

**MINUTES
MONTEAGLE CITY COUNCIL
SPECIAL MEETING
OCTOBER 18, 2021
GIS MAPPING PROJECT**

**PRESENT: MAYOR, MARILYN RODMAN
 DORRAINE PARMLEY
 JESSICA FAVALORO
 ALVIN POWELL**

ABSENT: NATE WILSON

The special meeting of the Monteagle City Council was called to order by Mayor Rodman at 8:00 am. Travis Wilson was present to explain the GIS system and what the town needs to do.

Mr. Wilson explained that the data collection of the water, sewer and storm water is an important part of the mapping system. It is especially critical to the sewer system. We will stay in town limits to do testing on the drains and basins.

The town anticipates receiving \$1.3 million in grant funds. There could be more in the future.

Mr. Wilson also recommended CCTV inspections of the sewer lines. He stated that the GIS mapping, manhole inspections and smoke testing could not detect all of the I & I problems. The cost of this project is \$ 118,000.00. This can be done in phases.

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SPECIAL MEETING
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The utility manager will be contacting MSSA & Tracy City to meet to see what we can do about the I & I problems.

This project could start in 30 days and take probably until March of 2022.

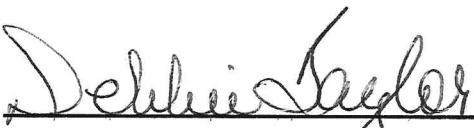
Alderman Favaloro made a motion to approve \$ 118,000.00 to do the GIS system. Alderman Parmley seconded the motion and it passe on roll call vote 4/0.

There being no other business the meeting adjourned at 9:12 am.

Respectfully Submitted,



Mayor, Marilyn Rodman



City Recorder, Debbie Taylor



1110 Market Street, Suite 300, Chattanooga, Tennessee 37402
t 423.720.2743 LJA.com

October 5, 2021

TASK ORDER

Honorable Marilyn Rodman
Town of Monteagle
117 South Central Avenue
Monteagle, Tennessee 37356

RE: Engineering Services as Related to the
Asset Management and GIS Mapping Project
Town of Monteagle, Tennessee
LJA Task Order 20210423

Dear Mayor Rodman,

LJA Engineering, Inc. ("LJA") is pleased to provide this proposal for engineering services associated with the Asset Management and GIS Mapping Project for the Town of Monteagle ("Client"). We propose the following services and corresponding fees in accordance with the Professional Services Agreement ("PSA") executed on February 19, 2021.

Background

Although the Town of Monteagle has completed a number of sewer projects over the years, there has not been a comprehensive mapping project that identifies each manhole and sewer mainline and the associated connectivity. In order to properly plan and manage a sewer system, it is important to have an accurate mapping system that is easily accessible to all those that have responsibility to manage and provide operational maintenance.

LJA staff will provide a GIS mapping system for the sanitary sewer system as defined below.

Scope of Services

1.0 Data Collection & Field Services Management

LJA staff will facilitate the collection of field data for the water, sewer and storm water systems as indicated below. Prior to mobilizing to the field, LJA staff will set up the respective attribute information in the data collection applications as shown in the example Exhibits. LJA staff will make revisions as needed to the data dictionary and attribute tables during data collection to facilitate the finalization of the respective GIS maps.

- **Water System** – LJA staff will coordinate with Town staff to collect field data which would include water valves, hydrants, and sections of mainline that are at a known location per Town staff. (Note: Lines that cannot be verified by Town staff will be entered into the map in the approximate location to establish a total system and can be corrected at a time in the future as that information is provided as part of another contract scope.) LJA staff will be paired with a Town staff member to be

shown the location of the points to be surveyed. The Town would allocate a Town staff member during the entire field data collection phase to provide the most efficient means of gathering data points. Survey grade shots will be taken where possible to provide the best level of accuracy. In the event that survey grade is not attainable without conventional surveying, mapping grade accuracy will be used. LJA Professional Licensed Surveyor will review the data collected and verify accuracy.

