

**Professional Services Contract**  
**City of Stephenville, Texas**  
**Sanitary Sewer Evaluation Survey**  
**Basin 1**



Nick Williams, P.E., CFM  
Director  
Public Works Department  
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**November 10, 2021**



**PIPELINE ANALYSIS LLC**  
**1115 Main Street**  
**Garland, Texas 75040**  
**800-637-0164**  
**TBPE Firm No. F-6538**

## **CONTRACT FOR PROFESSIONAL ENGINEERING SERVICES**

THIS CONTRACT made and entered into on the date last stated below between the City of Stephenville, hereinafter called "City", acting by and through Doug Svien, Mayor, duly authorized to act on behalf of CITY and Pipeline Analysis, LLC hereinafter called "ENGINEER", acting by and through James H. Forbes, Jr., P.E. (Project Manager) duly authorized to so act on behalf of the ENGINEER.

WHEREAS, the CITY desires professional engineering services in connection with the Sanitary Sewer Evaluation Survey of sewer drainage Basin 1 for the City of Stephenville, Texas, hereinafter called "the PROJECT"; and

WHEREAS, the CITY has determined that the ENGINEER has experience in the area involved in the Project and is qualified to perform the work, and the ENGINEER is willing to enter into a contract with CITY to perform the engineering services desired by CITY in connection with the PROJECT.

THE CITY AND ENGINEER AGREE AS FOLLOWS:

The CITY hereby retains the ENGINEER to perform engineering services in connection with the PROJECT described above.

### **1. SCOPE OF SERVICES**

The scope of Engineering services to be performed by the ENGINEER shall be as follows:

#### **1.1 Approach to Project**

This project will perform various field testing and inspection of the wastewater collection system within Basin 1 and prepare draft and final reports that recommend system repairs and estimated costs to reduce wet weather infiltration/inflow.

#### **1.2 Detailed Scope of Services**

See Exhibit B attached.

### **2. CITY'S RESPONSIBILITIES**

So as not to delay the services of ENGINEER, the CITY shall do the following in a timely manner:

## 2.1 Provide Existing Data

CITY will provide to ENGINEER at no cost those sewer maps and any applicable previous reports.

Existing data delivered to the ENGINEER by the CITY remains the property of the CITY and must be returned to the CITY after completion of the PROJECT.

## 2.2 Provide Access

Arrange for access to, and make all provisions for, ENGINEER to perform services under this AGREEMENT.

## 2.3 CITY Representative

CITY designates Nick Williams, P.E., Director of Public Works as representative to act as the contact person on behalf of the CITY.

## 3. SCHEDULE

### 3.1 Schedule

Anticipated notice to proceed start date is December 1, 2021. The ENGINEER'S services shall be performed in a timely manner consistent with sound professional practices. The ENGINEER will complete the work according to the following schedule:

Task	Description	Month					
		1	2	3	4	5	6
100	Mobilization	■					
200	Manhole/Pipe Inspection -100%		■				
300	Smoke Testing, Public Awareness, Data Entry & Analysis (100%)		■	■			
400	Dye Flooding - None				■		
500	Preparatory Cleaning- None				■		
600	CCTV Inspection - Recommendations Only				■		
700	Admin.,Project Mgt.	■	■	■	■	■	■
800	Defect Analysis/Rehab.		■	■	■	■	
900	Database, Cost Estimates, Mapping, Final Reports				■	■	■

The time limits set forth in the schedule shall include allowances for reasonable and expected review time by the CITY and approval by authorities having jurisdiction over the PROJECT, and shall not be allowed as cause for delay or adjustments to the schedule. Delays in the project critical path caused by review times by the CITY or a permitting agency exceeding those anticipated by the ENGINEER'S schedule are cause for

adjustments in the schedule. Any adjustments made to the agreed upon schedule shall be made in writing and acceptable to both parties.

The ENGINEER shall begin work immediately upon receipt of the executed CONTRACT and/or written Notice to Proceed.

