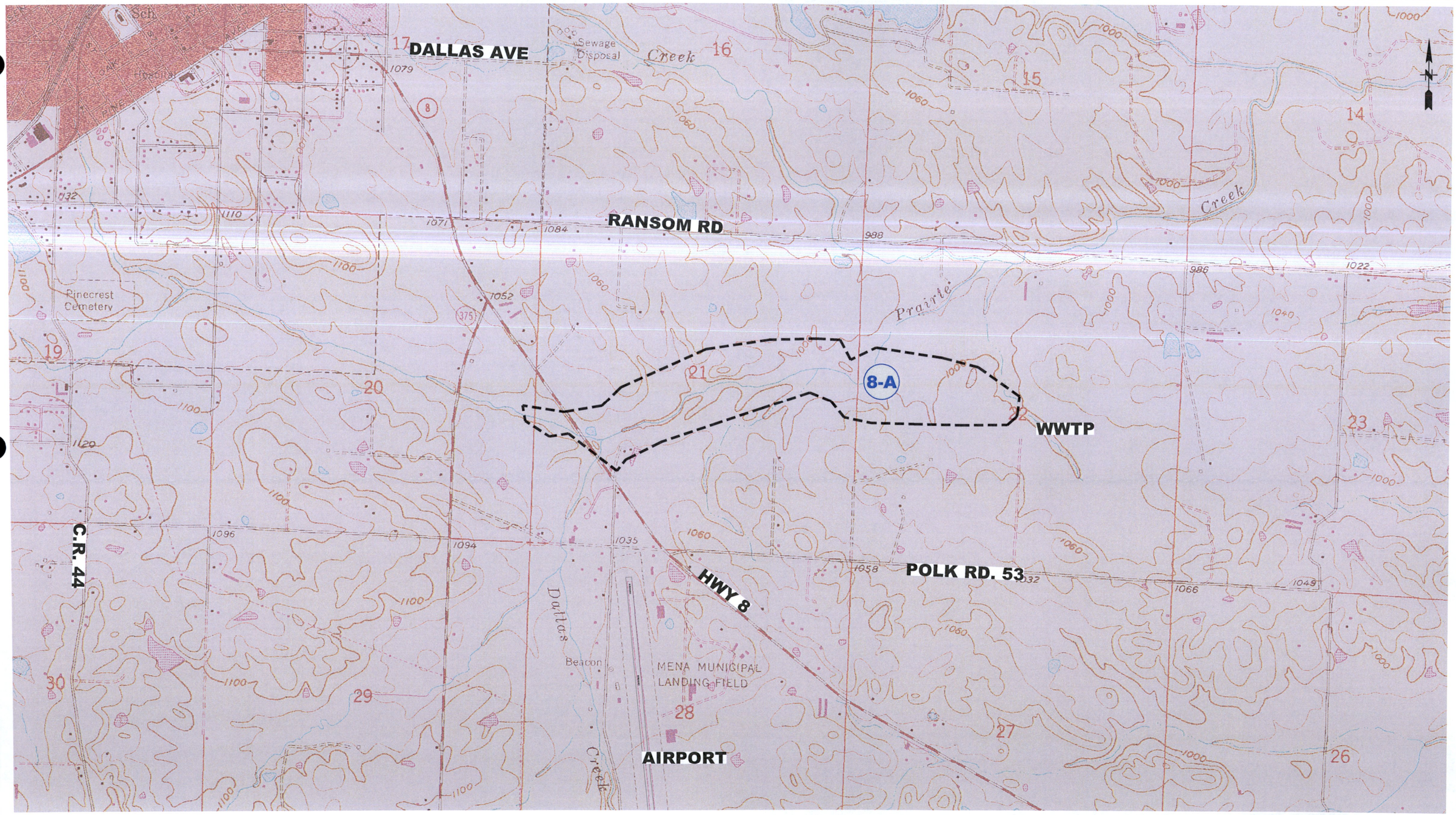
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

MINOR SEWER BASIN 7

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.9192 ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=1500'
Date: DEC 2019
Sheet 8



Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

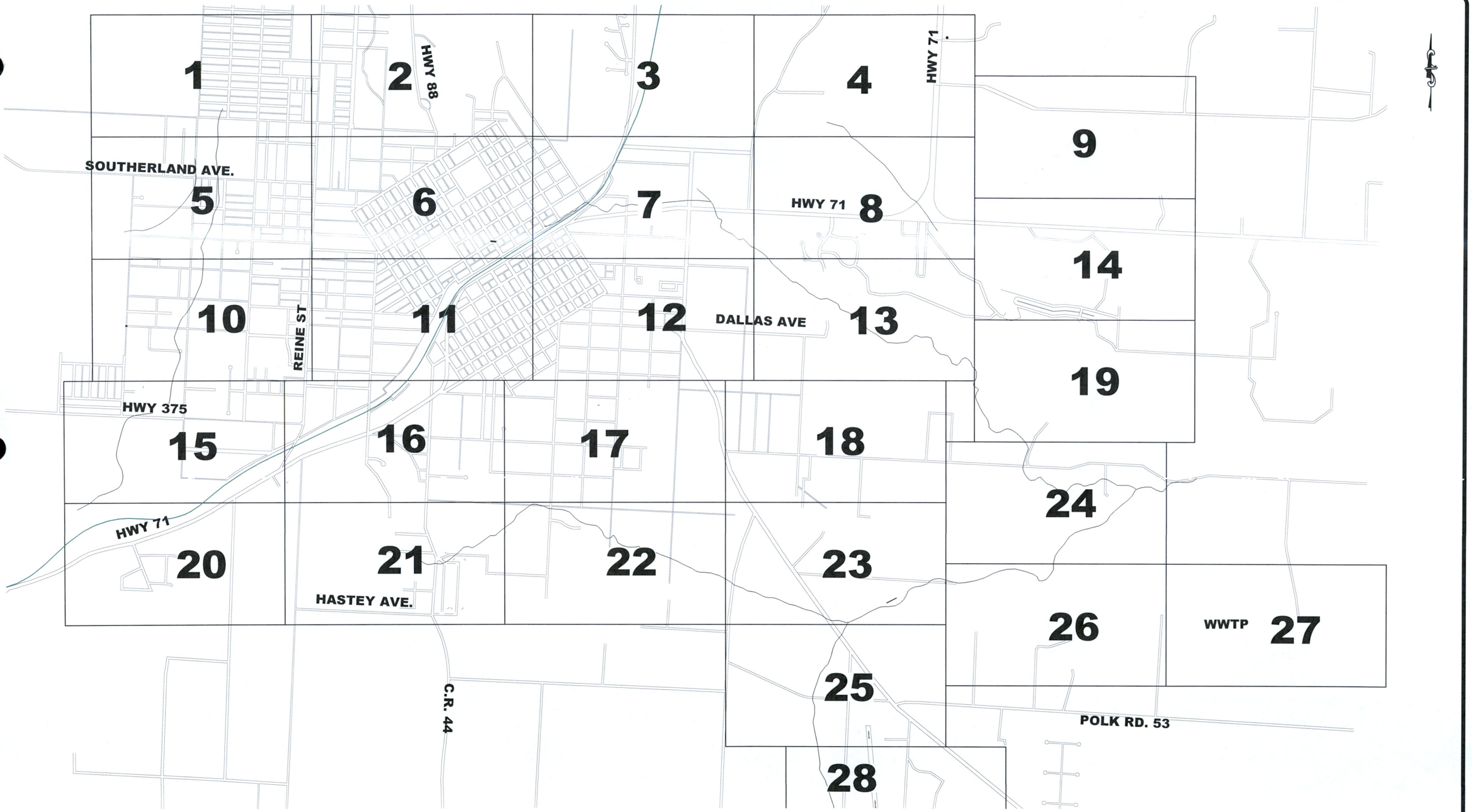
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

MINOR SEWER BASIN 8

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No.9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=1500'
Date: DEC 2019
Sheet 9