- **Sewer System** – LJA staff will facilitate the inspection of each manhole to provide an inventory of the material and current condition. The information collected will be based on the National Association of Sewer Service Companies (NASSCO) standardized coding and rating system (See Exhibit for example manhole inspection report). Line connections into each manhole will be verified to establish the connectivity of the sewer system. A survey grade GPS point on the manhole cover will be collected to establish the manhole location such that it can be projected onto the final GIS mapping layer. In the event that survey grade is not attainable without conventional surveying, mapping grade accuracy will be used. LJA Professional Licensed Surveyor will review the data collected and verify accuracy. Manhole inspections will be performed during wet weather periods to observe and document where active inflow and infiltration might be entering the system. A manhole inspection summary report will be provide in PDF format summarizing the information collected including any photos taken. During drier periods, smoke testing of the sanitary sewer mainlines will be conducted. This will be completed by utilizing a smoke machine and a non-toxic mineral oil to blow smoke into the mainlines. The smoke will exfiltrate through defects in mainlines, manholes, and service laterals into the ground and out to the ground surface where it can be observed during testing. The path in which smoke travels will identify locations where infiltration may currently be entering the sanitary sewer collection system such as storm pipe cross-connection defects and severe inflow sources such as roof and storm drains.
- **Storm System** – LJA staff will collect key system points such as storm manholes, storm drains, catch basins, storm piping, and drain culverts in order to delineate the storm water drainage system within the Town Limits. LJA Professional Licensed Surveyor will review the data collected and verify accuracy. LJA staff will compare to TDOT storm data files (if available) prior to mobilizing to the field to ensure that no duplication of data is performed. The extents of the assessment and data collection will include the outlets of stormwater to any natural resources as applicable within the Town limits. LJA staff will make every effort to delineate the storm water system to each outlet; however, because these outlets may likely be located along private property, some access issues may limit the ability to fully outline the extents of the storm system to the nearest natural resource /creek. Existing Lidar and/or contour data will be utilized where possible to maximize the information gathered. (Note: LJA will not be including any survey or assessment along or within any private property, only along Town right-of-way (ROW) within the Town limits.)

LJA staff will provide oversight and direct management of any subcontractors working on the project performing manhole inspections, smoke testing, and/or the collection of GPS coordinates. LJA staff will track progress throughout the project and provide updates to Town staff as requested. During the manhole inspection phase, LJA staff will evaluate productions logs and

the "cannot locate" list. This list will be submitted to Town staff so they can facilitate the raising of manholes in order to complete inspection work.

LJA staff will receive weekly submittals for the GPS information collected in shape file format. LJA will integrate GPS points into the master GIS file as submittals are received. LJA staff will provide the Client with update/status reports periodically during the course of field work as needed. All work captured will be presented in a format suitable for final integration into ESRI's ArcGIS software.

2.0 GIS Mapping & Data Integration

Upon completion of the collection of field data, LJA staff will review the collected data, perform QA/QC to ensure accuracy, and integrate into the associated GIS layers (water, sewer and storm). LJA staff will compile the digital information for each associated system and create a point layer in a personal geodatabase that will contain all the data to be served and queried within the GIS mapping system. Specific information about the defects such as type, location, and severity will be available within the layer of information. The manhole inspection and smoke testing reports will be available through a link in the GIS in PDF format.

LJA staff will facilitate the creation of a final GIS map where Town staff can access via an online ArcGIS account. In lieu of the Town purchasing ESRI software or paying for an online account (typically \$1,200-\$1,500 annually), LJA will host the ESRI mapping system at no cost. LJA staff will set up the ESRI account and port all mapping data to the online portal and prepare for viewing. LJA staff will provide one (1) in person training session for Town staff to show them how to use the map, assist in setting up the ESRI application on mobile devices and provide a general overview on using the mapping features. LJA staff will also provide an electronic tutorial that can be referenced at any time on how to use the mapping system.

3.0 Engineering & Summary Report of Findings

Upon finalization of the GIS integration, LJA staff will provide a summary memorandum outlining the work performed during the field data collection phase. Additionally, the memo will summarize the findings of the information collected and provide recommendations of future action to address the issues observed.

LJA staff will provide a drive with the data collected in the field in final format. Summary manhole and smoke testing reports will be provided in PDF format along with photos captured during inspections. An ESRI mxd file will be provided containing all data integrated and linked to the hard drive as a final data submittal. Although the Town is expected to utilize the online mapping account to access the information, the hard drive of information will serve as a backup as all information collected during the project. LJA staff will create a system map book for the sewer, water and storm water systems and provide electronically for Town staff to use. Additionally, LJA will provide one (1) hard copy of the map books for reference. Additional hard copies can be provided for an additional cost that can be invoiced through the General Services contract.

