ORDINANCE NO. _____, M-C SERIES

ORDINANCE AUTHORIZING MAYOR DANAHAY TO ENTER INTO A MASTER SERVICES AGREEMENT WITH COMPIANCE ENVIROSYSTEMS, LLC, FOR SEWER SYSTEM EVALUATION SERVICES.

BE IT ORDAINED by the City Council of the City of Sulphur, Louisiana, the governing authority thereof, that they do hereby authorize Mayor Danahay to enter into a Master Services Agreement with Compliance Envirosystems, LLC, for sewer system evaluation services.

BE IT FURTHER ORDAINED that this Ordinance shall become effective upon the Mayor's approval, or upon proper re-adoption by the Council pursuant to Section 2-13(C) of the Home Rule Charter of the City of Sulphur.

APPROVED AND ADOPTED by City Council of the City of Sulphur, Louisiana, on this _____ day of _____, 2022.

_____
MANDY THOMAS, Chairman

I HEREBY CERTIFY that the foregoing Ordinance has been presented to the Mayor on this ____ day of _____, 2022, at _____ o'clock ____.m.

_____
ARLENE BLANCHARD, Clerk

I HEREBY CERTIFY that I have received from the Mayor at _____ o'clock ___.m. on this _____ day of _____, 2022, the foregoing ordinance which has approved/vetoed by the Mayor.

_____
ARLENE BLANCHARD, Clerk

AGREEMENT

FOR

MASTER PROFESSIONAL SERVICES AGREEMENT

OWNER: **CITY OF SULPHUR, LA**

Address: 101 N. Huntington St.
Sulphur, LA 70663
Administrative Contact: Austin Abrahams
Phone: 337.527.4510
Email: aabrahams@sulphur.org

CONSULTANT: **COMPLIANCE ENVIROSYSTEMS, LLC**

Address: 1401 Seaboard Drive
Baton Rouge, LA 70810
Administrative Contact: Brad Dutruch, President
Phone: 225.769.2933
Email: brad@ces-sses.com

PROJECT: **Sewer System Evaluation Services**

THIS AGREEMENT, is made effective this _____ day of _____, 2021, by and between OWNER and CONSULTANT, a limited liability company domiciled in the State of Louisiana.

WITNESSETH:

WHEREAS, the OWNER desires to employ the CONSULTANT to provide services related to the PROJECT; and

WHEREAS, the CONSULTANT is willing and able to provide services related to the PROJECT in accordance with the terms and conditions set forth in this Agreement;

WHEREAS, the parties agree that the method of approach set forth in Attachment "A" is the basis for the services to be performed by the CONSULTANT under this Agreement.

NOW, THEREFORE, IT IS CONTRACTED, COVENANTED AND AGREED THAT:

ARTICLE 1 – CONSULTANT'S SERVICES

1. The CONSULTANT agrees to furnish the services identified and described in Attachments A and B, attached hereto and incorporated herein.
2. This Agreement shall commence once it has been executed by both parties and a Purchase Order issued by the OWNER.

ARTICLE 2 – COMPENSATION

1. The OWNER shall compensate the CONSULTANT for providing the services identified and described in Attachments A and B in accordance with the Fee Schedule set forth and attached to this agreement.
2. The CONSULTANT shall be paid in accordance with the Fee Schedule for any and all services performed in connection with the PROJECT. For those services that may arise from time to time that are not included in the Fee Schedule, the CONSULTANT shall work with the OWNER to negotiate a reasonable fee.

ARTICLE 3 – PAYMENT

Payment to the CONSULTANT, as described in Article 2, is to be made as follows:

1. Each month the CONSULTANT shall submit an invoice to the OWNER describing the services performed and expenses incurred by the CONSULTANT during the preceding month. OWNER shall review the CONSULTANT's invoice within ten (10) business days of receipt and either recommend it for payment or return it to the CONSULTANT with comments.

2. The OWNER shall pay the CONSULTANT the amount set forth in the invoice within thirty (30) days from the date the OWNER receives the CONSULTANT'S invoice.
3. If the CONSULTANT does not receive payment of the entire amount set forth in the CONSULTANT'S invoice within ninety (90) days from the date the OWNER receives the invoice, the CONSULTANT may suspend services until payment of the entire amount of the outstanding invoice is received by the CONSULTANT.

ARTICLE 4 – GENERAL TERMS AND CONDITIONS

1. PROFESSIONAL STANDARDS. The CONSULTANT shall be responsible, to the level of care and skill ordinarily used by practicing professionals in the same type of work in the U.S.A., for the professional and technical soundness, accuracy and adequacy of all data, reports, recommendations and other services and materials furnished under this Agreement.
2. PROJECT PROGRESS. The CONSULTANT'S services and compensation under this Agreement have been agreed to in anticipation of the orderly and continuous progress of the PROJECT through completion.
3. CONTRACT TIME. The duration of this contract shall be for a period of 36 months, commencing on the date that this agreement is signed by OWNER. At the end of the contract time, the OWNER will retain the option of renewing the contract for an additional 36 months, if mutually agreeable by OWNER and CONSULTANT.
4. CONFIDENTIALITY. The CONSULTANT shall not disclose nor permit disclosure of any information designated by the OWNER as confidential, except to its employees and other consultants who need such information in order to properly execute the services of this Agreement.
5. ASSIGNMENTS. The CONSULTANT binds himself and his partners, administrators and assigns to the other party of this Agreement, and to the partners, successors, executors, administrators and assigns of such other party, in respect to all covenants of this Agreement. The CONSULTANT shall not assign his or their interest in this Agreement without the written consent of the OWNER.
6. INSURANCE. Before commencing the work and until completion, CONSULTANT shall obtain and maintain, at its expense, the following insurance coverages. All policies required below shall contain provisions to the effect that the insurer(s) waive all rights of subrogation against the OWNER and their officers, directors, partners, employees and other consultants and subcontractors of each and any of them.

6.1 WORKERS COMPENSATION

CONSULTANT shall carry Workers Compensation coverage as follows:

(1) Worker's Compensation — Statutory

(2) Employer's Liability — $1,000,000

(3) CONSULTANT'S policy shall contain a Blanket Waiver of Subrogation granting a waiver of subrogation in favor of those that require it in a written contract.

6.2 COMPREHENSIVE AUTOMOBILE LIABILITY

CONSULTANT'S policy shall include all owned (private and others), hired and non-owned vehicles. CONSULTANT'S policy shall contain a Blanket Additional Insured endorsement and Blanket Waiver of Subrogation endorsement that is applicable if required in a written contract.

(1) Bodily Injury and Property Damage $1,000,000 Combined Single Limit

6.3 COMMERCIAL GENERAL LIABILITY INCLUDING PREMISE/OPERATIONS; EXPLOSION, COLLAPSE AND UNDERGROUND PROPERTY DAMAGE, PRODUCTS/COMPLETED OPERATIONS, BROAD FORM CONTRACTUAL, INDEPENDENT CONTRACTORS, BROAD FORM PROPERTY DAMAGE AND PERSONAL INJURY LIABILITIES

(1) Bodily Injury:	$1,000,000	Each Occurrence
	$2,000,000	Annual Aggregate
(2) Property Damage:	$1,000,000	Each Occurrence
	$2,000,000	Annual Aggregate
(3) Personal Injury:	$1,000,000	Annual Aggregate

CONSULTANT'S policy shall contain a Blanket Additional Insured and Blanket Waiver of Subrogation Endorsement as well as Primary Wording that is applicable if required in a written contract.

6.4 PROFESSIONAL LIABILITY

CONSULTANT carry's a professional liability policy with a $1,000,000 limit for each Act, Error or Omission and has a $1,000,000 Aggregate.

6.5 POLLUTION LIABILITY

CONSULTANT carry's a pollution liability policy with a $2,000,000 limit for each Pollution condition and a $4,000,000 aggregate.

6.6 UMBRELLA LIABILITY

CONSULTANT carry's an umbrella policy with a $5,000,000 limit Each Occurrence Limit and $5,000,000 Aggregate. Umbrella policy sits over CONSULTANT'S Auto Liability, General Liability and Employers Liability.

7. TERMINATIONFOR CONVENIENCE. Either party shall have the right to terminate this Agreement for any cause or for its own convenience, by providing a thirty (30) day written notice to the other party. In such event, OWNER shall pay CONSULTANT for that portion of the work actually performed plus any profits earned up to the date of termination. Notice of termination shall be given by the terminating party through certified mail, return receipt requested, to the office address of the other party listed on page 1 of this Agreement. The effective date of termination shall be thirty (30) days after date on which the notice of termination is received by the non-terminating party.

8. INDEMNIFICATION. To the fullest extent permitted by law, the CONSULTANT agrees to defend, indemnify and hold harmless the OWNER harmless from and against any liabilities, claims, damages and costs (including reasonable attorney's fees) caused solely by the negligence of the CONSULTANT in the performance of services under this Agreement.

9. DISPUTE RESOLUTION. The parties shall endeavor to resolve any disputes through informal negotiations between parties. If a dispute is not resolved within thirty (30) days from the date a party receives initial written notice of the dispute, the dispute shall be resolved by litigation in the _____(Name of Court).The terms and conditions of this Agreement shall be governed by and interpreted in accordance with the laws of the State of Louisiana without regard to the application of any conflicts of law principles.

ARTICLE 5 – EXTENT OF AGREEMENT

This Agreement constitutes the entire understanding of and between the parties and supersedes any prior proposals, negotiations, representations, understandings, correspondence and agreements, either oral or written.

ARTICLE 6 – GOVERNING LAW

The terms of the Agreement shall be construed and interpreted under, and all respective rights and duties of the parties shall be governed by the laws of the State of _____.

ARTICLE 7 – MISCELLANEOUS PROVISIONS

1. NOTICES. Any notice required under this Agreement will be in writing, addressed to the appropriate party at its address on the signature page and sent, by electronic mail, by registered or certified mail postage prepaid, or by a commercial courier service. All notices shall be effective upon the date of receipt.

2. SURVIVAL. All express representations, waivers, indemnifications and limitations of liability included in this Agreement will survive its completion or termination for any reason.

3. SEVERABILITY. Any provision or part of the Agreement held to be void or unenforceable under any Laws or Regulations shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon CONSULTANT and OWNER, which agree that the Agreement shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

4. WAIVER. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Agreement.

5. AMENDMENT. This Agreement may be amended only by a written instrument signed by both CONSULTANT and OWNER.

Executed the _____ day of _____, 2022.