Date	Revision	By

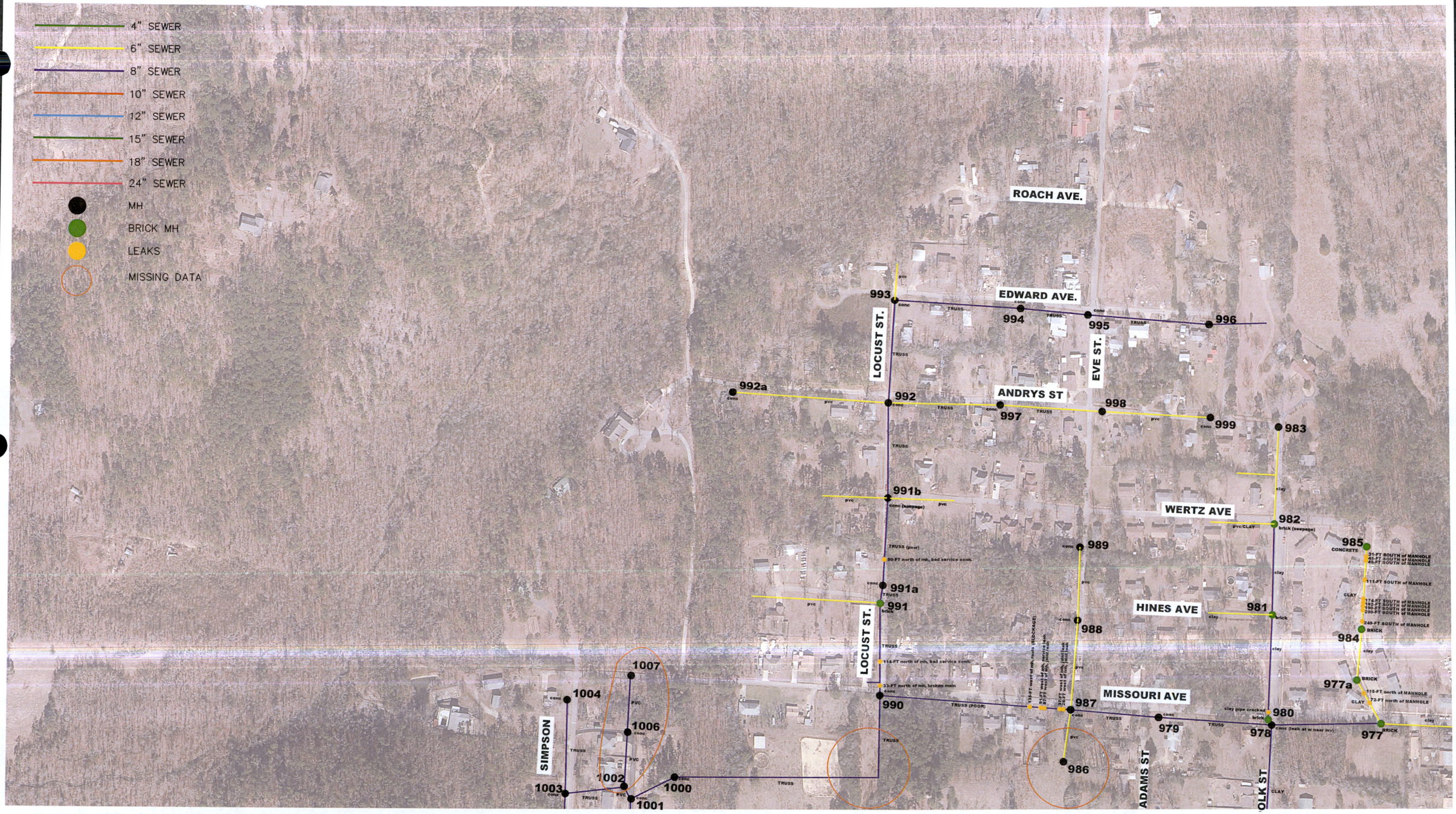
Designed JCH
Checked KAB
Drawn JCH
Approved ALF

A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

2018 GPS COLLECTION DATA

Job No.: MWU-01-18
Scale: NOT TO SCALE
Date: DEC 2019
Sheet INDEX



Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No.9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 1

Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

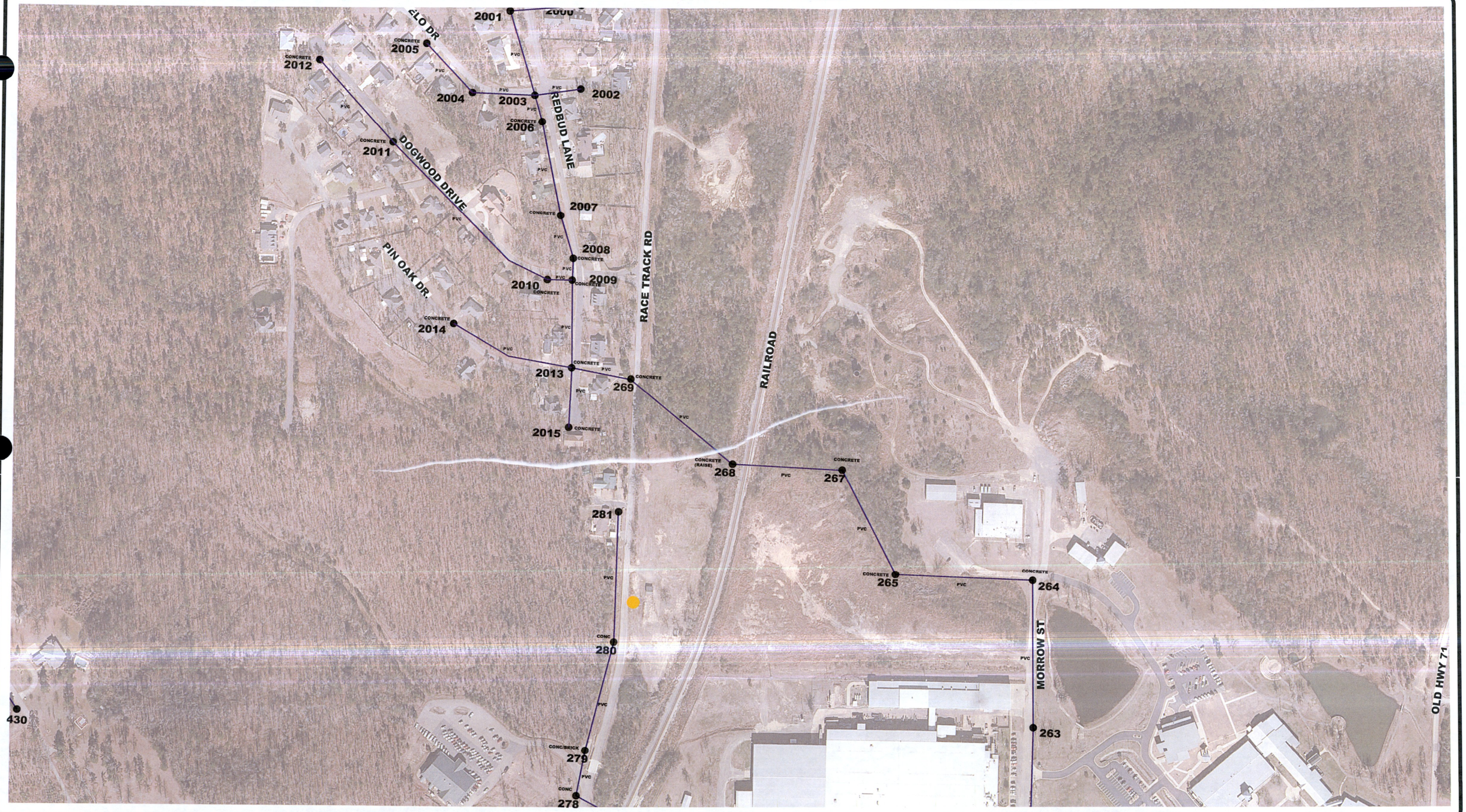
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 2



Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No.9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 3

Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

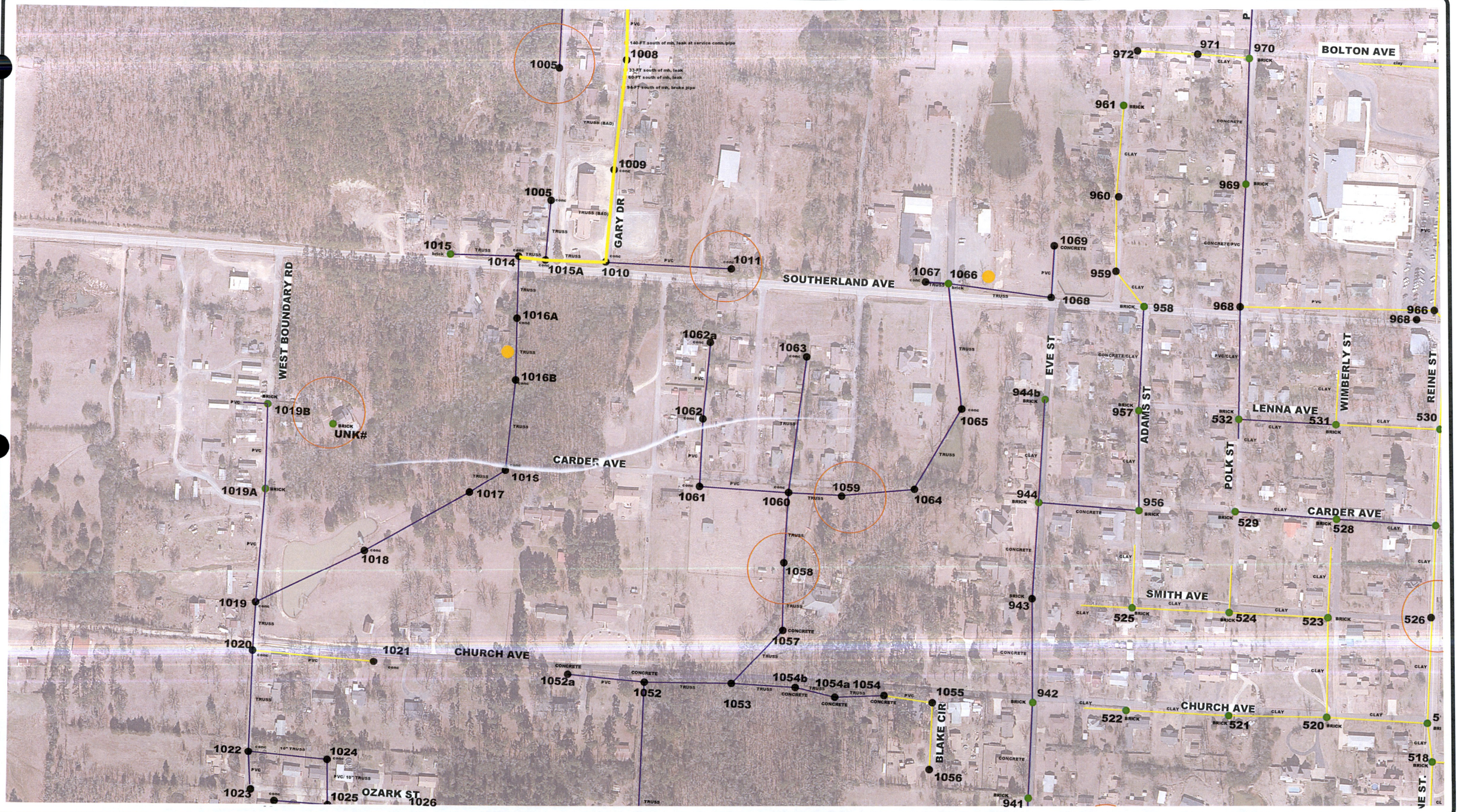
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No.9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 4



Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

A.L. FRANKS ENGINEERING

118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 5

Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

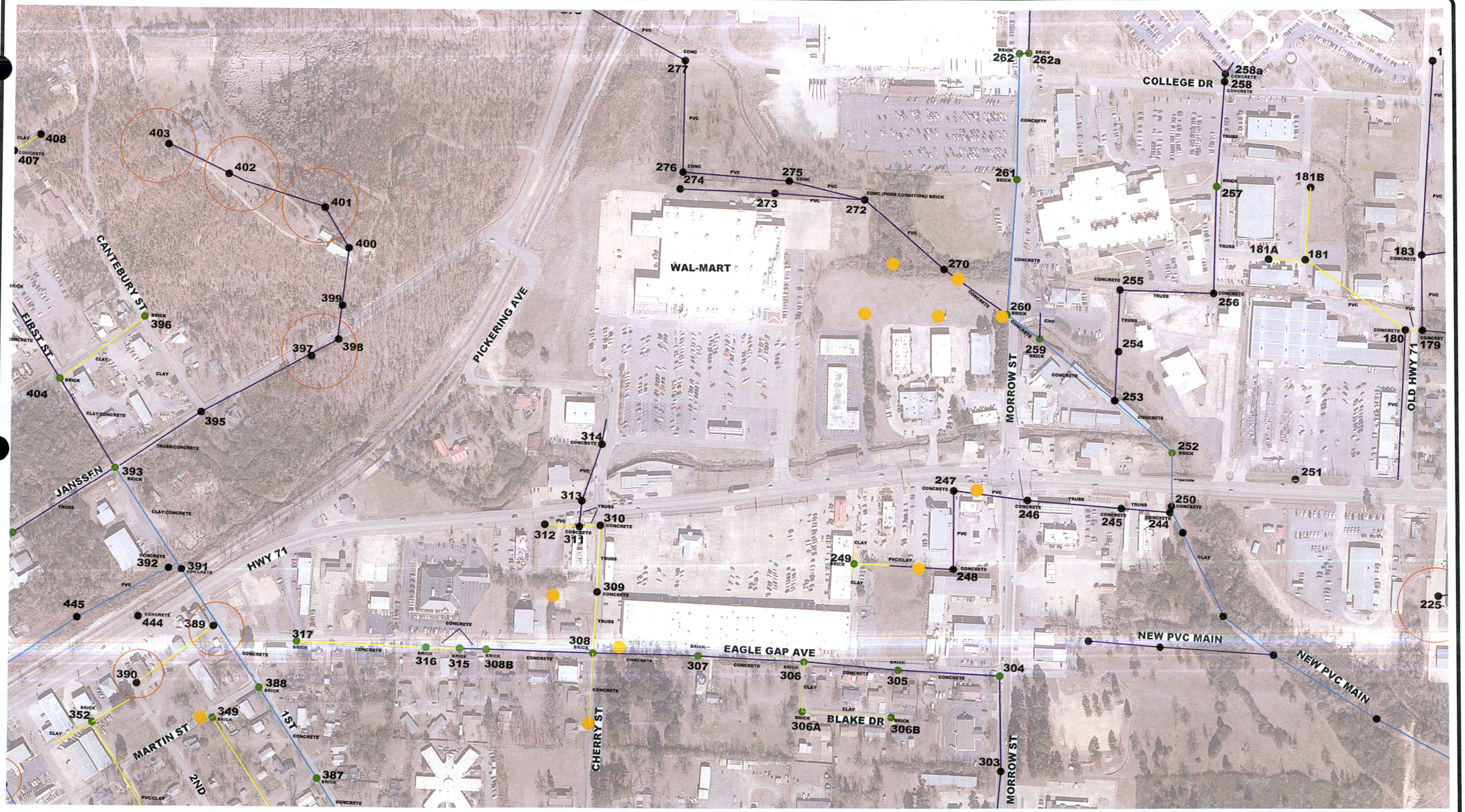
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No.9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 6



Date	Revision	By

Designed	JCH
Checked	KAB
Drawn	JCH
Approved	ALF

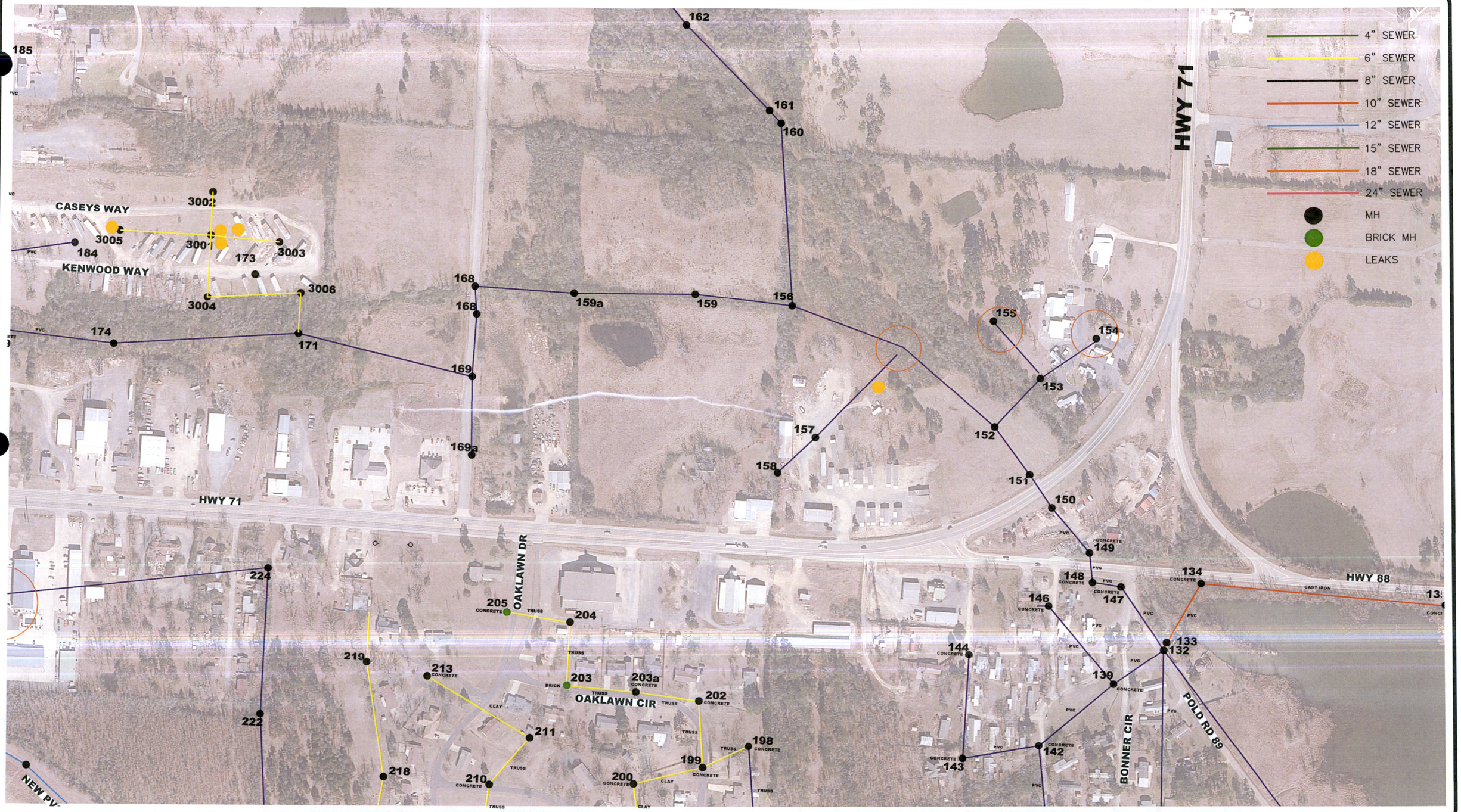
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No.9192
ANTHONY L. FRANKS