4.0 Additional Services – CCTV Inspection and Cleaning

As additional services, LJA recommends performing CCTV inspection and cleaning (where required). During the flow monitoring study, LJA identified priority areas of the system where I/I was observed. Although it is expected that much of these defects may be attributed to defective manholes and will be identified during the manhole inspection phase, additional defects and extraneous flow may likely be coming from defective mainlines. In order to locate and identify specific defects to repair and include in a rehabilitation project, CCTV inspection of mainlines will be necessary.

Since the Town does not own their own CCTV and cleaning equipment, this task will need to be performed by those with the specialized equipment to access the sewer mainlines. LJA utilizes multiple contractors to perform this type of work for trenchless design of sanitary sewer repairs much like utilizing conventional surveying for open-cut type repairs. In order to facilitate impending trenchless design work, it is required that all inspections be performed utilizing NASSCO coding and rating system. NASSCO is a third party organization that provides ASTM like standards for sewer inspections (see www.NASSCO.org).

It is recommended the Town allocate funds to perform a minimum amount of CCTV inspection and cleaning as part of this project such that defects can be identified for repair in priority areas. It may be prudent to perform inspection throughout the entire system (as budget allows) since it has been over a decade since the system has been inspected and cleaned. It is imperative that the inspection work be performed during wet weather periods (~December through May) when the groundwater table is elevated such that active inflow and infiltration might be observed.

It is estimated that there is approximately 50,000 linear feet of sewer line within the system. Approximately 35% (17,500 LF) of the system may be considered priority. If 100% cleaning is not performed, some cleaning will need to be performed in order to navigate the camera through the pipeline and/or be able to see the walls of the pipe. As a general guide, it is estimated that approximately 50% of the pipes televised will require cleaning; however, should there be significant grease or root issues, a greater number of pipes would likely need to be cleaned prior to inspection.

Should the Town allocate funding for CCTV inspection, LJA will facilitate the completion of inspections and/or cleaning in priority area of the system based on the flow monitoring study results. All inspection videos would be integrated into the Town's online mapping system and accessible via link from the associated pipeline. The findings from the inspection work would be incorporated into the engineering summary of results.

Client's Responsibilities

Client shall be responsible for the following items:

- Provide assistance and coordinate with property owners as needed for property access.
- Assist LJA staff by locating manholes not easily identified both above and below grade.
- Provide access to buried manholes that are below grade.
- Assist LJA staff in performing traffic control as needed.

Compensation

We propose to provide the specific services described above to be billed as follows:

| Item No. | Description | Units | Unit Cost | Total |
|---|--|---------------|-----------|------------------|
| <u>Sewer</u> | | | | |
| 1 | Mobilization | 1 | \$3,500 | \$3,500 |
| 2 | Manhole Inspections | 200 | \$125 | \$25,000 |
| 3 | Manhole GPS | 200 | \$40 | \$8,000 |
| 4 | Smoke Testing | 50,000 | \$0.55 | \$27,500 |
| <u>Water</u> | | | | |
| 5 | Water Feature GPS | Cost Plus Max | Hourly | \$12,000 |
| <u>Storm Water</u> | | | | |
| 6 | Storm Feature GPS | Cost Plus Max | Hourly | \$8,000 |
| <u>Engineering</u> | | | | |
| 7 | GIS Mapping (Sewer, Water, Storm Water) | LS | \$18,500 | \$18,500 |
| 8 | Engineering & Summary Report of Findings | LS | \$15,500 | \$15,500 |
| Sub-Total Contract Fee (Tasks 1 through 8) | | | | \$118,000 |

The follow are additional services available as approved by the Town.

| Item No. | Description | Unit Cost |
|--------------|----------------------|-----------|
| Sewer | | |
| 9 | Mobilization | \$5,500 |
| 10 | CCTV Inspection | \$1.84 |
| 11 | Preconditioning | \$1.80 |
| 12 | Heavy Cleaning Adder | \$1.06 |
| 13 | *Data Delivery | \$15,250 |

**Price of Data Delivery is based on all 50,000 LF being televised. The data delivery fee may be adjusted should a significantly less footage be televised.*

Any work not authorized within three (3) months of the date of this agreement will be subject to renegotiations based on current rates.