City of Sulphur, LA

Signature: _____

Print Name: _____

Title: _____

WITNESSES:

BY:_____ BY:_____

Print Name: _____ Print Name:_____

Compliance EnviroSystems, LLC

Signature: _____

Print Name: Brad Dutruch

Title: President

WITNESSES:

BY:_____ BY:_____

Print Name: _____ Print Name:_____

Attachment A
Master Services Agreement (MSA) Fee Schedule
Sewer System Evaluation Services (SSES)

ITEM NO.	SERVICE DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
SECTION 1000 MOBILIZATION DEMOBILIZATION					
1000.01	MOBILIZATION / DEMOBILIZATION OF EQUIPMENT & CREWS	0	EA	$1,000.00	$0.00
SECTION 2000 FLOW MONITORING SERVICES					
2000.01	TEMPORARY FLOW MONITORING (1-10 METERS)	0	MD	$110.00	$0.00
2000.02	TEMPORARY FLOW MONITORING (1-10 METERS) - AFTER 60 DAYS	0	MD	$100.00	$0.00
2000.03	TEMPORARY FLOW MONITORING (11-24 METERS)	0	MD	$100.00	$0.00
2000.04	TEMPORARY FLOW MONITORING (11-24 METERS) - AFTER 60 DAYS	0	MD	$90.00	$0.00
2000.05	TEMPORARY FLOW MONITORING (25-49 METERS)	0	MD	$90.00	$0.00
2000.06	TEMPORARY FLOW MONITORING (25-49 METERS) - AFTER 60 DAYS	0	MD	$80.00	$0.00
2000.07	TEMPORARY FLOW MONITORING (50 OR MORE METERS)	0	MD	$80.00	$0.00
2000.08	TEMPORARY FLOW MONITORING (50 OR MORE METERS) - AFTER 60 DAYS	0	MD	$70.00	$0.00
2000.09	LONG TERM FLOW MONITORING - 1 YEAR MINIMUM	0	METER/ MONTH	$500.00	$0.00
2000.10	TEMPORARY RAIN GAUGES	0	GD	$29.00	$0.00
2000.11	LONG TERM RAIN GAUGES	0	GAUGE/ MONTH	$200.00	$0.00
2000.12	NIGHT FLOW ISOLATION	0	EA	$500.00	$0.00
2000.13	PUMP STATION DRAW/FILL TEST (1-2 PUMPS)	0	EA	$2,500.00	$0.00
2000.14	PUMP STATION DRAW/FILL TEST (3-4 PUMPS)	0	EA	$3,500.00	$0.00
2000.15	FORCE MAIN MONITORING (CLAMP-ON METERS)	0	MD	$175.00	$0.00
SECTION 3000 MANHOLE SERVICES					
3000.01	360 DEGREE MANHOLE CONDITION ASSESSMENT WITH INTERNAL IMAGES AND GPS DATA COLLECTION	0	EA	$125.00	$0.00
3000.02	STRUCTURAL MANHOLE CONDITION ASSESSMENT WITH INTERNAL IMAGES	0	EA	$110.00	$0.00
3000.03	360 DEGREE WET WELL CONDITION ASSESSMENT (LESS THAN OR EQUAL TO 8-FT DIAMETER)	0	EA	$150.00	$0.00
3000.04	360 DEGREE WET WELL CONDITION ASSESSMENT (GREATER THAN 8-FT DIAMETER)	0	EA	$175.00	$0.00
3000.05	UN-COVER BURIED MANHOLES LESS THAN 12" DEEP	0	EA	$300.00	$0.00
3000.06	REMOVAL OF STABILIZED DEBRIS IN MANHOLE INVERTS	0	EA	$425.00	$0.00
3000.07	INSTALLATION OF STAINLESS STEEL RAINSTOPPER DURING MANHOLE CONDITION ASSESSMENT	0	EA	$250.00	$0.00
3000.08	MANHOLE/WET WELL INSPECTION DATA MANAGEMENT	0	EA	$5.00	$0.00
3000.09	MANHOLE/WET WELL REHABILITATION RECOMMENDATIONS	0	EA	$10.00	$0.00
SECTION 4000 SMOKE TESTING					
4000.01	SMOKE TESTING	0	LF	$0.45	$0.00
4000.02	SMOKE TESTING DATA MANAGEMENT	0	LF	$0.05	$0.00
SECTION 5000 SANITARY SEWER LINE CLEANING					
5000.01	STANDARD CLEANING 6" - 10" SANITARY SEWER IN RIGHT OF WAY	0	LF	$1.58	$0.00
5000.02	HEAVY CLEANING 6" - 10" SANITARY SEWER IN RIGHT OF WAY	0	LF	$2.12	$0.00
5000.03	STANDARD CLEANING 6"-10" SANITARY SEWER NOT IN RIGHT OF WAY	0	LF	$3.25	$0.00
5000.04	HEAVY CLEANING 6" - 10" SANITARY SEWER NOT IN RIGHT OF WAY	0	LF	$4.20	$0.00
5000.05	STANDARD CLEANING 12" - 15" SANITARY SEWER IN RIGHT OF WAY	0	LF	$1.94	$0.00
5000.06	HEAVY CLEANING 12" - 15" SANITARY SEWER IN RIGHT OF WAY	0	LF	$2.47	$0.00
5000.07	STANDARD CLEANING 12"-15" SANITARY SEWER NOT IN RIGHT OF WAY	0	LF	$3.89	$0.00
5000.08	HEAVY CLEANING 12" - 15" SANITARY SEWER NOT IN RIGHT OF WAY	0	LF	$4.96	$0.00
5000.09	STANDARD CLEANING 16" - 18" SANITARY SEWER IN RIGHT OF WAY	0	LF	$5.00	$0.00
5000.10	HEAVY CLEANING 16" - 18" SANITARY SEWER IN RIGHT OF WAY	0	LF	$7.50	$0.00
5000.11	STANDARD CLEANING 16"-18" SANITARY SEWER NOT IN RIGHT OF WAY	0	LF	$7.75	$0.00
5000.12	HEAVY CLEANING 16" - 18" SANITARY SEWER NOT IN RIGHT OF WAY	0	LF	$13.00	$0.00
5000.13	STANDARD CLEANING 19" - 24" SANITARY SEWER IN RIGHT OF WAY	0	LF	$7.50	$0.00
5000.14	HEAVY CLEANING 19" - 24" SANITARY SEWER IN RIGHT OF WAY	0	LF	$11.00	$0.00
5000.15	STANDARD CLEANING 19"-24" SANITARY SEWER NOT IN RIGHT OF WAY	0	LF	$9.00	$0.00
5000.16	HEAVY CLEANING 19" - 24" SANITARY SEWER NOT IN RIGHT OF WAY	0	LF	$22.00	$0.00
5000.17	STANDARD CLEANING 25" - 30" SANITARY SEWER IN RIGHT OF WAY	0	LF	$9.00	$0.00
5000.18	HEAVY CLEANING 25" - 30" SANITARY SEWER IN RIGHT OF WAY	0	LF	$17.00	$0.00
5000.19	STANDARD CLEANING 25" - 30" SANITARY SEWER NOT IN RIGHT OF WAY	0	LF	$20.00	$0.00
5000.20	HEAVY CLEANING 25" - 30" SANITARY SEWER NOT IN RIGHT OF WAY	0	LF	$30.00	$0.00
5000.21	CLEANING OF >30" SANITARY SEWER	0	LF	TBD	
5000.22	SEWER DEBRIS DISPOSAL OFFSITE	0	TON	$75.00	$0.00
SECTION 6000 ROOT / GREASE / TAP CUTTING					
6000.01	ROOT / GREASE CUTTING IN 6" - 15" PIPE	0	LF	$1.75	$0.00
6000.02	ROOT / GREASE CUTTING IN 16" - 21" PIPE	0	LF	$3.00	$0.00
6000.03	ROOT / GREASE CUTTING IN 22" - 30" PIPE	0	LF	$6.00	$0.00
6000.04	CHEMICAL ROOT CONTROL IN 6" - 8" SEWER PIPE	0	LF	$2.00	$0.00
6000.05	CHEMICAL ROOT CONTROL IN 10" - 12" SEWER PIPE	0	LF	$2.75	$0.00
6000.06	CHEMICAL ROOT CONTROL IN 15" - 18" SEWER PIPE	0	LF	$5.00	$0.00
6000.07	CHEMICAL ROOT CONTROL IN 21" - 30" SEWER PIPE	0	LF	$7.00	$0.00
6000.08	REMOVAL OF PROTRUDING TAPS BY INTERNAL CUTTING	0	EA	$350.00	$0.00
SECTION 7000 CLOSED CIRCUIT TELEVISION INSPECTION					
7000.01	CCTV INSPECTION < 21" PIPE	0	LF	$1.50	$0.00
7000.02	CCTV INSPECTION > 21" PIPE	0	LF	$2.00	$0.00
7000.03	ADDITIONAL SETUP OF CCTV INSPECTION EQUIPMENT	0	EA	$300.00	$0.00
7000.04	CCTV INSPECTION OF SERVICE LATERALS (LATERAL LAUNCHING FROM MAINLINE)	0	EA	$175.00	$0.00
7000.05	CCTV INSPECTION OF SERVICE LATERALS (PUSH CAMERA FROM CLEANOUT)	0	EA	$175.00	$0.00
7000.06	CCTV INSPECTION DATA MANAGEMENT	0	LF	$0.25	$0.00
7000.07	SEWER PIPE REHABILITATION RECOMMENDATIONS	0	LF	$0.25	$0.00
SECTION 8000 BY-PASS PUMPING					
8000.01	SETUP OF 3"-4" BY-PASS PUMP	0	EA	$1,200.00	$0.00
8000.02	SETUP OF 6"" BY-PASS PUMP	0	EA	$2,000.00	$0.00
8000.03	SETUP OF 8" BY-PASS PUMP	0	EA	$2,800.00	$0.00
8000.04	OPERATION OF 3"-4" BY-PASS PUMP	0	HR	$45.00	$0.00
8000.05	OPERATION OF 6" BY-PASS PUMP	0	HR	$52.00	$0.00
8000.06	OPERATION OF 8" BY-PASS PUMP	0	HR	$64.00	$0.00
SECTION 9000 MISCELLANEOUS FIELD SERVICES					
9000.01	TRAFFIC CONTROL	0	HR	$42.00	$0.00
9000.02	CLEANING WET WELLS	0	HR	$425.00	$0.00
9000.03	DYE TESTING - IN CONJUNCTION WITH CCTV INSPECTION OF 6"-12" PIPE	0	EA	$308.00	$0.00
9000.04	DYE TESTING - IN CONJUNCTION WITH CCTV INSPECTION OF 15"-30" PIPE	0	EA	$368.00	$0.00
9000.05	DYE TESTING - NOT IN CONJUNCTION WITH CCTV INSPECTION	0	EA	$310.00	$0.00
9000.06	SONAR INSPECTION OF SEWER PIPE	0	LF	$5.00	$0.00
9000.07	MULTI-SENSOR INSPECTION OF SEWER PIPE	0	LF	$8.00	$0.00
9000.08	ACCURATE MEASURING PROBE (AMP) PIPE ASSESSMENT	0	LF	$2.75	$0.00
9000.09	ZOOM CAMERA PIPE ASSESSMENT	0	EA	$75.00	$0.00
9000.10	ACOUSTIC PIPE ASSESSMENT	0	LF	$0.50	$0.00
9000.11	COMBINATION CLEANING TRUCK WITH OPERATOR AND HELPER < 10,000 LF (MIN. 8 HRS)	0	HR	$350.00	$0.00
9000.12	CCTV INSPECTION UNIT WITH OPERATOR AND HELPER < 10,000 LF (MIN. 8 HRS)	0	HR	$350.00	$0.00
9000.13	COMBINATION CLEANING TRUCK WITH OPERATOR AND HELPER AND CCTV INSPECTION UNIT WITH OPERATOR AND HELPER < 10,000 LF (MIN. 8 HRS)	0	HR	$550.00	$0.00
9000.14	EMERGENCY SEWER HAULING	0	GAL	$0.75	$0.00
9000.15	EASEMENT MACHINE WITH OPERATOR < 10,000 LF (MIN. 8 HRS)	0	HR	$100.00	$0.00
				TOTAL:	**$0.00**

Attachment B
Master Services Agreement
Sewer System Evaluation Services
SPECIFICATIONS

City of Sulphur, LA (OWNER)

Compliance EnviroSystems, LLC (CONSULTANT)

SECTION 1000
MOBILIZATION / DEMOBILIZATION

A. Mobilization and demobilization consist of the preparatory work and operations including, but not limited to the movement of supplies, equipment, personnel and incidentals to and from the project location.