### **3.2 Completion of Services**

ENGINEER'S services under each item of the finalized Scope of Work shall be considered complete on the date when the submissions for that item have been accepted by CITY.

Failure to meet the time limit for completion of the Final Reports, as stated above under "Schedule", will result in liquidated damages of \$50.00 per consecutive calendar day until the Final Reports are submitted.

### **3.3 Changes**

If the CITY requests significant modifications or changes in the Scope of Services, general scope, extent or character of the PROJECT, the time of performance of ENGINEER'S services, the various rates of compensation and schedule shall be adjusted equitably.

### **3.4 Written Authorization for Additional Work**

Any provision in this CONTRACT notwithstanding, it is specifically understood and agreed that the ENGINEER shall not authorize or undertake any work pursuant to this CONTRACT which would require the payment of any fee, expense or reimbursement in addition to the fees stipulated in Section 4 (Payment for Services) of this CONTRACT, without first having obtained the specific written authority to do so from CITY.

## **4. PAYMENT FOR SERVICES**

### **4.1 Terms**

Terms used in describing the applicable method of payment for services provided by the ENGINEER shall have the meaning indicated below:

#### ***Basic Engineering Fee:***

Basic Engineering Fee shall mean those expenses incurred by the ENGINEER in prosecuting the PROJECT Scope of Services.

## ***Reimbursable Expenses***

Not applicable

## ***Additional Services***

Additional services **not** covered under the Scope of Services, will be provided to the CITY on a unit price or lump sum basis. A revised written detailed scope of services for additional services will be provided with the pricing summary. Additional services must be approved by City along with a written notice to proceed.

### ***4.2 Basis and Amount of Compensation for Basic Services***

Compensation for basic services will be as shown in Exhibit A. These services will be billed monthly based on a percentage completed and will not exceed the total presented.

### ***4.3 Basis and Amount of Compensation for Additional Services***

Not applicable. No additional services are anticipated.

### ***4.4 Partial Payments for Services***

Partial fee payments may be applied for at monthly intervals, based upon statements which reflect the percentage of work completed for the various items listed under Scope of Services. These statements shall be prepared by the ENGINEER and must be verified and approved by CITY.

### ***4.5 Delay***

If ENGINEER'S design services or service during construction of the PROJECT are delayed or suspended in whole or in part by the CITY for more than one year for reasons beyond ENGINEER'S control the various rates of compensation, including Additional Services, provided for elsewhere in this CONTRACT shall be subject to equitable adjustment.

## **5. TERMINATION, SUSPENSIONS OR ABANDONMENT**

### ***5.1 Termination***

The CITY or the ENGINEER may terminate this CONTRACT for reasons identified elsewhere in this CONTRACT. In the event such termination becomes necessary, the party effecting termination shall so notify the other party, and termination will become effective thirty (30) calendar days after receipt of the termination notice. Irrespective of which party shall effect termination or the cause therefore, CITY shall within thirty (30) calendar days of termination remunerate ENGINEER for services rendered and costs incurred, in accordance with the ENGINEER'S prevailing fee schedule (Exhibit A).

Services shall include those rendered up to the time of termination. All plans, field survey, and other data related to the PROJECT shall become the property of CITY upon termination of the CONTRACT and shall be promptly delivered to CITY in a reasonably organized form. Should CITY subsequently contract with a new Engineer for continuation of services on the PROJECT, ENGINEER shall cooperate in providing information. No amount shall be due for lost or anticipated profits.

## **5.2 Suspension**

If the Project is suspended by CITY for more than thirty (30) consecutive days, the ENGINEER shall be compensated for services performed prior to notice of such suspension. When the Project is resumed, the ENGINEER'S compensation shall be equitably adjusted to provide for expenses incurred in the interruption and resumption of the ENGINEER'S services.