Schedule

LJA staff would be ready to begin manhole inspections within 30 days of execution of this Task Order. LJA staff would simultaneously perform GPS of each manhole during manhole inspections. It is anticipated that manhole inspections and GPS would take approximately 60 days to complete. Smoke testing would begin during drier weather patterns and would be weather dependent. It is anticipated that smoke testing would take approximately 30 days to complete. LJA staff would coordinate with Town staff for the GPS work of the water and storm water systems and would complete that work based on the availability of Town staff. Upon completion of all field work, it is anticipated that a final summary report would be completed in 60 days. The online map would be available prior to the final summary report delivery. LJA staff would coordinate and schedule the training date based on Town staff availability.

Reimbursables and additional services

Included in the above fees are reimbursable expenses incurred on the project's behalf, including: mileage, printing, plotting, photocopies, reproduction, express mail, and/or courier services. Any regulatory agency review fees associated with plan reviews shall be the responsibility of the Client. Reimbursable expenses will be billed at cost plus ten percent (10%). LJA will bill monthly for all work performed and expenses incurred on the project's behalf. Unpaid invoices after thirty (30) days will accrue service charges at 1-1/2% per month and include any costs of collections and reasonable attorney's fees.

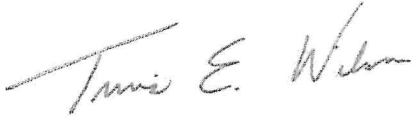
Authorization

If this proposal meets with your approval, your signature below and on the attached Professional Services Agreement will be sufficient authorization for LJA to commence the stated work as indicated in the above Scope of Services.

Honorable Marilyn Rodman
October 5, 2021
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We appreciate the opportunity to submit this proposal and look forward to working with you on this project. If you have any questions, please contact me at 931.273.8999.

Sincerely,



Travis E. Wilson, PE
Vice President

TEW

Attachment

Accepted By:
TOWN OF MONTEAGLE

By: _____

Name: _____

Title: _____

Date: _____

EXHIBITS

Manhole Inspection Report

Date: 12/18/2017

Manhole ID: 74-24
Crew: CC

Street Address: Blackburn Rd SE
General Location: Cut out in side of road at top of creek bank

Inspection Type: Internal
Structure Type: Standard
Location: Grass
Surface Type: Dirt/Grass
Weather: Dry Weather/Wet Ground

Cover Type: Pick
Cover Fit: Good
Holes in Cover: 0
Riser Present?: 0
Riser Height: 0

Ponding Type: None
Ponding Depth: 0
Grade +/-: 0 ft
Inflow Dish?: No
Frame Offset: 0 in

Chimney Material: Brick with Liner
Chimney Height: 3 in
Cone Material: Brick with Liner
Cone Shape: Concentric

Wall Material: Brick with Liner
Wall Lining Type: Cementitious
Wall Length: 0
Wall Width/Dia: 48 in