B. Equipment includes, but is not limited to CCTV inspection units, combination vacuum trucks, smoke testing units, sonar inspection units, multi-sensor inspection units, acoustic pipe assessment units, flow monitoring units, manhole condition assessment units or any other equipment necessary to complete the project.

MEASUREMENT AND PAYMENT

1000.01 Mobilization / Demobilization of Equipment & Crews: All costs associated with the initial and subsequent mobilizations / demobilizations of equipment, as defined above.

SECTION 2000
FLOW MONITORING SERVICES

TEMPORARY FLOW MONITORING

A. The objective of temporary flow monitoring is to quantify high groundwater, dry weather base flows, rainfall dependent inflow/infiltration and wet weather peak flows to support extraneous flow quantification and decision making and hydraulic modeling.

B. The Work includes:
   a. Investigating proposed monitoring sites and confirming suitability.
   b. Installing, calibrating, and monitoring temporary flow monitors for a minimum of 60 days (up to a maximum of 120 days) at each site.

c. Visiting each meter location once per week to enter the confined space to perform depth and velocity sensor calibrations, collect data and verify monitor operation.
d. Installing, calibrating and maintaining temporary rain gauges, for a minimum of 60 days (up to a maximum of 120 days) at each site.
e. Visiting each rain gauge once per week to collect data and ensure synchronization with the temporary flow meters.
f. Evaluating the collected data, performing the required QA/QC of the data and providing electronic data delivery and written reports and analysis of the temporary flow monitoring results/rain gauge data.

C. The temporary flow monitor, as manufactured by ADS, FloWav, Hach, ISCO or equal, shall be equipped with a pressure and area velocity sensors. Accuracy shall be demonstrated from the manufacturer of the meter to be +/- 5 percent of actual flow, recorded in time intervals as short as 5 minutes or other specified interval. The CONSULTANT shall submit certification results for each meter proposed to be used in the project of the date of the most recent manufacturer or field calibration and results.

D. Rainfall data shall be collected by the CONSULTANT by means of tipping bucket rain gauges. Each unit shall be approved by the OWNER, shall provide real time synchronized to computer type memory bank, and shall be of the solid-state type. Whenever 0.01-inch of rain is collected, the tipping bucket shall empty, triggering an electronic counter. At the agreed upon time interval, the timer shall activate the computer and the number of counts shall be recorded on the memory bank.

E. The flow meter and rain gauge data storage and clocks shall be compatible so each time interval of data shall be recorded synchronously with respect to each other meter and rain gauge deployed during the project.

F. OWNER will select and propose initial locations for the flow meters and rain gauges. OWNER will provide maps of the initial meter site selections to the CONSULTANT. The CONSULTANT will perform field investigations and evaluate the proposed sites for the meters (those manholes with the best hydraulic characteristics) and rain gauges (clear, open and secure areas that are protected from vandalism).

G. Laminar flow is desired with little evidence of backwater and/or surcharging conditions. Meter locations upstream of pumping stations shall get particular attention to ensure a minimum impact from the wet well operating levels. Should a proposed meter or rain gauge site not be suitable, the CONSULTANT shall propose and document alternate sites that still meet the general criteria of the collection system area identified for metering.

H. The CONSULTANT will develop and submit detailed site reports, including upstream pipe photos, for the proposed meter or rain gauge locations. The manhole

meter and rain gauge site reports will be submitted to the OWNER for review and confirmation of the site before the meters are installed.

I. Following OWNER's approval of the site(s), the CONSULTANT will install the flow meters and rain gauges in the selected locations. CONSULTANT will initially calibrate the meters at each installation. The meters will be set up to record flow data (depth, velocity and flow) at 5 to 15-minute intervals unless otherwise requested and the sensor calibrations confirmed in the pipe. The tipping bucket rain gauges, recording rainfall in depths of 0.01-inch increments, will also be set up to record every 15 minutes synchronously with the flow monitors.

J. The CONSULTANT will maintain the flow meters throughout minimum 60-day metering period. CONSULTANT will visit each meter a minimum of one time per week to download the data, to perform any necessary meter maintenance (e.g. scrubbing sensors, removing debris, etc.) and to field calibrate and confirm the meter sensor firings. Manual depth and velocity confirming measurements will be made weekly during each visit. Data collection routes, time of data collection and calibrations should be staggered, as practical, to ensure a reasonable calibration across the full range of diurnal flows for each meter site. One calibration point each, generally at the dry-weather peak diurnal flow and the minimum diurnal flow, is required over the minimum 60-day metering and data collection period.

K. Data will be reviewed on-site for overall data quality and any problems will be immediately addressed by the CONSULTANT. A documentation log will be maintained by the CONSULTANT of each meter visit and calibration and a copy of the entries provided to the OWNER on a bi-weekly basis. The manhole number (meter location), date, time on meter, and the time of manual depth verification will be indicated on the log. A written record will be maintained by field personnel for each monitoring point for each site inspection. The data will also be reviewed in the CONSULTANT's office by engineering staff. Field crews will return to the site as necessary if the engineering staff identifies any additional issues.

L. The CONSULTANT shall maintain spare meters, parts and testing equipment to permit replacement of defective meters to ensure a reasonably continuous metering period.

M. After the 60-day minimum monitoring period, the OWNER has the option to direct the additional data collection and field calibration on a weekly basis for up to an additional 60 days. The OWNER will determine when to pull the meters and rain gauges and advise the CONSULTANT of that decision at least 7 days in advance of the meter data collection termination date. The CONSULTANT can then begin removing meters subsequent to the meter termination data.

Analysis & Deliverables

Preliminary Data Review and Submittal:

A. Preliminary data (site logs, initial raw meter and rain gauge data) will be delivered for the OWNER's review following the initial 30 days of data collection. This data will be submitted no later than 45 days after the start of the data collection period. This data and any contemporary rain and flow data collected in the remaining period will be the basis for extending the meters on a weekly basis beyond the minimum 60-day flow-metering period.

Final Data Submission:

A. The CONSULTANT will submit a letter report summarizing the data collected (statistical wastewater flow summaries, rainfall data, hydrographs and tabularized formats); and will perform analyses associated with the data including an estimate of base sanitary flow and an assessment of I/I quantities tributary to each meter. CONSULTANT will also submit meter data to OWNER in electronic Excel format. Final calibrated data and letter report will be delivered no later than 30 calendar days following the termination of the flow-monitoring period.

A. The report shall include, but not be limited to the following:
    a. Executive Summary
    b. Field procedures used for data collection and calibration
    c. Site location information and reports
    d. Hydrographs of depth, velocity, flow, and rain.
    e. Graphs of dry and wet weather analysis.
    f. Results of the dry and wet weather analysis. Prioritized areas shall be ranked by the amount of extraneous (I/I) flow tributary to each meter.
    g. Electronic data (rain, depth, velocity & flow ASCII or CSV format)

LONG TERM FLOW MONITORING

A. The objectives of establishing a long-term flow network are to track the effectiveness of the sewer system rehabilitation, evaluate system performance over time and establish an event notification network.

B. CONSULTANT will install wireless wastewater flow monitors within the collection system. Each of the flow monitors will be networked into a system and provide the OWNER with vital information (including alarming) on the hydraulic performance of the wastewater. CONSULTANT will deliver, install and maintain flow monitors for the aforementioned flow monitoring program. CONSULTANT shall supply all hardware for each monitoring location as specified.

    a. Data Analysis

        i. The OWNER understands that flow data collected from a wastewater environment requires review for accuracy, issuing of work orders to maintain equipment, and identification and editing of data irregularities.

Site Selection, Investigation and Installation

A. CONSULTANT shall work with the OWNER to select sites for the installation of all equipment.

B. Each site shall be inspected to determine hydraulic suitability. This shall require a full manhole descent to ensure an adequate inspection. A topside inspection alone shall not be satisfactory.

C. CONSULTANT shall install equipment in optimum locations for best accuracy and reliability. A site report for each installed location shall be provided for approval by the OWNER.

D. The site report should include, but not be limited to the following:
   a. The initials of the person who performed the inspection
   b. The city and project name
   c. The model of flow monitor recommended
   d. A placeholder for the serial number of flow monitor
   e. Numerical designation for the manhole
   f. The type of collection system - Sanitary/Storm/Combined
   g. House address or a short description of the site location indicating the map page number and grid number, if available
   h. The measured height and width of the pipe to be monitored
   i. A copy of an electronic, small-scale, detailed map with street names and house numbers (if possible) of the immediate area where you will locate the monitor
   j. A road or landmark from the access map and upstream and downstream manholes with the sewer line and flow direction
   k. The date and time the site inspection was performed
   l. A topside inspection of each upstream and downstream manhole location with any hydraulic inconsistencies recorded on the inspection form
   m. Recorded depth of flow, velocity and silt at time of inspection
   n. The depth from the manhole rim to the invert
   o. The type of manhole material indicating whether loose bricks, broken rungs, cracked rim or cover, or slippery walls exist on the invert or apron
   p. The presence of all drop or side connections
   q. The type of pipe material
   r. Digital photos shall be taken of each selected site and alternate sites. One photo shall be taken of the area where the manhole is located. One photo shall be a planar view of the manhole invert showing the flow through the manhole from a north orientation. In addition, in-line photos shall be taken of all contiguous lines.