Job No.:	MWU-01-18
Scale:	1"=300'
Date:	OCT 2018
Sheet	7



Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 8

Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

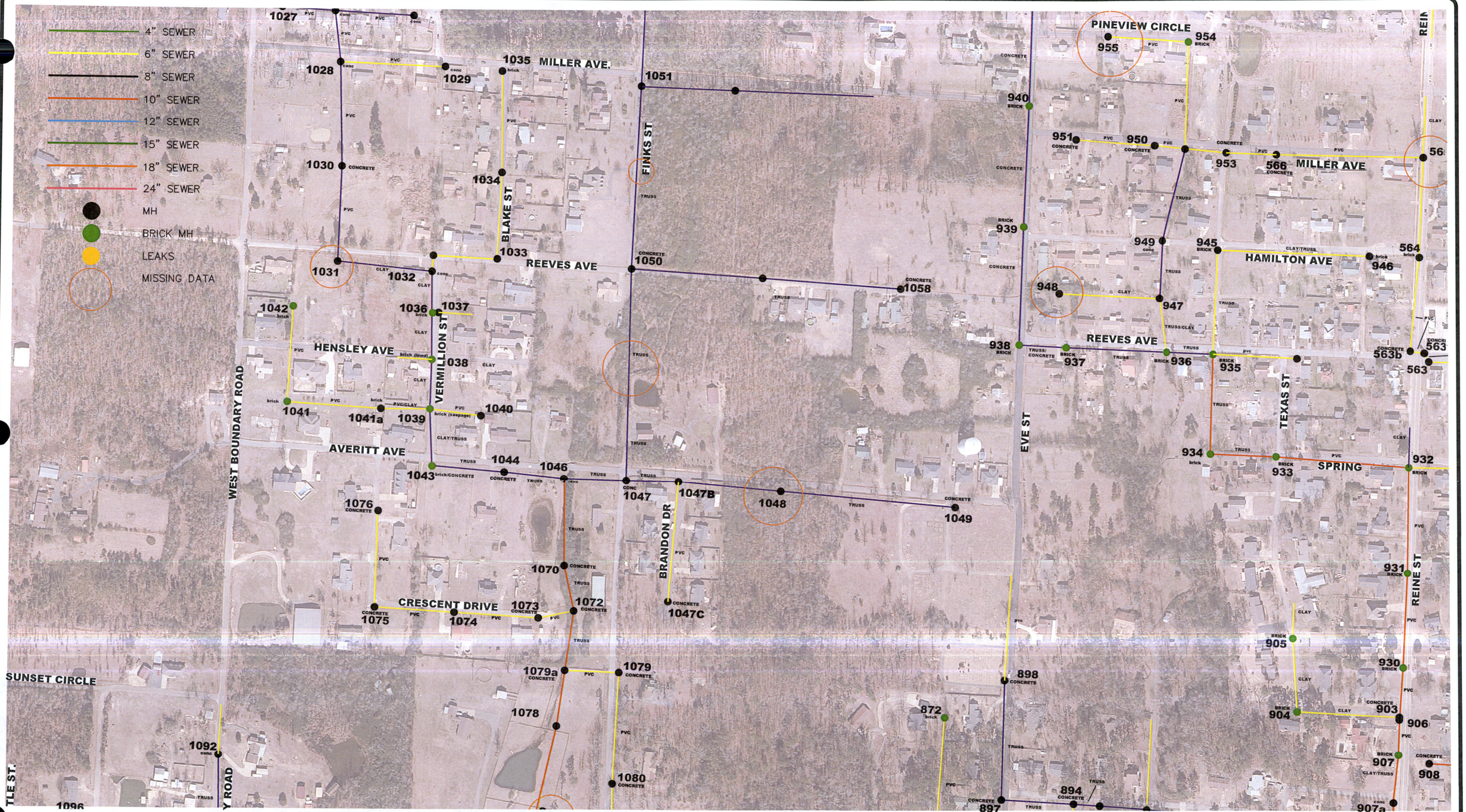
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No.9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 9



Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No.9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 10

Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

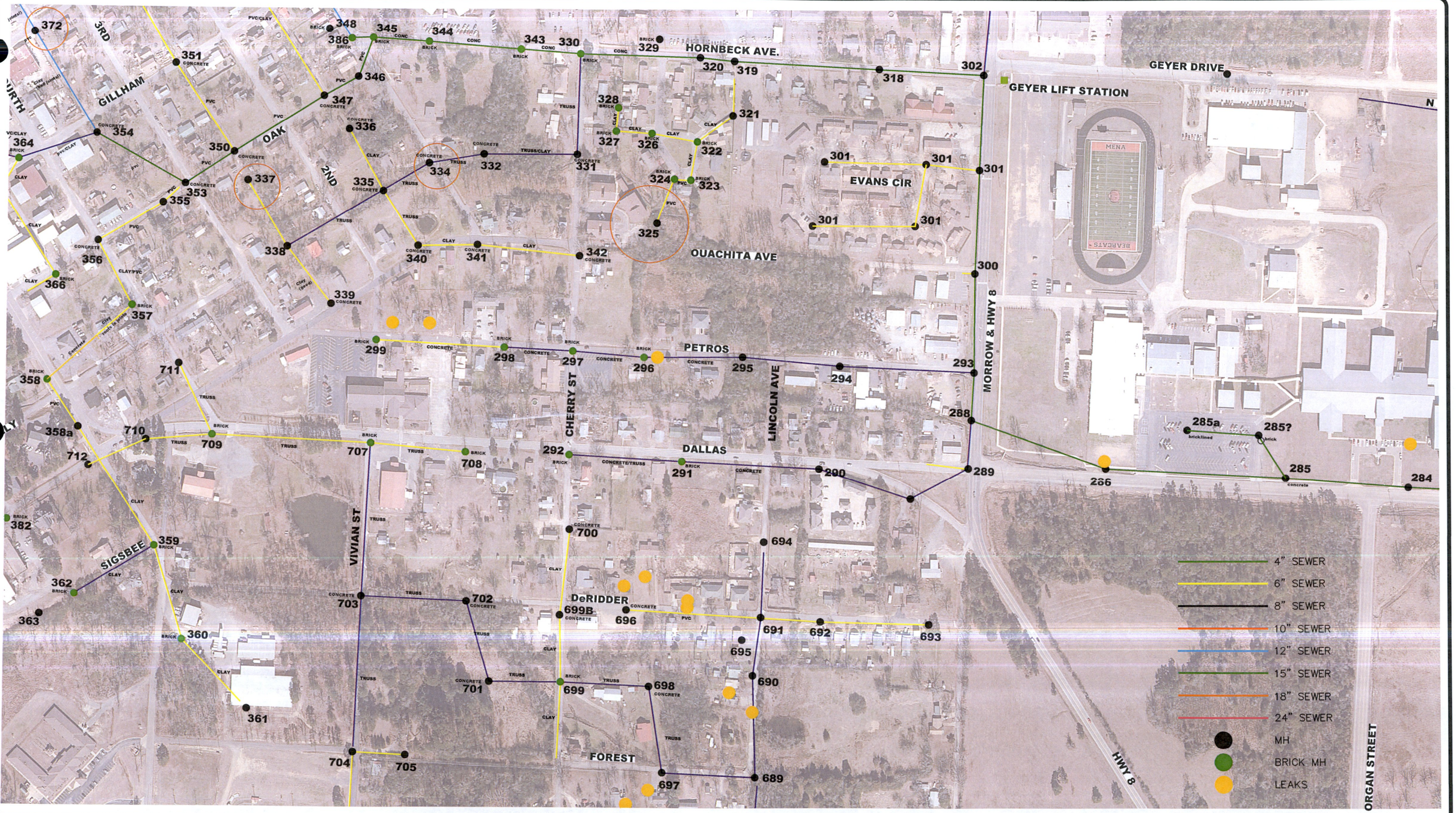
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 11



Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

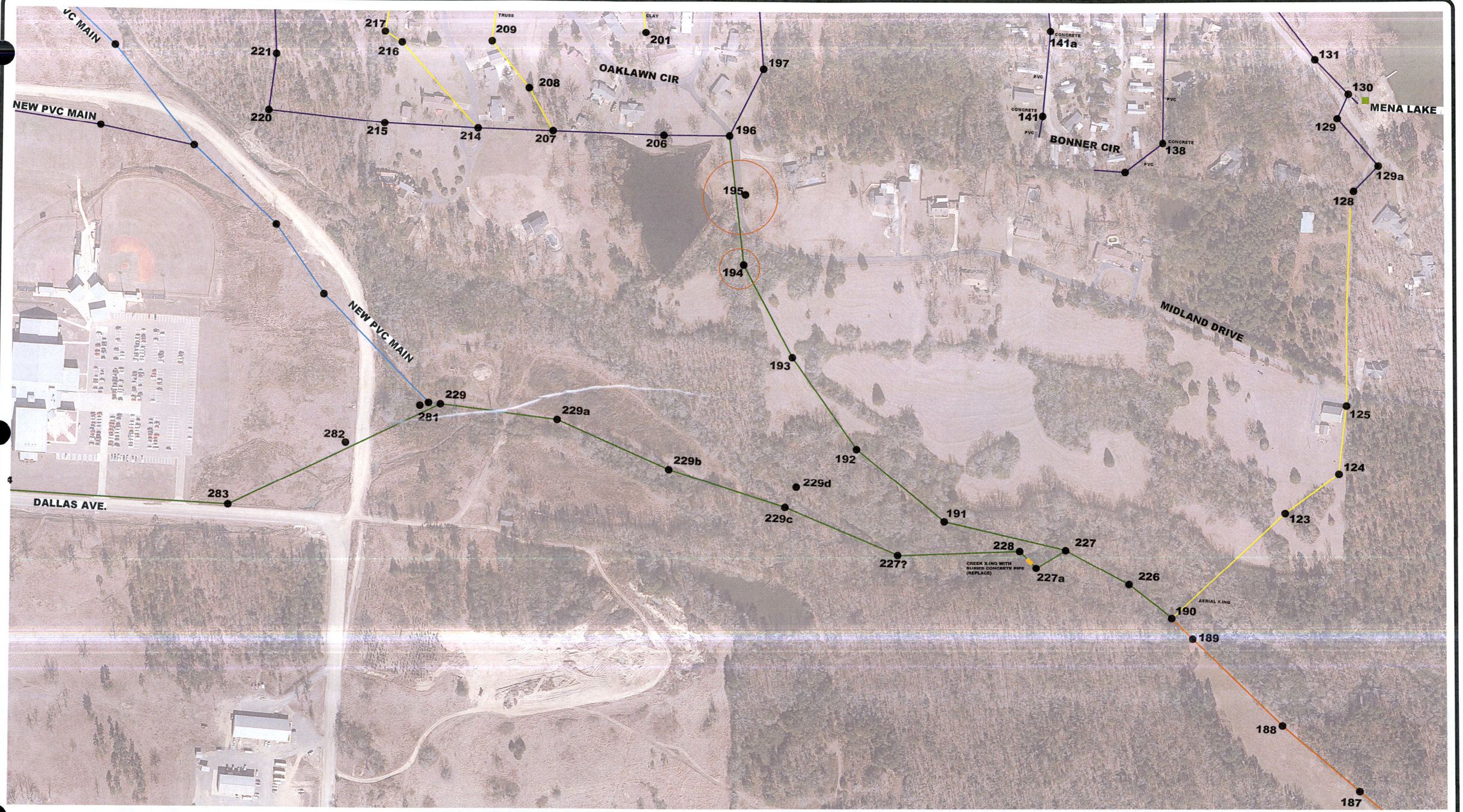
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.9192 ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 12



Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 13

Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

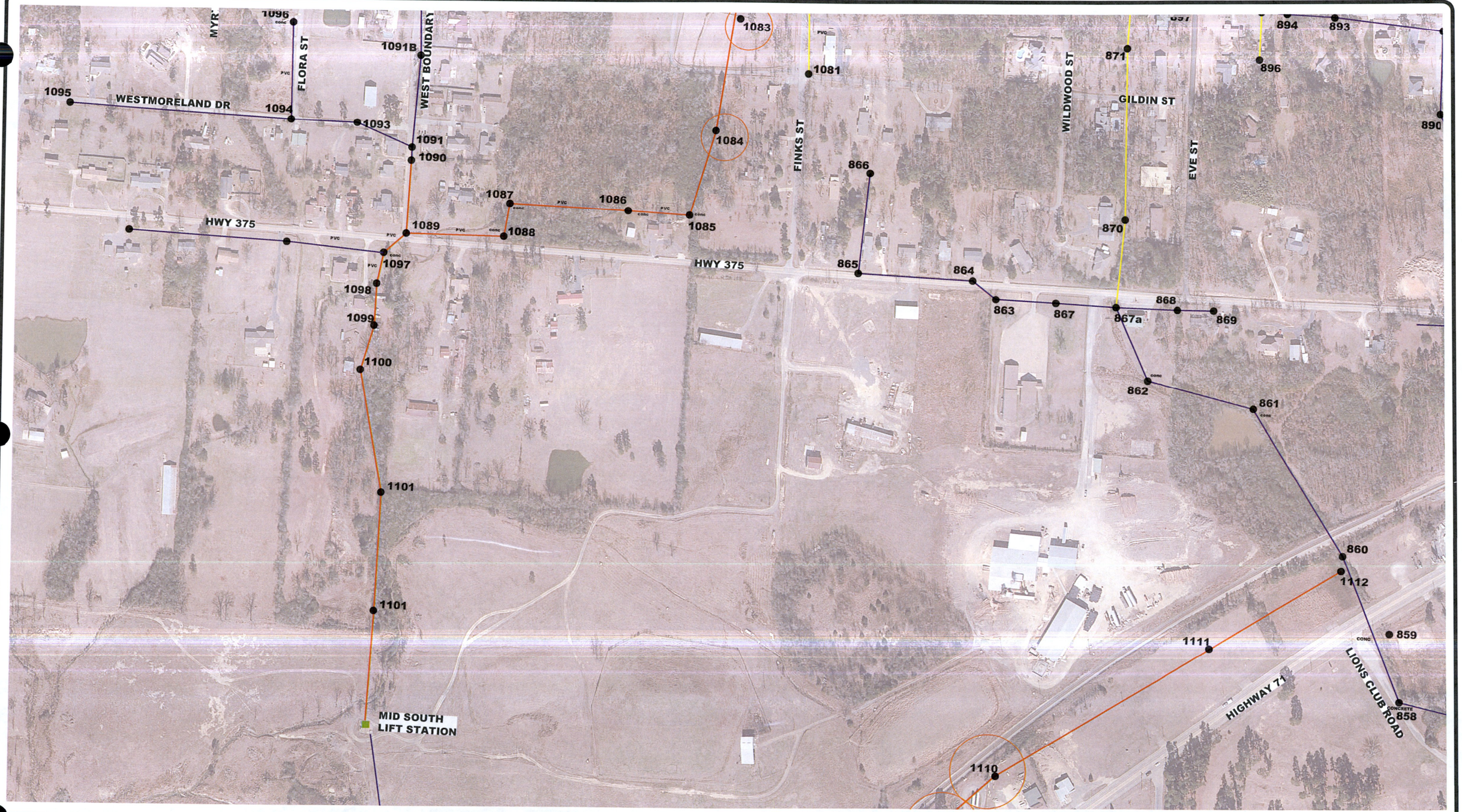
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No.9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 14



Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

A.L. FRANKS ENGINEERING

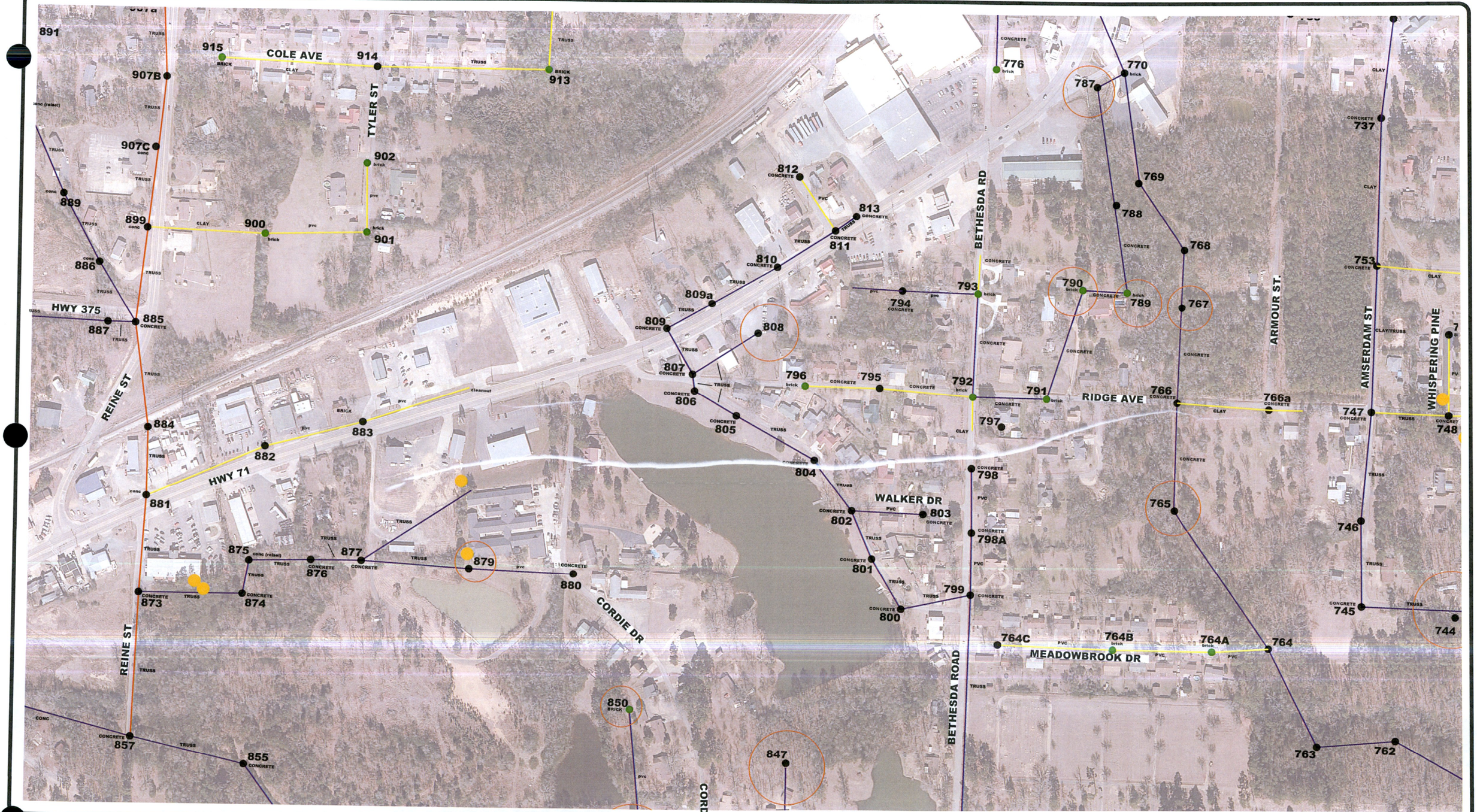
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No.9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 15