Bench Type: Poured
Trough Type: Poured
Step Type: Metal
Step Condition: Corroded

Manhole Depth: 4.55 ft
Comments: None

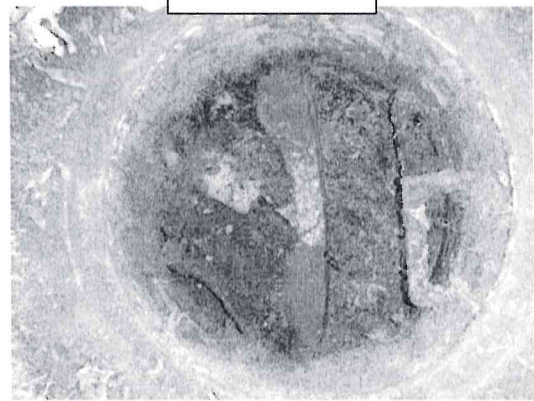
Evidence of Surcharge?: Yes

Surcharge Depth: 3.3 ft

Area Photo



Internal Photo

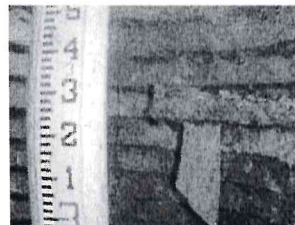


Manhole Defect Information

Components with Defects: Wall, Cover, Frame, Frame Seal, Chimney, Cone, Bench,

| | I/I Code Type | Broken | Lining Failure | Deposits | Roots | Fracture | Crack | Hole | Surface Damage | Brickwork | Joint |
|--------------------|---------------|--------|----------------|----------|--------------|----------|-------|------|----------------|-----------|-------|
| Cover: | | | | | | | | | Spalling | | |
| Frame: | Staining | | | | Roots Fine | | | | Spalling | | |
| Frame Seal: | | | | | Roots Medium | | | | | | |
| Chimney: | Staining | | | | Roots Medium | | | | | | |
| Cone: | Staining | | | | Roots Medium | | | | | | |
| Wall: | Staining | | | | Roots Medium | | | | | | |
| Bench: | | | | | Root Ball | | | | | | |
| Trough: | | | | | Roots Medium | | | | | | |

Manhole Defect Photos:



Manhole Inspection Report - Pipes

Pipe #: 1

Upstream MH: 74-24

Downstream MH: 74-23

Clock Position: 6

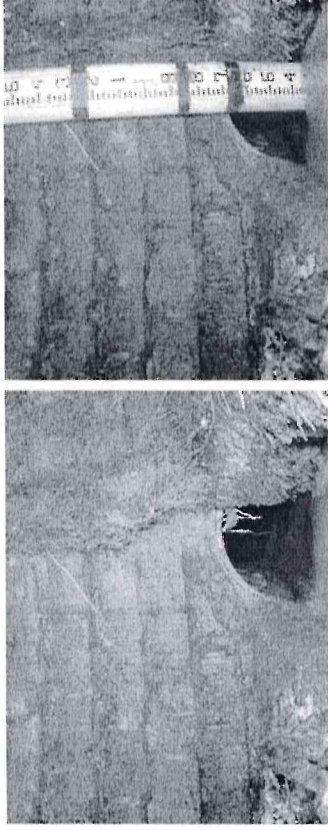
Shape of Pipe: Round

Diameter/Height: 8 in

Material: PVC

Rim to Invert: 4.55 ft

Flow Depth: 4 in



Comments: None

Pipe #: 2

Upstream MH: Svc

Downstream MH: 74-24

Clock Position: 10

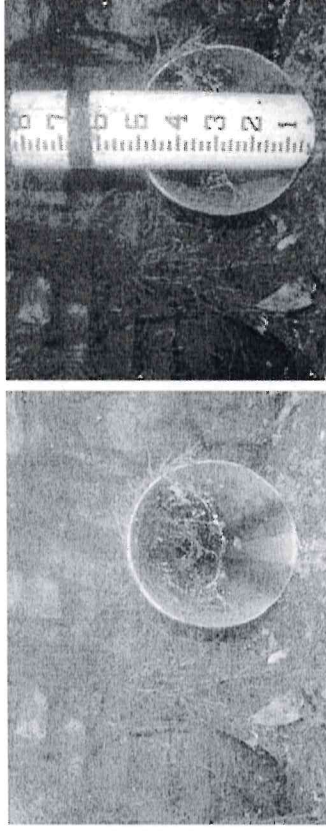
Shape of Pipe: Round

Diameter/Height: 8 in

Material: PVC

Rim to Invert: 3.4 ft

Flow Depth: 0 in



Comments: None

Pipe #: 3

Upstream MH: 74-25

Downstream MH: 74-24

Clock Position: 12

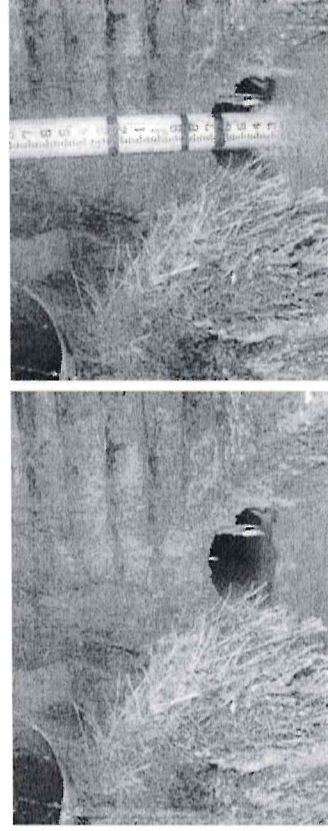
Shape of Pipe: Round

Diameter/Height: 8 in

Material: PVC

Rim to Invert: 4.55 ft

Flow Depth: 4 in



Comments: None

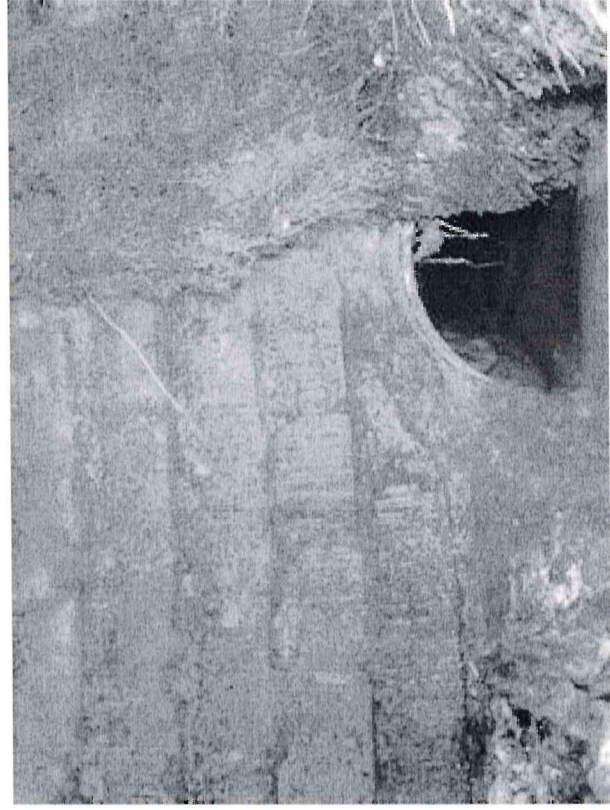
Manhole Inspection Report - Pipe Defects