## **5.3 Abandonment**

This CONTRACT may be terminated by CITY upon not less than seven (7) days written notice to the ENGINEER in the event that the Project is permanently abandoned. If the Project is abandoned by CITY for more than ninety (90) consecutive days, the ENGINEER or CITY may terminate this CONTRACT by giving written notice.

## **5.4 Failure to Pay**

Failure of CITY to make payments to the ENGINEER in accordance with this CONTRACT shall be considered substantial nonperformance and cause for termination.

If CITY fails to make payment to ENGINEER within thirty (30) days of a statement for services properly performed, the ENGINEER may, upon fourteen (14) days written notice to CITY, suspend performance of services under this CONTRACT. Unless ENGINEER receives payment in full within fourteen (14) days of the date of the notice, the suspension shall take effect without further notice. In the event of a suspension of services under this section, the ENGINEER shall have no liability to CITY for delay or damage caused CITY because of such suspension of services.

# **6. GENERAL CONSIDERATIONS**

## **6.1 Professional Standards**

Services performed by the ENGINEER under this CONTRACT will be conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. The ENGINEER shall comply with the applicable laws and rules of the current "Texas Engineering Practice Act". CITY's approval, acceptance, use of or payment for all or any part of the ENGINEER'S services herein under or of the project itself shall in no way alter

the ENGINEER'S obligations or CITY'S rights thereunder.

## **6.2 Progress and Performance**

The provisions of this CONTRACT and the compensation to ENGINEER have been agreed to in anticipation of continuous and orderly progress through the completion of the ENGINEER'S services. Time for performance shall be extended to the extent necessary for delays due to circumstances over which the ENGINEER has no control. If the ENGINEER'S services are suspended or delayed the times of performance shall be extended to the extent of such delay or suspension. A delay or suspension shall not terminate this CONTRACT unless ENGINEER elects to terminate in accordance with the provisions of Section 5 of this CONTRACT. If a delay or suspension extends for a period of greater than one year for reasons beyond the control of the ENGINEER, the fees and rates of compensation set forth in Section 4 shall be subject to re-negotiating.

## **6.3 CITY Control**

It is understood and agreed that CITY shall have complete control of the services to be rendered, and that no work shall be done under this CONTRACT until the ENGINEER is instructed to proceed with the work.

## **6.4 Independent Agent**

ENGINEER and CITY agreed that ENGINEER and any officer, employee or agent of ENGINEER, in the performance of this CONTRACT shall act in an independent capacity and not as an officer, agent or employee of CITY.

## **6.5 Compliance with Laws**

ENGINEER shall comply with all Federal, State, and local laws and ordinances in the execution of all work in connection with this PROJECT.

## **6.6 No Additional Work Without Authorization**

Any provision in the CONTRACT notwithstanding, it is specifically understood and agreed that the ENGINEER shall not authorize or undertake any work pursuant to this CONTRACT, which would require the payment of any fee, expense or reimbursement in addition to the fee stipulated in Article 4 of this CONTRACT, without having first obtained specific written authority therefore from CITY.

## **6.7 Assignment & Subcontracting**

This CONTRACT shall not be assigned or subcontracted in whole or part without the written consent of CITY.

## **6.8 Indemnification**

ENGINEER, its officers, agents and employees agree to indemnify, hold harmless, and defend CITY, at ENGINEER'S cost, its officers, agents, and employees from and against any and all claims or suits for injuries, damages, loss, or liability of whatever kind of character, arising out of or in connection with the performance by the ENGINEER of those services contemplated by the CONTRACT, based upon negligent acts or omissions of ENGINEER, its officers, agents, employees, consultants and subcontractors, whether or not caused solely by the ENGINEER, its officers, agents, employees, consultants or subcontractors or jointly with any other party.

ENGINEER agrees that he is solely responsible for the safety of himself and his employees in the performance of this CONTRACT and agrees to indemnify and hold harmless CITY, its officers and agents from and against any liability arising from the personal injury or death of the ENGINEER or the employees of the ENGINEER arising out of or in connection with this CONTRACT.