E. CONSULTANT may recommend that a designated monitoring location be changed to take advantage of more favorable hydraulics at upstream or downstream locations.

F. Site inspections shall include the accurate measurement of the pipe or channel geometry, silt and the recommended location for the installed equipment for use in flow calculations. The CONSULTANT shall not rely on as-built drawings for the determination of pipe geometry.

G. CONSULTANT shall submit one (1) copy of Site Reports to OWNER for review and comment. If requested, CONSULTANT shall provide comments to the initial submittal.

Wireless Access

A. CONSULTANT shall provide a method for wireless access to the flow monitors and install all wireless equipment and ensure it is operational.

B. CONSULTANT shall pay all charges for wireless service.

Confirmation of Data Accuracy

A. The OWNER will require the CONSULTANT to perform bi-weekly manual depth and velocity measurements/confirmations at each site in order to confirm that the sensors are accurately recording depths and velocities.

B. A valid confirmation is where the field accuracy of a given depth measurement and average velocity is within two standard deviations of the final data set.

C. CONSULTANT shall maintain at least three (3) valid confirmations at all times at each site during the term of the contract.

D. As a minimum requirement, confirmation of sensor accuracy shall be measured in the sewers at every site on a yearly basis.

E. The OWNER will not accept any options or proposals from the CONSULTANT to waive confirmations.

F. Method of confirmation:

   a. Initial confirmation of the flow monitors shall involve a minimum of three (3) manhole measurements taken on different days. Attempts shall be made to have these measurements done at flow levels that span typical dry daily flows.

   b. The instantaneous depth of flow measurement shall be taken from the bottom of the pipe to the top of the flow.

   c. There will be a manual depth reading for silt which will be recorded on the confirmation report.

Operation and Maintenance Services

A. CONSULTANT will notify the OWNER upon completion of the initial installations. The OWNER will then have 5 days to notify the CONSULTANT in writing of acceptance of installations which will provide a start date of the annual maintenance section of the contract.

B. CONSULTANT shall provide all spare parts at the CONSULTANT's expense to maintain the equipment. Spare parts shall be maintained at the CONSULTANT's closest office to the project site. A minimum of 10% of major hardware component spare parts must be available and ready use.

Monitoring System Uptime

A. CONSULTANT shall provide a system-wide uptime of 90% or greater. Uptime is defined as number of valid 15-minute flow data points divided by total number of 15-minute intervals in the month.

Data Analysis

A. Backup copies of raw data shall be maintained and delivered to the OWNER by the CONSULTANT for the duration of the contract.

B. Twice-weekly data review shall be performed by the CONSULTANT to ensure that the equipment is operational and properly logging data. CONSULTANT shall be responsible for issuing maintenance work orders based on this review.

C. Finalization of data shall be completed according to the specification for information deliverables.

Data Viewing

A. The software system shall have the ability, at a minimum, to display data for each site in the following formats:

   a. Hydrograph – a time series graph of multiple data types with the ability to segment data based on intervals (e.g. "weekly") over the user specified time period

   b. Scattergraph – a depth to velocity graph for the specified time period with the ability to select a data point to see the actual value for that data point

   c. Tabular – both tables for viewing and a CSV format for download shall be available.

Telecommunications

A. The software system shall allow an authorized user to collect data directly from wireless monitors via the Internet. The software system shall automatically collect data from all telemetered sites at a minimum each day and whenever an alarm occurs.

Multiple Data Type Support

A. Final and Original Data: The software system shall allow for the upload of final edited data and shall maintain a copy of both the final and the original data after upload.

Data Exports

A. The software system shall allow the user to export data to an Excel/CSV format.

Flow Information Deliverables

A. Dry Day Analysis

   a. Dry days used for this analysis will be days that are not affected by recent rainfall. Selected dry days shall be grouped into week days and weekend days and analyzed separately.

B. Rainfall Analysis

   a. Rainfall data shall be reported in tabular form with the depth of rain for each storm. A storm will consist of any event in which half the rain gauges in the network record at least 0.5-inch of rainfall.

C. Wet Weather Analysis

   a. Rainfall Dependent Infiltration and Inflow (RDII) shall be calculated for each monitor and every qualifying storm for the period. The objective is to quantify both the peak rate and volume of RDII. If there are upstream monitors, the peak and volume of Net RDII is also to be determined.

   b. RDII shall be determined after the dry day hydrograph is adjusted either higher or lower to match the actual flow rate immediately prior to the storm. It is intended to compensate for periods of high ground water causing the dry weather flow to be temporarily higher that the average dry weather flow.

c. RDII values are to be normalized by dividing the net RDII by both the area (acres) of the basin and/or the LF of sewers in the basin. A ranking of the basins will be based on normalized values of RDII. As rehabilitation projects are completed, each report shall RDII to show it has been reduced.

D. Hydraulic Capacity Analysis

a. Depth and velocity data will be plotted in a scatter graph format.

b. The report shall include an evaluation of silt or blockages present at each site.

c. The report shall include a statistical evaluation of hydraulic performance indicators for each monitoring point; to include evaluations of depth capacity, flow capacity, backwater, surcharge, velocity and silt.

NIGHT FLOW ISOLATION

A. The purpose of flow isolation is to identify localized areas of likely sources of infiltration to specific reaches of sewer where flow monitors have indicated specifically high levels of flow relative to base flow. Measurements are typically taken between 12:00 a.m. and 5:00 a.m. when base flows are minimal.

B. Graduated V-notch weirs or depth/velocity measurements shall be used to determine flow rate during flow isolation. Floating objects are not acceptable to estimate mean flow velocity. Computation of mean velocity using sewer slope and measured depth of flow is not acceptable.

C. All flow isolation field measurements shall be conducted between 12:00 A.M. and 5:00 A.M. local time on a micro-system of sewers with a total length of approximately 1,000 linear feet. CONSULTANT will plug all pipes upstream of the test segment or differentially isolate the segments.

D. The CONSULTANT shall document all observations regarding each flow isolation test in a report. The report shall include the following information at a minimum:

a. Date and time
b. Location, including reference to the manhole numbering system and street address
c. Testing personnel
d. Schematic layout of the manholes and sewer lines under testing, showing location of the weir.
e. Pipe Sizes and lengths

E. Prior to measuring flows, CONSULTANT will perform an area survey to identify and document businesses and/or institutions that typically have high discharge rates to the sewer, such as hospitals, laundries/cleaners, food establishments, bars, etc.

F. Public notification is critical and compliance with the public notification criteria is a prerequisite for conducting flow isolation, when conducting flow isolation tests on sewers in easements which pass through private property. The following steps shall be taken but not limited to:

   a. Residential/commercial: Distribute advance notice flyers between 24 and 72 hours before flow isolation commences for each section of pipe.
   b. Emergency response agency (fire/police): Set up contact person and notify daily as to area, start time, and ending time.
   c. Schools, hospitals, and nursing homes: Distribute advance notice flyers between 24 and 72 hours before flow isolation.
   d. The CONSULTANT shall keep a daily log of his/her contact with all affected agencies and institutions.

G. Electronic database of flow isolation data and digital photographs of results shall be submitted to the OWNER. The electronic database using the required file format in Microsoft Access®.

MEASUREMENT AND PAYMENT

2000.01-.08 Temporary Flow Monitoring: All costs for temporary flow monitoring, documentation and preparation and delivery of data including but not limited to labor, equipment, transportation, tools and all other related procedures and materials necessary to produce the results in the form, format and of the quality specified in the flow monitoring section. Payment will be made based on the number of meters installed and the number of days each meter is installed for (meter days).

2000.09 Long Term Flow Monitoring: All costs for long term flow monitoring, documentation and preparation and delivery of data including but not limited to labor, equipment, transportation, tools and all other related procedures and materials necessary to produce the results in the form, format and of the quality specified in the flow monitoring section. Payment will be made based on the number of meters installed and the number of months each meter is installed for (meter months).

2000.10 Temporary Rain Gauges: All costs for rain gauges, documentation and preparation and delivery of data including but not limited to labor, equipment, transportation, tools and all other related procedures and materials necessary to produce the results in the form, format and of the quality specified in the flow monitoring section. Payment will be made based on the number of rain gauges installed and the number of days each gauge is installed for (gauge days).

2000.11 Long Term Rain Gauges: All costs for rain gauges, documentation and preparation and delivery of data including but not limited to labor, equipment, transportation, tools and all other related procedures and materials necessary to produce the results in the form, format and of the quality specified in the flow monitoring section. Payment will be made based on the number of rain gauges installed and the number of months each gauge is installed for (gauge months).

2000.12 Night Flow Isolation: All costs for night flow isolation, documentation and preparation and delivery of data including but not limited to labor, equipment, transportation, tools and all other related procedures and materials necessary to produce the results in the form, format and of the quality specified in the flow monitoring section. Payment will be made per each night flow isolation setup utilized.

2000.13-.14 Pump Station Draw/Fill Test: All costs for pump station draw/fill tests, documentation and preparation and delivery of data including but not limited to labor, equipment, transportation, tools and all other related procedures and materials necessary to produce the results in the form, format and of the quality specified in the flow monitoring section. Payment will be made based on the number of pumps at the station the test is conducted.

2000.15 Force Main Monitoring (Clamp-On Meters): All costs for force main monitoring, documentation and preparation and delivery of data including but not limited to labor, equipment, transportation, tools and all other related procedures and materials necessary to produce the results in the form, format and of the quality specified in the flow monitoring section. Payment will be made based on the number of meters installed and the number of days each meter is installed for (meter days).

SECTION 3000
MANHOLE SERVICES

A. The CONSULTANT shall provide all labor, material, supplies, equipment and transportation necessary to complete the 3D manhole / wet well condition assessment, structural manhole condition assessment, uncovering of buried manholes, removal of stabilized debris and cleaning of manholes.

B. The CONSULTANT shall perform each manhole / wet well assessment by determining the dimensional configuration and physical condition of the base, channel(s), barrel, connections, cone, ring and cover of the structure and locate possible sources of inflow/infiltration (I/I) and defects.

C. All manholes must be inspected according to NASSCO MACP standards. All surveyors and data management personnel must be MACP certified.

D. The manhole / wet well interior structure shall be manually inspected using uniformly diffused, high intensity illumination. High-resolution digital photographs with approved picture quality shall be taken of observed defects as well as all other relevant features. Information gathered shall provide a full illustration of the condition of the manhole / wet well interior as well as each pipeline entering the manhole / wet well.

360 DEGREE MANHOLE / WET WELL CONDITION ASSESSMENT WITH INTERNAL IMAGES AND GPS DATA COLLECTION

A. The purpose of manhole / wet well condition assessment is to determine the location, physical condition and possible sources of I/I in all manholes / wet wells designated and approved by the OWNER. Information obtained during the inspection process will be utilized in determining rehabilitation costs and methods.