Date	Revision	By

Designed	JCH
Checked	KAB
Drawn	JCH
Approved	ALF

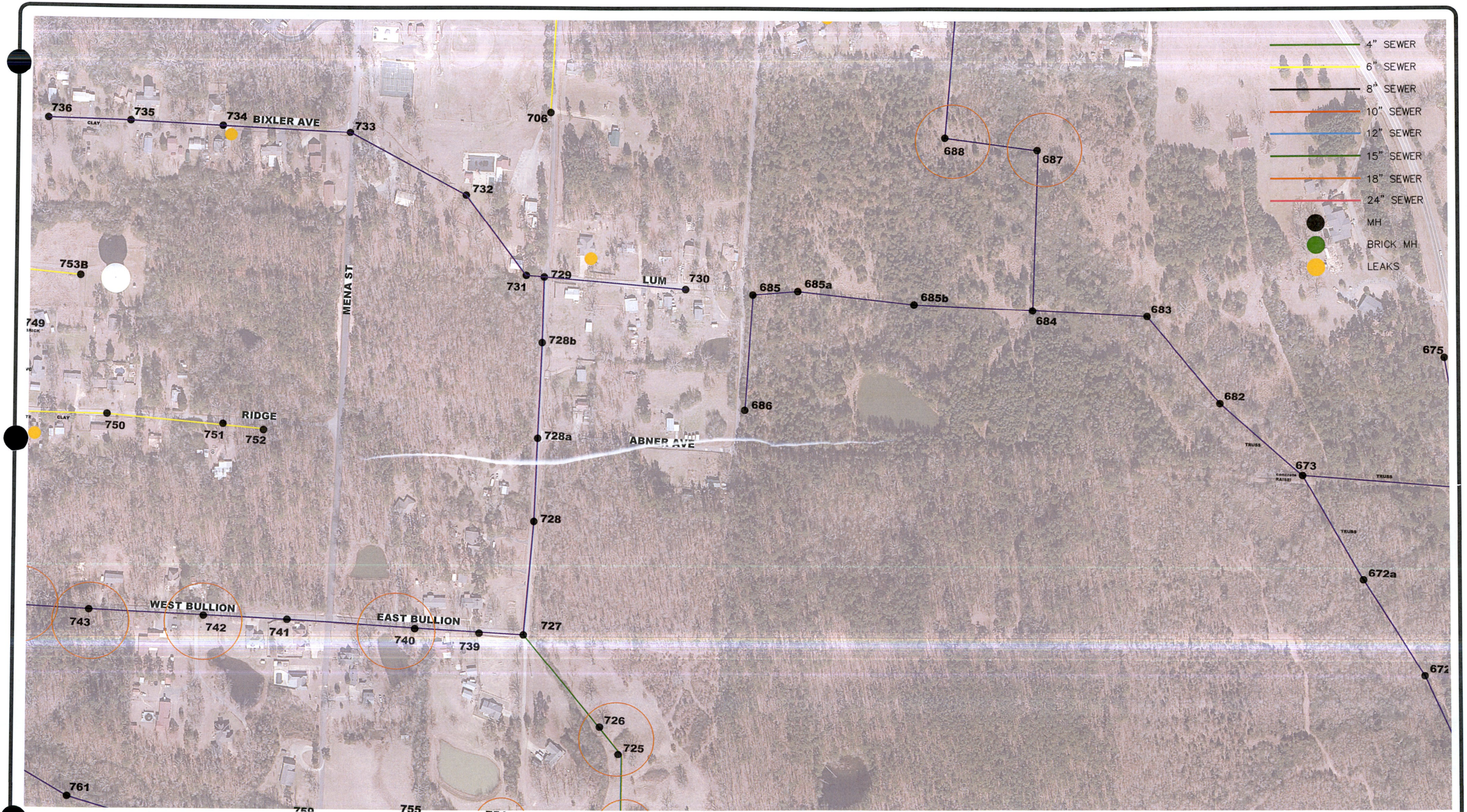
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No.9192
ANTHONY L. FRANKS

Job No.:	MWU-01-18
Scale:	1"=300'
Date:	OCT 2018
Sheet	16



Date	Revision	By

Designed	JCH
Checked	KAB
Drawn	JCH
Approved	ALF

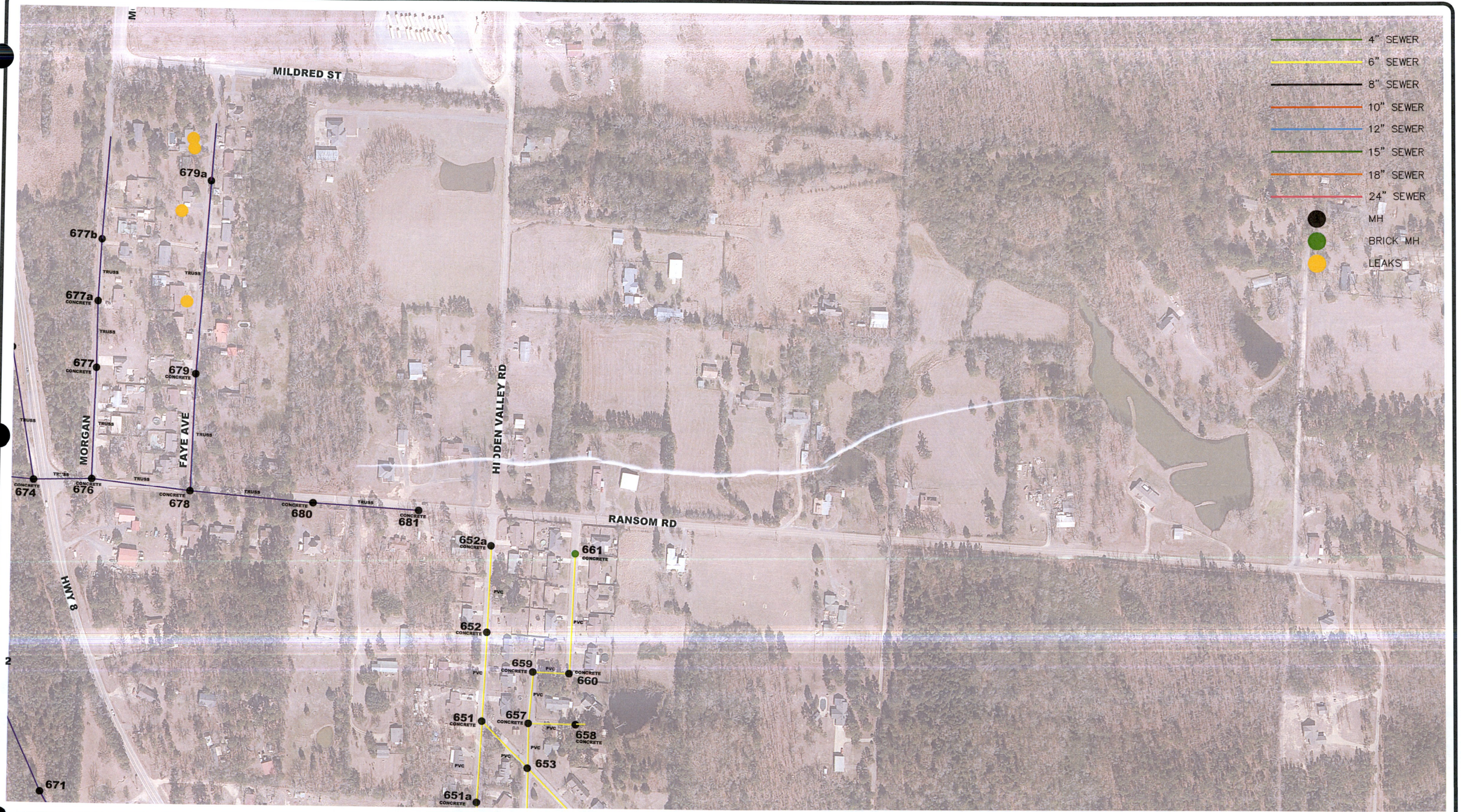
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9192
ANTHONY L. FRANKS

Job No.:	MWU-01-18
Scale:	1"=300'
Date:	OCT 2018
Sheet	17



Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 18

Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

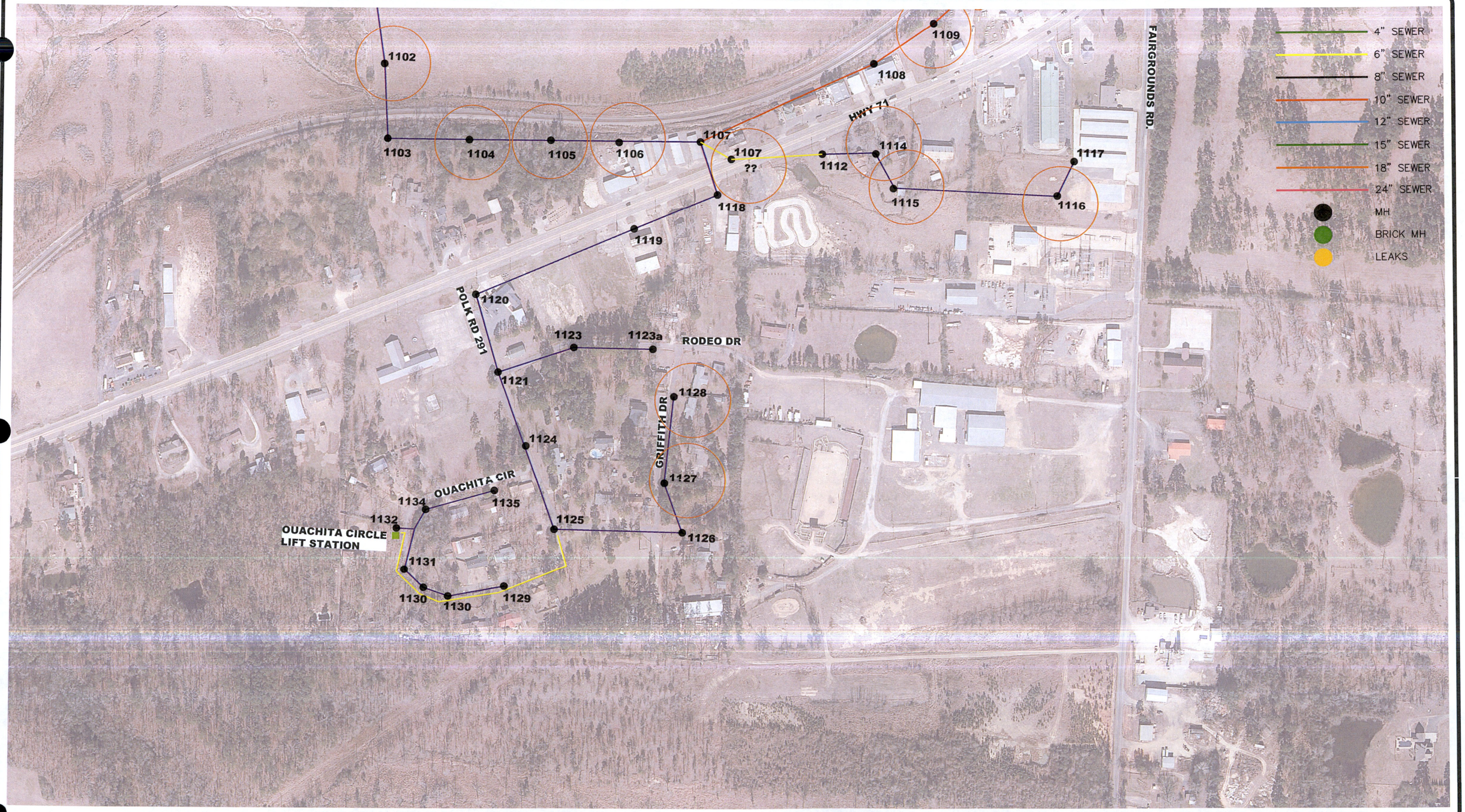
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.9192 ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 19



Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

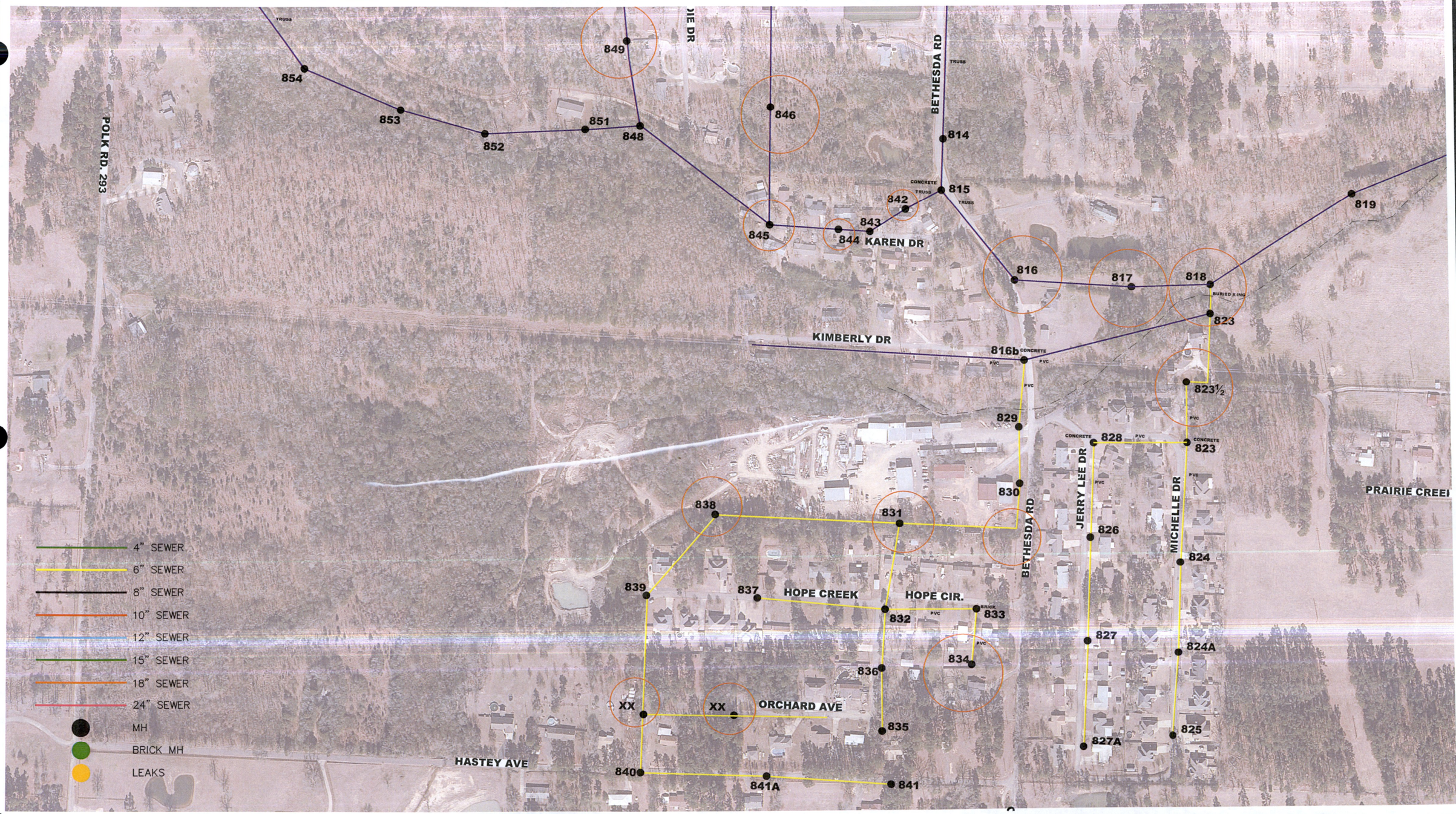
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 20



4" SEWER
6" SEWER
8" SEWER
10" SEWER
12" SEWER
15" SEWER
18" SEWER
24" SEWER
MH
BRICK MH
LEAKS

Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No.9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 21

Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

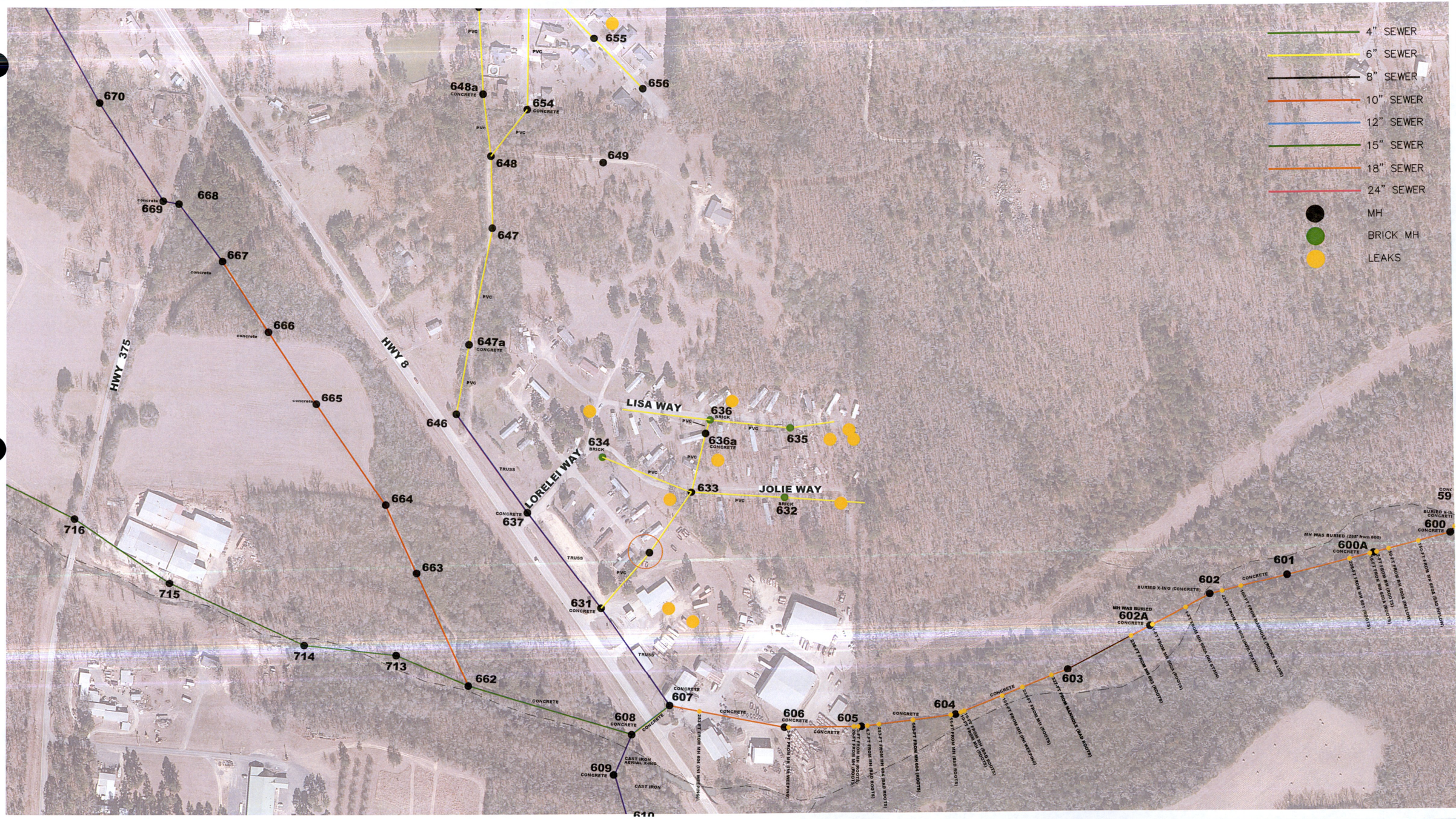
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 22



Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

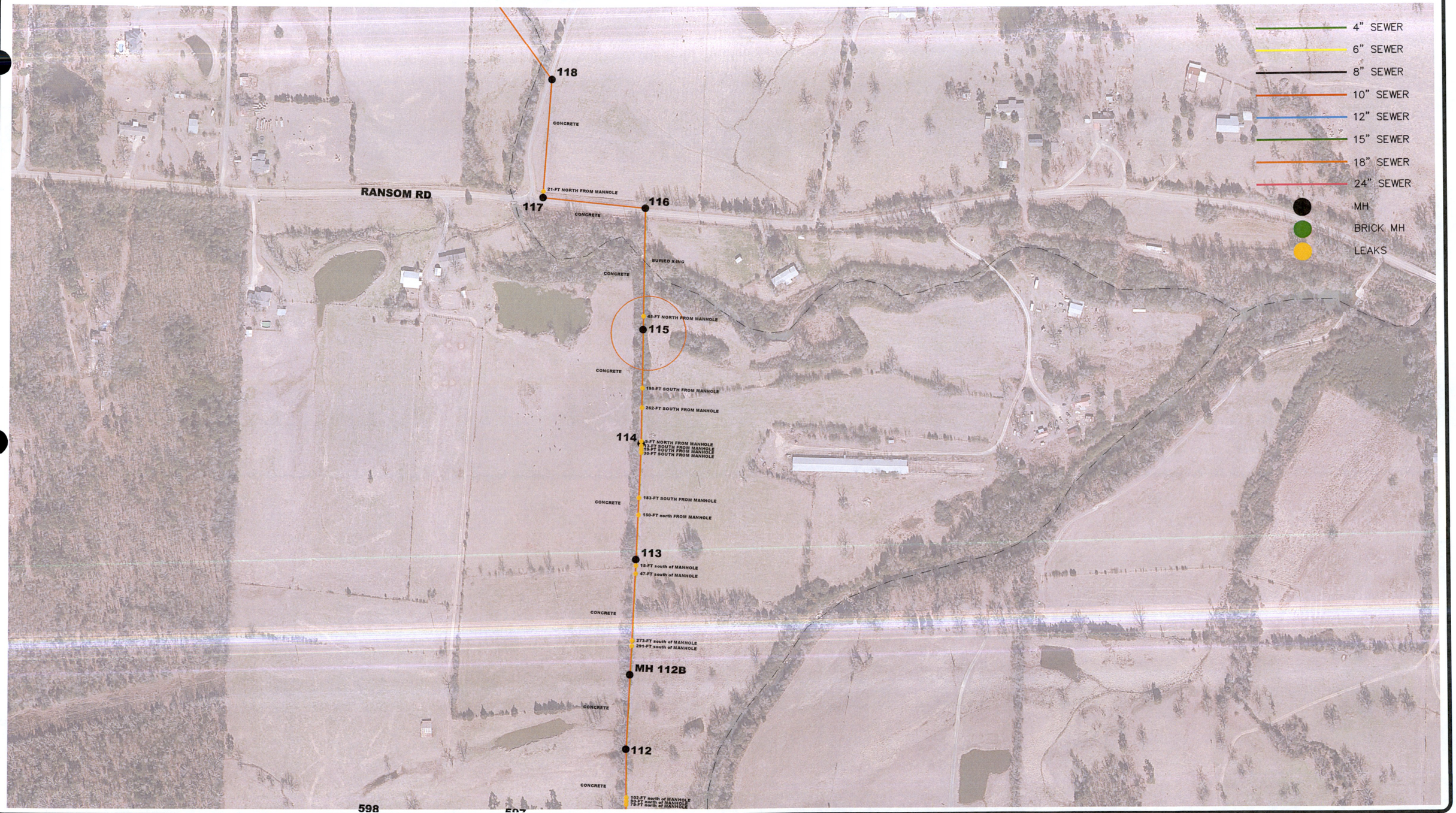
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No.9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 23



Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

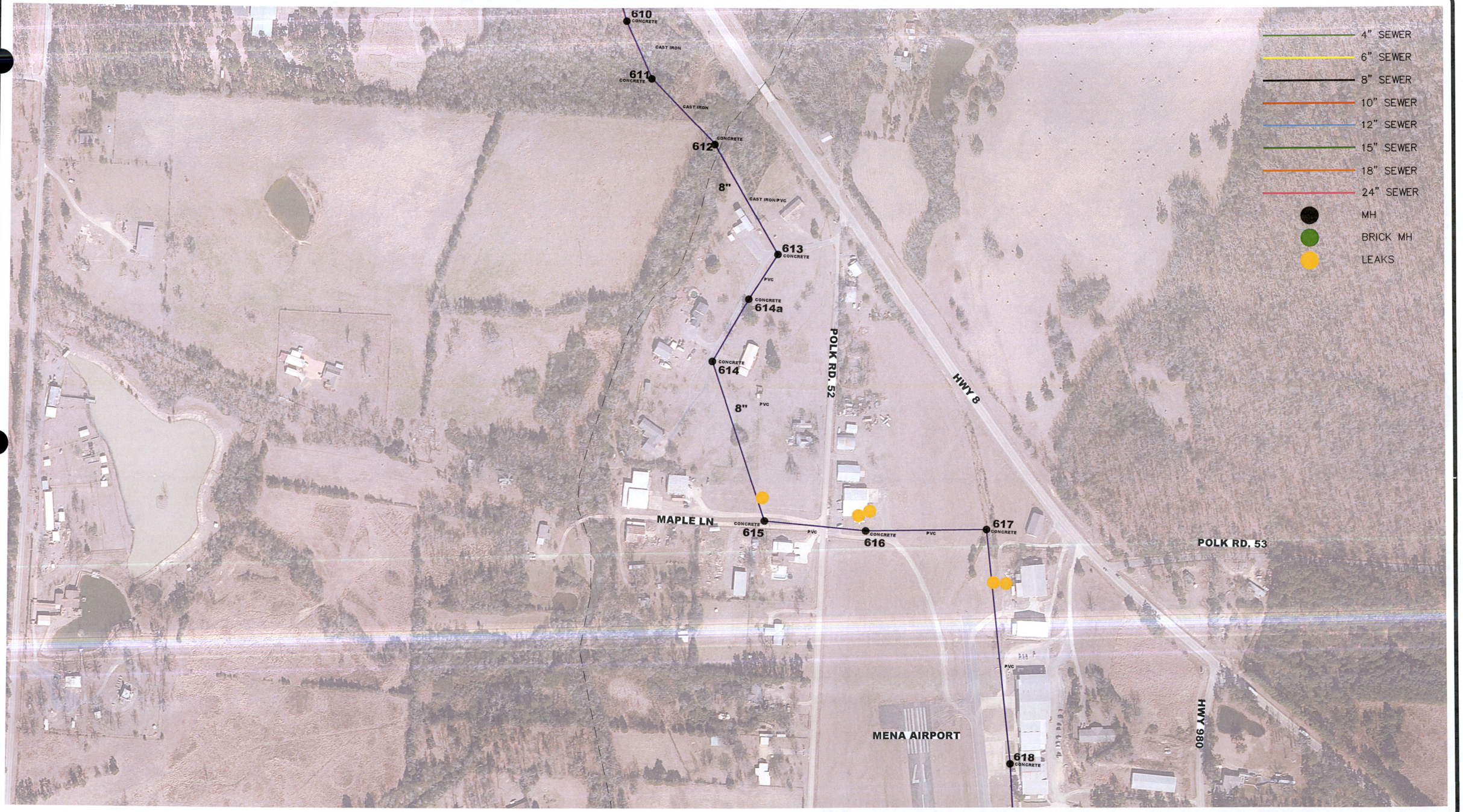
A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No.9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 24



Date	Revision	By

Designed	JCH
Checked	KAB
Drawn	JCH
Approved	ALF

A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No.9192
ANTHONY L. FRANKS

Job No.:	MWU-01-18
Scale:	1"=300'
Date:	OCT 2018
Sheet	25

Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.9192 ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 26

Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM
MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 27

Date	Revision	By

Designed JCH
Checked KAB
Drawn JCH
Approved ALF

A.L. FRANKS ENGINEERING
118 East Broad Street
Texarkana, Arkansas 71854
Phone (870) 216-1906
Fax (870) 216-1907

MENA WATER UTILITIES
SEWER COLLECTION SYSTEM MAPPING

GPS COLLECTION DATA

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9192
ANTHONY L. FRANKS

Job No.: MWU-01-18
Scale: 1"=300'
Date: OCT 2018
Sheet 28

A L FRANKS ENGINEERING
(870) 216-1906
ANDY FRANKS
118 EAST BROAD ST
TEXARKANA AR 71854

5 LBS 1 OF 1
SHP WT: 5 LBS
DWT: 21,13,12
DATE: 10 JAN 2020

SHIP TO: WATER DIVISION, ENFORCEMENT ANALYST
ADEQ
5301 NORTHSHORE DR

NORTH LITTLE RO AR 72118-5328

AR 722 9-21

UPS GROUND
TRACKING #: 1Z A55 40F 03 6579 3734

BILLING: P/P

ISH 13.00N ZZP 450 20.5V 10/2019

Print