## **6.9 Insurance**

ENGINEER shall secure and maintain insurance that will protect him from claims under the Worker's Compensation Act (statutory amounts).

ENGINEER shall secure and maintain Commercial General Liability Insurance that will protect him from claims for bodily injury, death or property damage which may arise from the performance of his services under this CONTRACT, written on an occurrence basis, in the following amounts:

For engineering design contracts for more than \$10,000.00, insurance in an amount not less than \$500,000 per occurrence and \$1,000,000 annual aggregate for bodily injury or death and property damage. ENGINEER shall maintain Comprehensive Automobile Liability Insurance covering all owned, non-owned, and hired vehicles with combined single limit coverage of \$1,000,000 for bodily injury, death or property damage.

ENGINEER shall maintain, at no expense to CITY, a professional liability (errors and omissions) insurance policy placed with a company rated at least A-/VII by Best's Key Rating Guide, authorized to do business in Texas. This coverage must be maintained for at least two (2) years after the PROJECT is completed. Coverage must be written on an occurrence basis. However, at its sole discretion, the CITY may accept coverage written on a claims-made basis if the policy provides for a retroactive date equivalent to the inception date of the CONTRACT or earlier, maintained during the full term of the CONTRACT.

All policies, except Worker's Compensation and Professional Liability, shall name the CITY as additional insured. All policies shall contain a waiver of subrogation in favor of the CITY and shall require the giving of written notice to CITY at least thirty (30) days



prior to cancellation, non-renewal or material modification of any policies, evidenced by return receipt of United States Certified Mail. ENGINEER shall furnish CITY with copies of said policies or certificates evidencing such coverage.

#### **6.10 Property**

All documents, including drawings, field notes, surveys, tracings, calculations, computer input and output, digital or computer files, etc., prepared by the ENGINEER pursuant to this contract shall become the property of CITY. The ENGINEER may retain copies of all documents. Any reuse of the documents shall conform to The Texas Engineering Practice Act.

#### **6.11 Governing Law**

This CONTRACT has been made under and shall be governed by the laws of the State of Texas. The parties agree that the performance and all matters related thereto shall be in Stephenville, Texas.

**7. DOCUMENT EXECUTION**


IN WITNESS WHEREOF, the parties have executed this CONTRACT the \_\_\_\_\_ day of \_\_\_\_\_, 2021.

**City of Stephenville, Texas  
298 West Washington  
Stephenville, Texas 76401-4257  
(254)918-1220  
(254)918-1207 FAX**

By: \_\_\_\_\_  
Doug Svien (Mayor)

Date: \_\_\_\_\_

**ENGINEER  
Pipeline Analysis, LLC  
1115 Main Street  
Garland, Texas 75040  
(800)637-0164  
(972)479-0659 FAX**

By:   
\_\_\_\_\_  
James H. Forbes, Jr., P.E. (President)

Date: November 10, 2021

# Exhibit A Compensation Basin 1 Sewer System Evaluation Survey

## Sanitary Sewer Evaluation Survey Basin 1

Task	Description	Estimated Quantity	Unit Price	Total
100	Mobilization	L.S.	L.S.	\$ 1,680.00
200	Manhole/Pipe Inspection -(100%)	50	\$105.00	\$ 5,250.00
300	Smoke Testing, Public Awareness, Data Entry & Analysis (100%)	23,000	\$ 0.55	\$ 12,650.00
400	Dye Flooding	1	\$225.00	\$ 225.00
500*	Preparatory Cleaning	0	\$ 2.50	\$ -
600	CCTV Inspection	4000	\$ 1.55	\$ 6,200.00
700	Admin.,Project Mgt.	L.S.	L.S.	\$ 1,400.00
800	Defect Analysis/Rehab.	L.S.	L.S.	\$ 1,500.00
900	Database, Cost Estimates, Mapping, Final Reports	L.S.	L.S.	\$ 5,095.00
<b>Total Not To Exceed (City of Perform Preparatory Cleaning)</b>				<b>\$ 34,000.00</b>