B. The 3D scanner uses two high resolution digital cameras with specially designed distortion-free wide-angle lenses. The cameras optically scan the entire interior of the manhole / wet well in a few seconds in one single vertical run. The digitally transmitted image data can be viewed by the operator as if it were a live picture.

C. As a component of the inspection, CONSULTANT will collect GPS coordinates (x,y) of every manhole / wet well. This data can be imported into the OWNER's GIS mapping system.

D. The CONSULTANT shall provide the OWNER with the software required to view the digital film file in the way that the CONSULTANT can view them, including full control of the virtual pan and tilt. The digital film files must include the following:

    a. An unfolded view of the manhole / wet well with a minimum of 3,000 lines of vertical resolution
    b. A distortion-free virtual pan and tilt allowing the review of the manhole / wet well structure from any angle at any depth. The virtual pan and tilt must consist of view from the bottom and top camera, any virtual pan and tilt that artificially creates this view from a single camera will be deemed unacceptable due to distorted images on the direct side view.
        i. The virtual pan and tilt and up/down direction of the view must be able to be controlled from a computer mouse.
        ii. The virtual pan and tilt and unfolded views must be able to be viewable by the OWNER without the need for any third-party data logging software.

MANHOLE CONDITION ASSESSMENT

WITH INTERNAL IMAGES

A. Manhole condition assessment with internal images shall by performed using a pole-mounted viewing camera(s) with lighting. CONSULTANT will utilize this method on manholes that cannot be accessed with conventional equipment.

B. Digital high-resolution photographs shall be taken, at a minimum, showing general surrounding view(s) and include identifying landmarks to locate the manhole's above ground location as well as plan view looking down at the manhole invert with the outgoing line in the 6 o'clock position. Major defects in the manhole and pipes shall be included in the photographs. Digital pictures shall have minimum resolution of 72 dpi x 72 dpi and minimum dimensions of 640 x 480 pixels.

Documentation

At a minimum, the following information will be collected during a manhole condition assessment:

A. General Information:

   a. Manhole number
   b. Basin
   c. Address/ Location description
   d. Surface conditions, etc.
   e. Inspector, date of assessment, status of inspection, method of inspection, weather condition
   f. Evidence of surcharge, groundwater, ponding and debris

B. Manhole Characteristics:

   a. For each manhole component — Type, Shape, Materials of Construction, Depth and size
   b. Cover vents and size
   c. At/Above/Below grade
   d. Inflow dish
   e. General configuration of manhole

C. Pipe Data

   a. Size, shape, clock position, material, liner and depth of pipes
   b. Flow depth
   c. Indication if drop pipe and/or parallel line

D. Defects in manholes

a. Location and nature of visible defects and obstructions (i.e., indication of structural conditions or special problems in the pipe connection/manhole)
b. Root growth and type in manhole wall/base (if any)
c. Evidence of leaks and locations, along with measured or estimated sources of extraneous flows (i.e. identification and quantification of I/I)
d. Special problems and/or conditions such as overflows, bypasses, etc.
e. Type and amount of debris and deposits in the manhole

Photographic Documentation Procedures

A. High-resolution digital color photographs shall be taken for each manhole assessed and shall show the following:

a. Above ground features and conditions in the vicinity of the manhole to be assessed
b. Plan view from surface of manhole invert – photographer's feet placed on location of outgoing pipe
c. Elevation view of each incoming and outgoing sewer
d. All observed defects and obstructions

B. Groups of digital photographs for each designated manhole, orientated so that the long side of the photograph is horizontal, shall be incorporated into the manhole condition assessment report and supplied on a USB drive, or via an online repository, for each work order issued by the OWNER, unless otherwise directed.

C. Reference to location for each photograph shall be indicated on the sketches at the end of the report. Photographs taken within the manhole shall indicate the depth below the ground surface and clock reference, relative to North at 12 o'clock. Each photograph filename shall be entered into the electronic database in the appropriate corresponding record.

Deliverables

A. Electronic database with inventory and condition data and photographs shall be submitted to the OWNER.

B. All photographs shall be digital pictures in electronic format.

C. Corrections to the printed map shall be illustrated with red markings and delivered at the completion of each work task or at progress meetings. Supplemental sketches will be provided, as necessary, to clearly depict actual site conditions.

A. Once the manhole inspection data has been obtained and analyzed and professional reports compiled, a recommended protocol for repairs will be recommended by the CONSULTANT.

B. All rehabilitation recommendations must be approved by a registered licensed engineer with a minimum of 10 years of experience analyzing manhole inspection data. Engineer must be MACP certified.

UNCOVER BURIED MANHOLES LESS THAN 12" DEEP

A. CONSULTANT shall provide all labor, materials and equipment necessary to uncover sewer manholes less than 12" deep requiring access for sewer line inspection on this project. CONSULTANT will uncover only those manholes approved by the OWNER.

B. CONSULTANT will not be required to uncover manholes covered in asphalt, concrete or any other permanent or semi-permanent material.

C. After inspection is complete, the CONSULTANT shall close the lid and re-cover the manhole only with the material removed to access the manhole. The CONSULTANT will not be required to seal manhole lid or replace any gasket material that may have been removed or damaged during the opening of the manhole.

REMOVAL OF STABILIZED DEBRIS IN MANHOLE INVERTS

A. CONSULTANT shall provide all labor, materials and equipment necessary to remove stabilized debris from manholes inverts on this project. CONSULTANT will only remove stabilized debris from manhole inverts approved by the OWNER.

INSTALLATION OF RAINSTOPPER DURING MANHOLE CONDITION ASSESSMENT

A. The CONSULTANT shall provide all labor, material, supplies, equipment and transportation necessary to complete the installation of Rainstopper manhole inserts during manhole condition assessment, in areas designated by the OWNER.

B. The Rainstopper insert and components shall be manufactured of materials resistant to corrosion from atmospheres containing hydrogen sulfide and dilute sulfuric acid.

C. The insert body shall be manufactured of high-density ethylene hexane-1 copolymer equal to Phillips Chemical Co. Marlex HHM-5502, meeting the requirements or ASTM D1248 Class A, Category 5. The insert shall exceed 5 ½" in depth to allow penetration of the manhole lid through the clear opening in the ring. The insert shall have three or more ribs in the bottom for stiffness and lid deflection. The insert shall have a straight-side design to allow a loose fit into ring for easy removal. The insert manufacturer must furnish a "load test verification" showing a load test failure in excess of 800 pounds.

D. The gasket shall be made of close cell neoprene, and shall have a pressure sensitive adhesive on one side. The gasket shall be installed by the manufacturer and must be

compatible with the insert material to form a long-lasting bond in wet or dry conditions.

E. The gas relief valve shall be designed to release at a pressure of .5-1.5 PSI and have a water leak down rate no greater than 5 gallons per 24 hours. The valve shall be installed in the insert by means of a hole tapped in the insert by the manufacturer and secured by a special designed lip molded into the insert to prevent being knocked out by lid rotation. The valve shall be made of nitrile for prevention of corrosion from contact with hydrogen sulfide, dilute sulfuric acid and other gasses associated with sewers.

F. The handle shall be made of 1" wide nylon webbing and shall be installed on the insert body with #6 high-grade stainless-steel rivets and washers. The handle shall be installed on the insert in such a way that it does not interfere with the installation of the manhole lid. The handle shall be able to withstand a pull of 500 pounds of force before it fails or separates from the insert.

G. The manhole frame rim shall be free of dirt and debris prior to the installation of the Rainstopper insert. The Rainstopper insert should be fully seated around the manhole frame rim to insure against water seepage between the insert and manhole frame rim. A generous coating of grease on the gasket will be applied by CONSULTANT to assist in seating and prevention of rust.

MEASUREMENT AND PAYMENT

3000.01 360 Degree Manhole Condition Assessment: All costs associated with inspecting all designated manholes and documentation including but not limited to labor, equipment, transportation, tools, GPS data collection and all other related procedures and materials necessary to produce the results in the form, format and of the quality specified in the manhole condition assessment section. CONSULTANT will be paid per each manhole inspected.

3000.02 Structural Manhole Condition Assessment: All costs associated with inspecting all designated manholes and documentation including but not limited to labor, equipment, transportation, tools and all other related procedures and materials necessary to produce the results in the form, format and of the quality specified in the manhole condition assessment section. CONSULTANT will be paid per each manhole inspected.

3000.03 360 Degree Wet Well Condition Assessment (Less Than or Equal to 8-Ft Diameter): All costs associated with inspecting all designated wet wells that are less than or equal to 8-ft. diameter and documentation including but not limited to labor, equipment, transportation, tools, GPS data collection and all other related procedures and materials necessary to produce the results in the form, format and of the quality specified in the

manhole / wet well condition assessment section. CONSULTANT will be paid per each wet well inspected.

3000.04 360 Degree Wet Well Condition Assessment (Greater Than 8-Ft Diameter): All costs associated with inspecting all designated wet wells that are greater than 8-ft. diameter and documentation including but not limited to labor, equipment, transportation, tools, GPS data collection and all other related procedures and materials necessary to produce the results in the form, format and of the quality specified in the manhole / wet well condition assessment section. CONSULTANT will be paid per each wet well inspected.

3000.05 Uncover Buried Manholes Less than 12" Deep: Payment will be made for the uncovering of buried manholes in less than 12" of soil. Uncovering of manholes in concrete, asphalt, or any other material besides soil will not be performed.

3000.06 Removal of Stabilized Debris in Manhole Inverts: All costs associated with confined space entry into manhole and removal of stabilized debris from manhole inverts. CONSULTANT will be paid for each manhole that stabilized debris is removed from.

3000.07 Installation of Rainstopper During Manhole Condition Assessment:

3000.08 Manhole Inspection Data Management: All costs associated with the preparation and delivery of manhole inspection data, reports in the form, format and quality specified in the manhole inspection section. Payment will be made per each manhole inspected.

3000.09 Manhole / Wet Well Rehabilitation Recommendations: All costs associated with the preparation and delivery of manhole / wet well rehabilitation recommendations. Payment will be made per each manhole / wet well inspected.

SECTION 4000
SMOKE TESTING

A. The CONSULTANT shall provide all labor, material, supplies, equipment and transportation necessary to complete the smoke testing work.

B. Smoke testing work shall be conducted on pipes in areas of the system as selected and approved by the OWNER.

C. Caution should be taken in assessing storm drainage connections. Once smoke enters a storm sewer, many inlet structures may exhibit smoke exiting. The possible cause

for smoke exiting the storm sewer may be due to poor joints, in both the storm and sanitary sewer, broken service lateral crossing the storm sewer, directional drilling that damaged storm or sewer pipe, direct connection, etc. Additional investigation, which may include dye flooding and CCTV, will be required to determine the exact location of the source and establish the repair method.