Pipe #: 1

Defect Type: Obstacle,Roots

Defect Location: MH-Pipe Connection

Comments: None

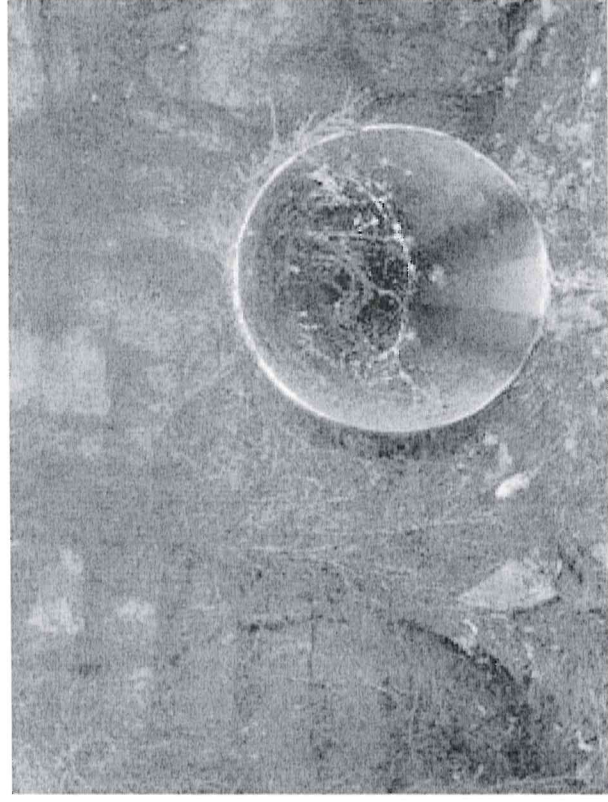


Pipe #: 2

Defect Type: Roots

Defect Location: MH-Pipe Connection

Comments: None



Smoke Test Inspection Report

Observation : 8-2

Collected By: Tyler Mowery

Date Inspected: 09/06/2018

Address: 575 East St

Location: Front yard

Upstream Manhole: 69-46

Downstream Manhole: 69-45

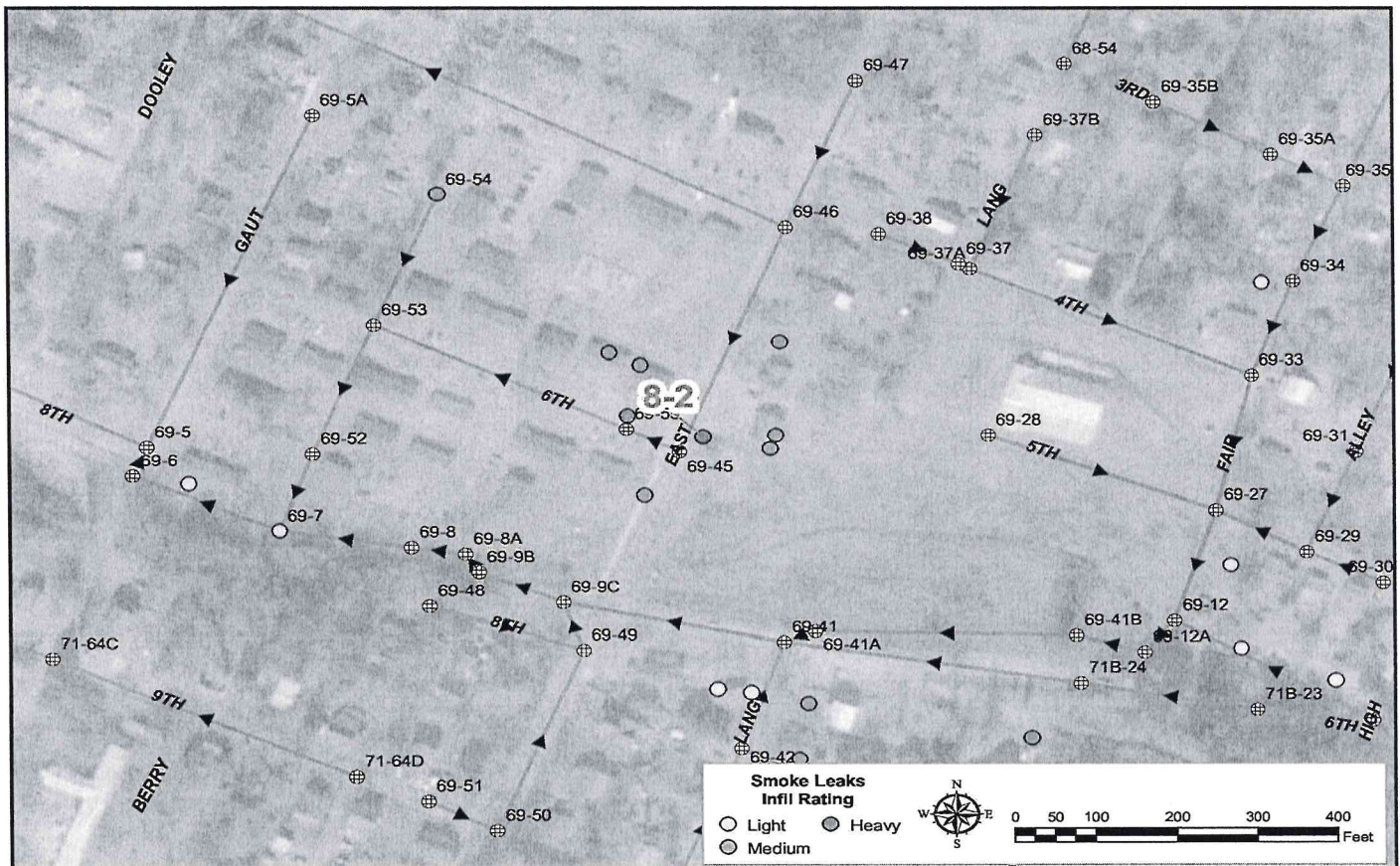
Area: Private

Source: Service Cleanout

Smoke Intensity: Heavy

I & I Rating: Severe

Comments: Missing cap and broken 4 inch cap connection



From: Travis Wilson twilson@lja.com
Subject: Monteagle Special called meeting
Date: Sep 29, 2021 at 11:59:41 AM
To: debbieadmin@blomand.net, Marilyn Rodman
rodmanmayor@benlomand.net

See below. I'm not sure how you usually right up your ads, but this might be some language to include. Please feel free to add to or revise what is here. I didn't think you wanted to get into too much detail in the add, but if you do, I would be glad to revise based on your recommendation.

The Town of Monteagle will be conducting a special called meeting onX at X AM to discuss the mapping and asset management of sewer, water, and storm water infrastructure as it relates to future upcoming projects. This is part of the Town's initiative to provide operational and maintenance needs for the current infrastructure as well as planning for future growth in the community.

Travis E. Wilson, PE

Vice President

LJA Engineering | We seek solutions.

198 Dodd Road, McMinnville, Tennessee

C: [931.273.8999](tel:931.273.8999)

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