\* City to perform preparatory cleaning

# Exhibit B

## Detailed Scope of Services

### Basin 1

Using the prioritized results of the wastewater flow monitoring performed in July 2008, the system evaluation is being phased such that the highest priority areas (for example meter basin 10 and 7) are investigated first. This phase of field testing and rehabilitation will concentrate effort on Basin 1. Tasks include:

- Manhole Inspection
- Smoke Testing
- Map Update
- Draft and Final Report

#### **TASK 100      MOBILIZATION**

Mobilize project team and coordinate startup. Establish personnel assignments and responsibilities. Inventory equipment needs and order expendable supplies. Review all relevant existing materials, previous reports, etc. developed for or by the City of Stephenville concerning this project, including, but not limited to, the following:

1. Previous studies for the service areas to be investigated
2. Sewer maps including converting to ArcView mapping system. Also modifying the existing asset numbering system in the project area.

#### *Deliverable:*

1. Delivery of equipment and personnel
2. Work maps of Basin 1 with delineated boundaries

#### *To Be Provided by City:*

- Access for placement of equipment and personnel
- Copies of all applicable reports, maps and historical data for the study area at no cost to ENGINEER
- As-built drawings, sewer key maps, street plans, electronic aerial photographs if available and if requested at no cost to ENGINEER

## TASK 200      MANHOLE/PIPE INSPECTION

Manholes can be a significant source of extraneous infiltration/inflow and thereby reduce system wet weather capacity. For this reason, each manhole within the study area is inspected. For the study area designated (Basin 1), field inspection crews will perform an inspection of manholes. The data gathered during this phase of the project will be used to prioritize manholes for rehabilitation and establish the base data necessary to accurately determine mainline sewer rehabilitation alternatives and costs. Other important deliverables resulting from this work task are the updating of the collection system map, determination of debris levels in pipes and verification of pipe sizes. This information is critical in preparing subsequent rehabilitation plans, cleaning requirements to restore capacity and updating of the system maps.

Inspection personnel will use digital cameras during the inspection of all manholes on this project. All photographs will be included in the field inspection computer database so that a permanent electronic record can be maintained. During inspection, each of the following types of information will be obtained to establish the condition and prioritize least cost repairs:

1. Basin and Sub-area Designation
2. Manhole/Cleanout ID
3. Inspection Status – buried, CNL, CNO
4. Address and GPS coordinate (x,y) of manhole
5. Surface cover, grade, type of cover (paved, yard, etc.)
6. Material of construction – brick, concrete, etc.
7. Area and Internal photo of manhole
8. All incoming and outgoing pipe depths from rim to invert
9. All incoming and outgoing pipe digital photographs
10. Outgoing pipe length
11. Defects – Active, Evidence or No Infiltration/Inflow with digital photographs
12. Field corrections to collection system map

Upon completion of the manhole inspection, a prioritized manhole rehabilitation summary will be prepared that will include:

- Documentation with summary of field observations
- List of manholes/lines requiring immediate attention
- Digital photos
- Documentation for preparing manhole rehabilitation quantities
- Field updated map(s)
- Prioritized Manhole Repair Recommendations and Cost Estimates

*To Be Provided by City:*

- Current collection system map
- Access (if requested) to manholes that are buried or could not be opened.
- Assistance in locating assets (if requested)

*Measurement of Payment:*

Payment for this work task shall be a unit price for each manhole documented. Those manholes that are located, but buried or could not be opened will be noted and a list provided to the City. Manholes that could not be located using metal detectors or probes will be listed as Could Not Located (CNL). CNL manholes will not be billed. Manholes located, but were buried or could not be opened will be billed. The City will provide replacement covers at no cost should a cover be broken while attempting opening.