D. Smoke testing provides detailed information on wet weather inflow sources, cross-connections with storm sewers, odor complaints and service connection confirmation, etc. However, soils that are saturated may not allow smoke to exit and limit the usefulness of the testing. Therefore, smoke testing must be scheduled during dry weather to optimize the effectiveness of the test. Local conditions will dictate the time required after a rainfall event that will allow for smoke testing to be optimally effective.

E. The CONSULTANT shall test the gravity sanitary sewer system using high-capacity blower(s). The smoke blower will be suitable for the anticipated testing and generate non-toxic smoke. The CONSULTANT will visually identify and document each defect location. The CONSULTANT shall provide safety equipment suitable for the anticipated field and traffic conditions. Digital camera(s) will be used for documentation of observations. GPS units shall be used to log locations for leaks and manholes. All inspections shall be entered into an electronic database.

   a. The CONSULTANT shall provide a portable blower designed and built specifically for the use of smoke testing. The blower shall be self-contained and capable of producing a minimum of 4,000 cubic feet of air per minute (cfm). Blowers with less cfm may be approved by the OWNER provided it is demonstrated that sufficient pressure is generated for the testing. If inadequate pressure is being generated, then additional blowers (dual blowers) or larger blowers may be required. Adequate pressure is being provided when smoke is exiting the vent stacks as a plume or, where no vent stacks are present, smoke is exiting the upstream/downstream manhole casting/vent hole/pick hole, etc. In general, the larger the pipeline diameter being tested, the higher the smoke blower capacity required.

   b. The base of the blower shall have appropriate adapters and seals to make a good connection to the manhole without excessive loss of smoke.

   c. Smoke fluid shall produce continuous smoke that can be controlled by the CONSULTANT's field crew for the duration of the test. The smoke generated shall be white to gray in color, leave no residue, and shall be non-toxic and non-explosive.

d. The CONSULTANT shall supply the smoke MSDS sheet to the OWNER.

F. Field documentation of smoke leaks is extremely important and will include GPS data collection of manholes and smoke leaks and color photographs will be taken to document each defect during the smoke test.

G. The CONSULTANT'S smoke testing field crew will be of sufficient size to properly operate the smoke generation machine and provide full coverage of the area to visually locate smoke discharged from defects. This must include personnel for traffic control.

a. The CONSULTANT'S smoke testing field crew shall be properly trained and thoroughly experienced in the use of the equipment and procedures.

b. The CONSULTANT shall take appropriate action to ensure that his/her employees are polite to the public in all aspects of the work and that immediate assistance is provided to property owners if needed.

H. The work shall generally progress as follows:

a. The CONSULTANT shall apply for and obtain work permits for all work to be performed in State and/or County Highways if applicable. All required insurances, traffic control measures and other terms of the permit shall be provided to the satisfaction of the OWNER.

b. The OWNER will provide the CONSULTANT with the procedure that should be followed regarding notification of fire department, police department, emergency personnel, etc.

i. The CONSULTANT shall submit field inspection forms and database deliverable to the OWNER for review and acceptance.

ii. The CONSULTANT shall notify, by hand delivery of approved door hangers to all residences and businesses in the study area. All notification door hangers shall be approved by the OWNER before printing and distribution. The CONSULTANT shall place door hangers on all residences and business in the area of smoke testing at least 24 hours prior to smoke testing at those specific addresses. Notification shall be an ongoing process throughout the project and shall be limited to the area provided in the look ahead schedule. Door hangers shall not be placed for

areas which will not be tested within 7 days. If smoke testing is delayed for more than 7 days due to rain, wind, etc., the area shall be re-notified. Logs will be maintained to document notification of hospitals, nursing homes, schools, high rise buildings, etc. The logs will include the facility name, notification date, time and individual notified. Notification of sensitive locations such as hospitals, nursing homes, day care, schools and the like must be completed in person.

iii. The CONSULTANT shall check with all residents who expressed special concerns or special needs/notification prior to testing.

iv. Notification of emergency services and dispatch centers will be completed each morning prior to testing that day. OWNER will provide the required contact information for notifications by the CONSULTANT.

v. It shall be the CONSULTANT's responsibility to keep adequate records of all notifications and to produce them upon OWNER's request. Failure to comply with this requirement may result in temporary suspension of the field work until compliance is achieved.

c. A work schedule shall be submitted to the OWNER for review and approval. No field testing or notification may proceed until the schedule has been approved by the OWNER. After approval of the work schedule, the CONSULTANT shall not make any revisions or modifications to it without the OWNER's written approval.

i. The work schedule shall consist of a study area map showing the anticipated area(s) to be tested each day, week or month (depending on project size and duration.

I. Work hours must be approved by the OWNER. However, the CONSULTANT shall not typically commence testing before 7:00 a.m. local time and shall terminate testing no later than 5:00 p.m. Monday through Friday. If the CONSULTANT wishes to test outside these times or days for commercial areas or high traffic areas, such testing shall be shown on the submitted work schedule and is subject to the OWNER's approval.

a. Smoke testing shall not be performed on weekends or on holidays without the prior approval of the OWNER.

b. CONSULTANT shall not perform smoke testing on days that, in the opinion of the OWNER, will hinder the results of the test. (For example, when heavy rains,

or excessively saturated soil conditions would interfere with the effectiveness of the testing). CONSULTANT may provide soil moisture or segment re-testing data as evidence that soil conditions are favorable for smoke testing.

J. The CONSULTANT shall be aware of and follow all Federal, State, and Local safety laws and regulations.

a. No entry into any part of the collection system shall be permitted until the CONSULTANT has demonstrated that on-site personnel has been trained in applicable confined space safety procedures and has the equipment on-site to allow those procedures to be followed.

b. The CONSULTANT shall minimize the physical entry of personnel into sanitary sewer facilities. If required, manhole entry shall be in accordance with Federal, State, and local regulations for confined space entry and other regulations that may apply. The CONSULTANT shall provide all safety equipment required for manhole entry operations, including harnesses, ventilation equipment, etc.

c. Traffic Control. The area of work shall be protected by means of an adequate number of cones, barricades, flags, or by other means necessary to properly and safely protect both vehicular and pedestrian traffic.

d. Any condition deemed to be an unsafe by the CONSULTANT shall be reported to the OWNER. It is further understood that the CONSULTANT shall not be required to work where, in the opinion of the CONSULTANT, conditions would not be safe for the public, company personnel, equipment, etc.

K. Unless otherwise approved by the Owner, the sections of sewer subject to testing shall typically:

a. Consist of a central manhole, where the blower will be positioned, and an upstream and downstream manhole and the sewer pipe between them. With three (3) manholes and two pipe sections, lengths should not exceed 1,000 feet. The blower capacity and/or number of blowers necessary will be determined by the adequacy of pressure as observed at the vent stack or downstream/upstream manholes.

b. Upon approval of the OWNER, longer sections may be tested provided good pressure, as evidenced by smoke plume, is observed at the vent stacks.

L. The walk through for locating defects will not begin until smoke is highly visible with a smoke plume emanating from the plumbing vents of houses at the end of the setup location (maximum 500 ft radius) from the smoke testing machine. A red (heavy smoke), yellow (medium smoke) or blue (light smoke) flag will be placed at the location of the smoke leak depending on the amount of smoke visible. Walkers shall traverse not only the sidewalk but between all homes and in back yards looking for illegal connections including patio, pool drains, roof drain connections and buildings where vent stacks do not exhibit smoke.

M. Flow Control - It is the intent of this specification that the smoke testing be accomplished without the need for bypass pumping. The CONSULTANT shall provide temporary plugs, sandbags or flow barriers as required to contain an adequate volume of smoke within the section of sewer being tested. The CONSULTANT shall monitor the resulting surcharged sewer at the manhole upstream of the tested section of sewer and prevent overflow conditions from occurring by removing the flow barriers or removing sewage by vacuum trucks.

N. All smoke testing information shall conform to the smoke testing codes and database.

a. Each smoke defect shall include an address, be referenced by sketch, and dimensioned to permanent landmarks.

b. Two photographs of all leaks using a digital camera shall be included in the field log. Photographs of smoke leaks shall have a location indicated in the photograph using a red, yellow or blue flag where possible. All photographs shall be clearly cross-referenced to the typed and/or computer-generated log indicating the location of the leak.

c. An up-close photograph shall be taken once the defect has been flagged. The digital picture shall show the smoke exiting from the defect.

d. An area photographs should include sufficient field of view so that drainage patterns can be discerned.

O. The following data will be recorded on a paper form and entered into a database by the CONSULTANT, using the required file format in Microsoft Access. Data will be recorded using the approved smoke test form. The smoke test database shall include the following information at a minimum:

a. Description of the smoke return ("leak"), including intensity;
b. Date and time;

c. Location, including reference to the relevant manhole segment (upstream and downstream manhole incorporating the manhole numbering system) and the nearest street address;
d. Area and type of surface drained by the smoke return ("leak");
e. Testing personnel; and
f. Digital color photographs and filenames of the results of each smoke test
g. GPS X & Y location of the leak location

P. The standard electronic deliverable (all inspection images, database containing line segment information and leak details, coding information, shapefiles containing the coordinates of leaks and manholes, and a map created from the GPS collection of manholes and leaks points) will be submitted on an external USB drive for each basin as it is completed. The smoke testing report will consist of a report for each segment smoked (imagery from ArcMap) leak detail with two digital photographs of each leak and one aerial imagery shot (collected from Arcmap). A final report will be provided for all basins upon completion of the entire project.

MEASUREMENT AND PAYMENT

4000.01 Smoke Testing: All costs for smoke testing, documentation and public notification including but not limited to labor, equipment, transportation, tools and all other related procedures and materials necessary to produce the results in the form, format and of the quality specified in the smoke testing section. CONSULTANT will be paid for the actual footage of pipe smoke tested.

4000.02 Smoke Testing Data Management: All costs associated with the preparation and delivery of smoke testing data and reports in the form, format and quality specified in the smoke testing section. CONSULTANT will be paid for the actual footage of pipe smoke tested.

SECTION 5000
SANITARY SEWER LINE CLEANING

A. Standard line cleaning shall be performed to remove foreign material and restore pipe capacity to 95%. Standard cleaning shall be defined as three (3) complete passes of the sewer line with the cleaning equipment. The term "complete passes" shall mean cleaning from the upstream manhole all the way to the downstream manhole.

B. Heavy line cleaning shall be performed to remove foreign material and restore pipe capacity to 95%. Heavy line cleaning shall be defined as four (4) or more complete passes of the cleaning equipment. The term "complete passes" shall mean cleaning from the upstream manhole all the way to the downstream manhole.

C. The location of manholes and line segments which require additional equipment and manpower to access and perform cleaning operations are considered to be in the easement. Additional equipment includes, but is not limited to an easement machine, additional vacuum hose, additional manpower, etc. If the need arises for clearing and/or matting in order to access manholes, a price for clearing and/or matting will be negotiated by CONSULTANT and OWNER.