**TASK 300      SMOKE TESTING OF STUDY AREA**

Smoke testing will provide detailed information on wet weather inflow sources for the study area. In order to identify defects in the lines, a non-toxic smoke will be forced into the sewer by high capacity blowers. Data documentation includes measurements from two permanent points and will be sufficient to establish the location of each defect and determine the best repair method and priority. Color digital photographs will be taken to document each defect during the smoke test.

Forty-eight (48) hours prior to testing, door hangers will be used to notify residents. A telephone number will be provided for those individuals with questions or for anyone requiring special assistance. Each day the fire department will be notified of the crew location since smoke may enter homes through defective plumbing.

*To Be Provided by City:*

- Review and approval of Notice to Residents
- Letter of introduction to be carried by field crews
- Previous City smoke testing data, if any

*Deliverables:*

- Defects listing and database
- Defect location sketch
- Digital photographs
- Smoke Notification Flyers and Notification of Residents
- Priority ranking of defects (both private and public sector)
- Repair methods and estimated costs



## **SMOKE TESTING NOTICE TO RESIDENT**

For the next few days, inspection crews will conduct a physical survey of the wastewater collection system. Pipeline Analysis will perform this study, which involves opening manholes in the streets and backyard utility easements. Information gained from this study will be used to repair and improve the wastewater collection system.

One important task of the survey will be **smoke testing** of sewer lines to locate breaks and defects in the system. During this testing, white smoke will exit through vent pipes on the roofs of homes and through sewer line breaks. **The smoke is non-toxic, leaves no residue, and creates no fire hazard.** The smoke should not enter your home unless defective plumbing exists or drain traps are dry.

If you have seldom-used drains, please pour a gallon of water in the drain to fill the drain trap. This procedure will help prevent the possibility of smoke entering your living areas through those drains.

Field crews will perform testing of all sewers in the area. **At no time will field crews have to enter your business or residence.**

Your cooperation is appreciated. Should you have any additional questions concerning this study or if you desire special assistance, please phone:

**800-637-0164**



## **Task 400      Dye Flooding**

Dye water testing can be anticipated to assist in locating specific defects during the evaluation. Non-toxic dye will be introduced as a powder or liquid. Cross-connections, roof drains and area drains that are suspected of being connected to the sanitary sewer will be positively identified using the dye tracer procedure. Field documentation and photographs will be used to record all findings. Internal inspection will determine the exact source of the 'cross-connection' and establish the best repair option (i.e., point repair, direct connection, etc.).

*To Be Provided by City:*

- Water for dye flooding at no cost to Engineer

## **TASK 500 & 600 CLEANING AND CCTV**

Preparatory cleaning shall consist of hydraulic jet cleaning to facilitate the internal CCTV inspection. Preparatory cleaning will consist of not more than three passes of the jet hose (normal cleaning). Heavy cleaning to remove large deposits of debris is not included in this work task. The City of Stephenville staff may perform this phase of the work in close coordination with the CCTV operator. Debris will be removed from the line and transported for disposal. CCTV investigation is found to be critical in establishing best practical repair methods. The following information will be provided:

1. Field forms, equipment, supplies and oversight QA/QC
2. Document findings. Data to include:
  - a. Date inspected
  - b. Line segment being inspected
  - c. Project name
  - d. Location (Address)
  - e. Footage location from manhole
  - f. Defect code and/or type and severity rating using the national Pipeline Assessment Certification Program (PACP) codes
  - g. Pipeline surface cover
3. Review video and logs
4. Provide reports on of segments televised in electronic format
5. Summary of line segments cleaned and CCTV'd
6. Results of TV inspection provided on printed logs
7. Prepare prioritized mainline rehabilitation plan

*To Be Provided by City:*

- Hydraulic jet cleaning of line segments if this task is to be performed by City staff
- Access to site of work for placement of equipment and personnel
- Disposal of any debris removed from the sewer system
- Water for cleaning and dye testing at no cost to engineer