D. Conditions such as broken pipe and major blockages may prevent cleaning from being accomplished, especially where additional damage would result if cleaning were attempted or continued. Should such conditions be encountered, the CONSULTANT shall not be required to clean those specific pipe sections unless the apparent obstruction is removed.

E. During sewer cleaning operations, satisfactory precautions shall be taken by the CONSULTANT in the use of cleaning equipment. Precautions shall be taken to ensure that damage to, or flooding of public or private property does not occur during the cleaning procedure.

F. Selection of the equipment shall be the sole discretion of the CONSULTANT and based on the conditions of lines at the time the work commences. The equipment shall be capable of removing dirt, grease, rocks, sand, and other materials and obstructions from the sewer lines and manholes.

G. If cleaning of an entire section cannot be successfully performed from one manhole, the equipment shall be set up at the other manhole and cleaning again attempted. If successful cleaning still cannot be performed or the equipment fails to traverse the entire manhole-to-manhole pipe segment it will be assumed that a major blockage exists and the cleaning operation will be abandoned. The cleaning operator will note these occurrences in his daily cleaning log. The CONSULTANT will be compensated for cleaning the entire length of sewer should this occur.

H. All sludge, dirt, sand, rocks, grease, and other solid or semi-solid materials resulting from the cleaning operation shall be removed at the downstream manhole of the section being cleaned. Passing materials from pipe segment to pipe segment, which could cause line stoppages, accumulations of debris in wet wells, interference with in-line long term flow monitoring equipment or damage to pumping equipment will not be permitted. Under no circumstances shall sewage or solids removed during the cleaning operation be dumped onto the streets or in ditches, catch basins or storm drains.

I. If the CCTV inspection shows the cleaning to be unsatisfactory, the CONSULTANT shall re-clean and re-inspect the sewer line at his sole expense until the cleaning is shown to be satisfactory.

J. All sludge, dirt, sand, rocks, grease, and other solid or semisolid materials removed from the sewers and manholes during the cleaning operation shall be drained of water

and transported to the local dumpsite to be provided by the OWNER. No tipping fee will be charged to the CONSULTANT by the OWNER.

K. The OWNER will provide water for cleaning operations from any fire hydrant at no cost to CONSULTANT.

MEASUREMENT AND PAYMENT

5000.01-.20 Standard and Heavy Pipe Cleaning: Standard and heavy pipe cleaning will be billed per linear foot with measurement being made between centerlines of consecutive manholes for the line segments being cleaned. Payment for standard and heavy sanitary pipe cleaning shall be made at the unit price per linear foot based on the pipe size being cleaned and whether or not the line is in the easement. Heavy pipe cleaning will be charged in addition to the standard cleaning rate when applicable.

5000.21 Cleaning of >30" Sanitary Sewer: Pricing for cleaning of greater than 30" diameter sanitary sewer pipes will be negotiated by the CONSULTANT and the OWNER when the need arises.

5000.22 Sewer Debris Disposal Offsite: Pricing for sewer debris disposal offsite will be negotiated by the CONSULTANT and the OWNER when the need arises as the OWNER does not have a debris disposal site for the CONSULTANT to utilize.

SECTION 6000
ROOT / GREASE / TAP CUTTING

A. The CONSULTANT shall furnish all labor, equipment, supplies, and supervision and shall perform all work required in accordance with these specifications.

B. Roots, grease and/or taps that can be removed by conventional means, such as cutting, shall be removed by the CONSULTANT at the rate specified for that line item.

C. The cutting of roots, grease and or taps will occur during CCTV inspection.

D. Roots, grease and/or taps will only be removed if they do not allow the passage of the CCTV inspection camera, are obscuring the view of potential defects or could cause a potential blockage and overflow.

E. When root, grease and/or tap cutting occurs, roots, grease and/or taps shall be cut to clear the pipe for flow and to allow for the proper viewing of defects.

CHEMICAL ROOT CONTROL

A. CONSULTANT will apply EPA registered root-control agents to various main line sanitary sewers, as selected by OWNER in order to kill the root growth present in the lines and to control root re-growth.

B. CONSULTANT will apply the chemical, as a foam, directly to the roots via a hose that extends throughout the entire length of each sewer section. The material will be applied evenly and uniformly, so as to completely fill the sewer pipe. CONSULTANT will not use "pour down" products or utilize high pressure application equipment. CONSULTANT will pump the chemical foam under low pressure to assure that the sewer section is completely filled with foam, and to ensure that foam penetrates "wye" connections. The chemical agent will contain a herbicide to destroy root tissue and a foaming surfactant to deliver the herbicide to the targeted roots.

C. The root control materials will be EPA registered, labeled for the intended use in sewer lines, and registered with the Department of Agriculture & Forestry.

D. CONSULTANT will comply with all applicable federal, state and local requirements and ordinances relative to this type of material and usage thereof (OSHA, EPA, DOT and the Department of Agriculture & Forestry). Chemical handling and treatments will be applied by trained, professional applicators that are certified by the Department of Agriculture & Forestry, as required by law.

E. CONSULTANT will keep complete and accurate records of each day's operation. Records shall show the date of treatment, the sections of line treated, pipe size and distance, and other pertinent information.

F. The OWNER will provide water for root control operations from any fire hydrant at no cost to CONSULTANT.

G. CONSULTANT guarantees to kill all the roots in every sewer it treats in order to eliminate main line sewer stoppages caused by live tree roots. CONSULTANT will apply this guarantee for a period of two (2) years, beginning on the date of treatment and ending 2 (two) years after the date of treatment. If a treated sewer plugs up due to live tree roots during the guarantee period, CONSULTANT will re-treat the sewer line at his sole expense. CONSULTANT will provide a three (3) year guarantee on any paid repeat applications that are performed within six (6) months of the expiration date of the previous guarantee period. Re-treatments performed at no charge in honor of the guarantee do not extend the expiration date of the guarantee. This guarantee applies only to main line sewer stoppages caused by live tree roots. The guarantee does not apply to stoppages caused by grease or other foreign matter; flat, collapsed or deformed pipe or flooding caused by a surcharged or plugged sewer section downstream from a guaranteed sewer section.

MEASUREMENT AND PAYMENT

6000.01-.03 Root / Grease Cutting: Payment will be made per linear foot requiring root and/or grease cutting.

6000.04-.07 Chemical Root Control: All costs for the application of chemical root control. CONSULTANT will be paid at the unit price per linear foot based on the pipe size that chemical root control is applied to.

6000.08 Removal or Protruding Taps By Internal Cutting: Payment will be made per tap cutting performed.

SECTION 7000
CCTV INSPECTION

A. The CONSULTANT shall furnish all labor, equipment, supplies, and supervision and shall perform all work required in accordance with these specifications. CCTV inspection shall be performed in the areas selected and approved by the OWNER.

B. It shall be the responsibility of the CONSULTANT to schedule and perform investigations to prevent system overflows. If flows are such that they interfere with the CONSULTANT's ability to collect accurate data, then the CONSULTANT shall be responsible to schedule his work during low flow periods or to request written permission to perform by-pass pumping around the site. The CONSULTANT may provide by-pass pumping only with specific approval from the OWNER. OWNER will reimburse CONSULTANT for all costs associated with bypass pumping.

C. Inspection of sewer infrastructure by means of CCTV equipment shall be performed to determine the location and extent of any obstructions and defects such as offset joints, protruding tees, broken pipe, and other pipe defects that may permit groundwater infiltration. Logs shall note the existence of any significant defects. Cleaning by the CONSULTANT shall be performed prior to each CCTV inspection on each pipeline to be inspected.

D. CCTV inspections shall be performed on one manhole-to-manhole pipe segment at a time. The inspection shall be performed by moving the CCTV camera through the line along the axis of the pipe at a rate not to exceed 30 feet per minute. Any means of propelling the camera through the sewer that would exceed this rate of speed or produce non-uniform or jerky movements shall not be acceptable. The camera shall be stopped for a minimum of 5 seconds at each identifiable defect to ensure proper documentation of the lines condition. In addition, the camera shall be stopped at each service connection, and the camera shall pan the service connection to video inside the service line. CCTV inspection is performed from the upstream manhole to the downstream manhole when the conditions allow. If conditions do not allow an upstream to downstream inspection, the inspection will be performed in reverse (from the downstream to the upstream manhole).

E. A log shall be made by the CONSULTANT when each manhole-to-manhole pipe segment is televised. The log shall include at a minimum:

a. Location of each point of leakage
b. Location of each service connection or other pipe entering the televised line
c. Location and degree of offsets
d. Location of any damaged sections, and nature of damage
e. Location of buried structures or blind junctions
f. Location and amount of any deflection in alignment or grade of pipe; also the total length of pipe sag
g. Pipe materials, diameter, and distance between pipe joints
h. Date, city, manhole-to-manhole segment, reference manhole number, name of operator, and inspector
i. Video Filename

F. The pipe segment length, with respect to the referenced manhole, shall be determined with a meter device, accurate to within ±2%. Markings on the cable, instruments requiring observation inside a manhole, or correction of each reading for the depth of the reference manhole shall not be allowed. Accuracy of the measurement meters shall be checked daily by use of a walking meter, roll-a-tape, or other suitable device.

G. A header screen showing tape number, segment number, and manhole number shall be taped for 10 seconds at the beginning of each televised line segment. All header information shall be recorded on the log forms.

H. At the CONSULTANT's discretion the camera shall be stopped or backed up to view and analyze conditions that appear to be unusual or uncommon for a sound sewer line. At all times, the operating technician shall be able to move the camera through the line in either direction without loss of quality in the video presentation on the monitor. The picture shall be free of electrical interference and provide a clear, stable image of the specified resolutions at all times. The camera lens shall be cleaned, as required, to provide a clear image within the sewer lines.

I. In the event that equipment becomes lodged in the sewer line, the CONSULTANT shall notify the OWNER immediately. If equipment becomes lodged through no fault of CONSULTANT, the OWNER will remove the camera at no cost to the CONSULTANT. Timely excavation is necessary to maintain project schedules and to eliminate the possibility of overflows resulting from the lodged equipment creating a blockage.

J. If during the inspection the camera cannot pass through the entire pipe segment, the CONSULTANT shall set up his equipment so that the inspection can be performed from the opposite manhole. Should this occur, CONSULTANT will be paid for an additional set-up. If the camera again fails to pass through the entire pipe segment, the

inspection shall be abandoned and considered complete. The CONSULTANT will be paid for the actual footage inspected, and no additional inspection work shall be required in that pipe segment until the pipe has been rehabilitated. CONSULTANT will be paid for the actual footage inspected during each subsequent attempt.