*Measurement of Payment:*

**Note: It is anticipated that all preparatory cleaning will be performed by the City.** Should the City elect not to perform the preparatory cleaning, then Pipeline Analysis will invoice for the actual linear feet of sewer cleaned per the unit price specified in Exhibit A. In the case of CCTV, should the camera not be able to pass the entire length of the segment (due to protruding taps, roots, dropped joints, etc.), then an attempt will be made from the opposite direction (if possible). Where a reverse setup was attempted, then the entire segment length will be billed at the unit price specified. If a reverse setup cannot be performed, then the actual segment footage CCTV'd will be billed. Summary listings of the database with field logs will serve as the basis for the periodic partial payment requests.

**TASK 700      ADMINISTRATION AND PROJECT MANAGEMENT**

This task includes internal project administration and oversight including scheduling, budget, quality assurance and control meetings and reporting. The project schedule will be reviewed and milestones for the completion of each task will be assigned. The project schedule will be reviewed and updated monthly to ensure that all tasks are completed in a timely and organized fashion.

Management work items include:

1. Field crew supervision and project planning
2. Obtain initial maps for field use and verification
3. Prepare monthly billings
4. Schedule equipment and order supplies

Major system deficiencies that are identified during the field inspections that if corrected would result in significant reduction in I/I or is deemed to be of a safety concern will be recorded and forwarded as soon as possible to City's designated project manager. Likewise, should City undertake a major repair within the study area, they will immediately notify ENGINEER to determine the impact on data analysis.

*Deliverables:*

1. Monthly invoice
2. Status reports
3. Project schedule and updates

*To Be Provided by City:*

- All reports or materials deemed necessary by ENGINEER and identified during the course of the project that is not specifically stated above will be provided at no additional cost to the ENGINEER

**TASK 800      DEFECT ANALYSIS/ REHABILITATION**

This project will generate a considerable amount of data that will require proper entry and quality control. Data collection will include the following:

1. All collected data will be integrated into the project existing defect database and will be compatible with ArcView GIS system.
2. All collected defect data will be correlated between sources to address duplicate defects that were identified by different testing methods. Identify duplicate defects to ensure multiple rehabilitation methods are not recommended for the same defect.
3. Defect data will be presented graphically (data visualization).
4. Using industry standard quantification of source defects, (i.e. ASCE Manual of Practice for Sewer Evaluation and WEF Manual of Practice for Manhole Rehabilitation) Pipeline Analysis staff will prioritize defects and recommend rehabilitation.
5. Much of the baseline data required for rehabilitation decision is gathered during the normal course of field investigations. For example, “area photos” are taken of each manhole in the direction of the outgoing pipe. This photograph not only shows the location of the manhole but also provide data on the line cover and easement conditions.
6. Since private sector defects can contribute to excessive inflow, proper documentation for subsequent repair is important. Property owner address, photograph and sufficient information to document the defect will be recorded and incorporated into the City database. TECQ’s SSO Initiative program and EPA’s CMOM program both address the need for private sector repairs. Private sector defects will be prioritized and repair methods/costs established.
7. Rehabilitation recommendations will consider the best repair for the particular asset (manhole, pipeline, etc.) being rehabilitated. A long-term least-cost solution may have an initial higher cost, but provide a higher level of service and lower operating and maintenance cost. Supporting data will be provided on accompanying flash drive.

*To Be Provided by City:*

- Complaint records and SSO database if requested
- Review and comments on rehabilitation methods, cost estimates, and alternatives

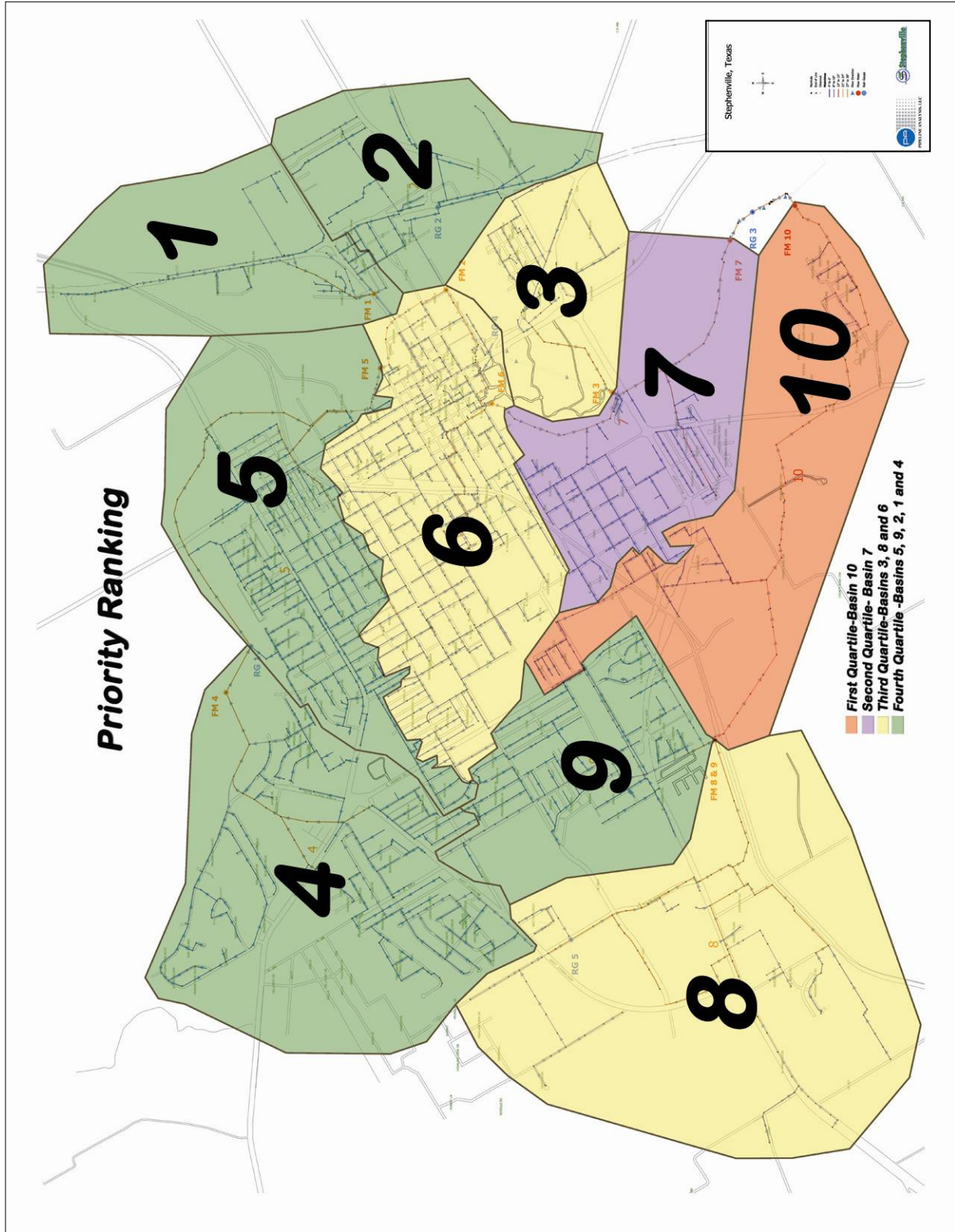
**TASK 900      FINAL REPORT**

Prepare and submit a Final Report that includes the following:

- Executive Summary
- Description of all tasks
- Manhole and pipe inspection summary/inventory
- Manhole defect summary
- Pipeline defect summary
- Service lateral defect summary
- Smoke test data summary
- Cleaning and CCTV findings
- Recommendations and Cost Estimates for Private and Public sector repairs

Prepare and submit three (3) Final Reports and electronic data.

# Basins by Flow Monitoring Priority



# Study Area Map Basin 1