CCTV INSPECTION OF SERVICE LATERALS

A. CONSULTANT will use a lateral launch inspection system, consisting of a robotic tractor and a lateral launch CCTV camera, to remotely deploy a pan & rotate camera into lateral pipes connected to a mainline sewer pipe. Should CONSULTANT encounter multiple laterals converging in a single tap, CONSULTANT shall utilize a steerable lateral camera with guide pin to inspect the adjoining laterals separately. Each pipe shall be identified as an independent inspection for data submittal and invoicing purposes.

B. A main sewer television camera is used to position the lateral camera launcher. The lateral sewer camera is used to inspect each lateral from the mainline towards the cleanout.

C. The television inspection of the lateral will be attempted from inside the mainline sewer up into the lateral or attempted from the cleanout towards the sewer main. Lateral sewers inspected from the cleanout towards the mainline will be attempted by using a mini push camera if necessary.

D. In the event a lateral pipe segment cannot be fully inspected after reasonable attempts, CONSULTANT shall provide all the information to the OWNER and the OWNER will determine alternate possible solutions.

Submittals

A. Copy of completed CCTV log

B. Schedule for cleaning and inspecting each sewer reach

C. Daily report form

D. Confined space entry form

Data Submittals

C. All videos will be digital .mp4 files, clear, legible and free of "snow" or haze.

D. Electronic copies (data files) shall be submitted in a PACP Exchange Database.

E. The CONSULTANT shall prepare and submit a list of defects, which appear to require immediate corrective action, based on their size and/or type, on a daily and weekly basis. This submittal is not a final deliverable.

F. To establish the working criteria for video picture quality which must be maintained throughout the project, the CONSULTANT shall furnish a USB drive with .mp4 video footage of an actual sewer line inspection that is satisfactory to the OWNER, and meets the job specifications for CCTV inspection. The USB drive shall become the property of the OWNER and shall be used throughout the project as a standard that the CONSULTANT's video picture quality must meet.

G. The CONSULTANT shall furnish the OWNER a USB drive that contains both data files and video files. The data files shall be able to upload into a PACP Exchange Database. Once downloaded by the OWNER, the hard drive will be returned to the CONSULTANT. OWNER shall provide labeling and file naming standards at the pre-construction meeting.

H. All inspections shall be made by PACP certified operators and data shall be documented using NASSCO's Pipeline Assessment and Condition Program.

I. Once the CCTV inspection data has been obtained and analyzed and professional reports compiled, a recommended protocol for repairs will be recommended by the CONSULTANT.

J. All rehabilitation recommendations must be approved by a registered licensed engineer with a minimum of 10 years of experience analyzing sanitary sewer line inspection data. Engineer must be PACP certified.

MEASUREMENT AND PAYMENT

7000.01-.02 CCTV Inspection: All costs associated with the CCTV inspection of sanitary sewer lines. CONSULTANT will be paid for the actual linear footage of pipe inspected at the unit rates specified based on pipe size.

7000.03 Additional Setup of CCTV Inspection Equipment: All costs associated with the additional setup performed during CCTV. This will occur when the CCTV camera is unable to traverse the line segment from one manhole and must be setup again at the opposite or connecting manhole to attempt the inspection. CONSULTANT will be paid for each additional setup performed.

7000.04 CCTV Inspection of Service Laterals (Lateral Launching From Mainline): All costs associated with the CCTV inspection of sanitary sewer service laterals from the mainline towards the cleanout. CONSULTANT will be paid for each service lateral inspected.

7000.05 CCTV Inspection of Service Laterals (Push Camera From Cleanout): All costs associated with the CCTV inspection of sanitary sewer service laterals from the cleanout towards the mainline. CONSULTANT will be paid for each service lateral inspected.

7000.06 CCTV Inspection Data Management: All costs associated with the preparation and delivery of CCTV inspection data, videos, reports and rehabilitation recommendations in the form, format and quality specified in the CCTV inspection section. Payment will be for the actual footage of pipe CCTV inspected.

7000.07 Sewer Pipe Rehabilitation Recommendations: All costs associated with the preparation and delivery of sewer pipe rehabilitation recommendations. Payment will be made per linear foot of sewer pipe inspected.

SECTION 8000
BYPASS PUMPING

A. CONSULTANT shall be responsible for furnishing all equipment, labor and materials necessary to setup, operate and maintain by-pass pumping. The OWNER and CONSULTANT shall determine and agree upon the quantities and disposition of water to be pumped and the CONSULTANT shall provide the necessary equipment to meet these requirements.

B. When by-pass pumping is required, the CONSULTANT shall furnish, install and operate pumps, plugs, conduits and other equipment to divert the flow of sanitary sewer around the pipeline reach around the pipe being inspected. The pumping system shall be of sufficient capacity to handle peak flow plus additional flow that may occur during a rainstorm.

C. Pumping shall be done by the CONSULTANT in such a manner as to not damage public or private property or create a nuisance or health menace. The pumped sewage shall be in an enclosed hose or pipe and shall be reinserted into the sanitary sewer system. Sewage shall not be allowed to flow in gutters, streets or over sidewalks, nor shall any sewage be allowed to flow into storm inlets or conduits. After the work has been completed, flow shall be restored to normal.

D. When flow in a sewer line is plugged, blocked or by-passed, the CONSULTANT shall protect the sewer lines from damage that might result from sewer surcharging.

MEASUREMENT AND PAYMENT

8000.01 - .03 Setup of Bypass Pump: All costs associated with the setup and subsequent teardown of bypass pumps, up to 600' of discharge hose and 50' of

suction hose. Payment will be made based on the size of the pump needed to accommodate the amount of flow.

8000.04-.06 Operation of Bypass Pump: All costs associated with the operation of bypass pumps. Payment will be made based on the size of the pump needed to accommodate the amount of flow.

SECTION 9000
MISCELLANEOUS SERVICES

TRAFFIC CONTROL

A. CONSULTANT will provide standard traffic control including cones, signs, etc. at no cost to the OWNER

B. CONSULTANT will provide additional traffic control such as a flagman or policeman, as needed and as approved by the OWNER.

C. The CONSULTANT shall notify the local fire department, police department, engineering department, and all other necessary authorities to carry out the requirements of the scope of work. All investigation work shall be coordinated with these authorities on a daily basis to avoid any conflict.

CLEANING WET WELLS

A. The CONSULTANT shall scour debris or grease-laden wet well walls with a high-velocity water gun. If the impact of the high-velocity water appears to be weakening the structural integrity of the wet well wall or any internal components of the wet well, the CONSULTANT shall discontinue the scouring on the wet well and notify the OWNER.

B. Wet well cleaning shall be conducted on wet wells in areas of the system as selected and approved by the OWNER.

C. Upon request from CONSULTANT, OWNER shall provide CONSULTANT with adequate access to the wet wells requiring cleaning.

D. All debris removed during the cleaning process shall be properly disposed of by the CONSULTANT at a site provided by the OWNER at no cost to CONSULTANT.

E. Upon request from CONSULTANT, OWNER shall draw down the water level in the wet well within a reasonable time and to a reasonable water level to facilitate the cleaning.

DYE TESTING

A. The objective of dye water testing, when used in conjunction with CCTV, is to pinpoint specific points of entry of inflow into the sanitary sewer system, such as direct and indirect connections of storm drains, yard drain inlets and pipes, sinkholes, leaking manholes in unpaved areas and leaking manhole covers and rings. Dye water testing without CCTV shall also be used to trace line segments during sewer map updating, locate cross connections, and co-relationship of individual properties to sewer lines.

B. At a minimum, CONSULTANT should flood the area over the suspected leak with dyed water and check for dye at 5-minute intervals for up to 30 minutes, noting positive or negative each time checked at the downstream manhole. Two photographs will be taken: one when dyed water is applied and a second when positive results are noted, or at the 30 minute check if results are negative.

C. The following data shall be recorded by the CONSULTANT using the required file format in Microsoft Access. Data, where specified, will be recorded using codes provided by the OWNER. A hard copy and electronic diskette shall be submitted to the OWNER. The dye test database shall include the following information at a minimum:

   a. Date and time
   b. Location, including reference to the relevant manhole segment (upstream and downstream manhole incorporating the manhole numbering system) and the nearest street address
   c. Testing personnel
   d. Schematic layout of the manholes and sewer lines under test — noting location of sandbags and/or plugs
   e. Precise location of the site of confirmed source of inflow or leak, as determined by the dye testing, keyed to the relationship to appropriate manhole and pipe numbers from the OWNER's GIS mapping system and street address, and confirmation of any negative results of dye testing
   f. Digital color photographs filenames of the results of each dye test

D. Digital photographs shall be provided in jpeg (.jpg) format. Resolution of photographs shall be a minimum of 72 dpi x 72 dpi and minimum dimensions of 640 X 480 pixels. The CONSULTANT shall document each dye leak or series of dye tests by high-resolution digital photograph. The photographs shall be included in the database along with the location of the dye test defect.

E. Groups of digital photographs orientated so that the long side of the photograph is horizontal and that 3"x 5" printed copies shall be incorporated in the hard copy of the dye testing report and supplied on a USB drives incorporated for each work order issued by the OWNER, unless otherwise directed.

Deliverables

A. Electronic database of dye test data and digital photographs of results shall be submitted to the OWNER. The electronic database using the required file format in Microsoft Access, shall be tied to the OWNER's GIS sewer maps through the manhole numbers. If no GIS sewer maps are available, the CONSULTANT will be responsible for providing an applicable numbering system for manholes.

B. Dye test reports, location sketches, and digital photographs shall be submitted to the OWNER on USB drives.

C. The photographs shall be digital pictures in both hard copy and electronic format.

SONAR INSPECTION

A. The CONSULTANT shall determine the inspection technology method or combination of methods to be utilized in each pipeline segment. Generally, sonar alone will be used where the depth of fluid in the pipeline is greater than 75% of the full diameter of the pipe. CCTV and sonar will be used together when the fluid levels are between 25% and 75% of the full pipe diameter. Sonar will not be used where the fluid depth is generally less than 25% of the pipe diameter or more specifically where there is insufficient depth to pass the sonar gear on the float or crawler.

B. The speed of the crawler or float shall not be greater than 20 feet per minute when the scanning sonar is in use either alone or in combination with the CCTV camera.

C. The sonar equipment shall be purpose built for use in the inspection of sewer system pipelines and shall be operative in totally submerged conditions. It shall be capable of being traversed by crawler tractor, float or other suitable means through the pipeline on a stable vehicle constructed to situate the sonar inspection equipment below the water level.

D. The maximum beam width of the sonar energy pulse will be no greater than 2 degrees from the center of the transducer. The transducer will be of the continuous scanning type. The sonar image will be in full color during the inspection.

E. The sonar survey will include complete structural and service assessment of the equivalent PACP standard as that obtained through the CCTV survey. The sonar survey will include measurement of fluid depth and silt depth.

F. The sonar survey will be continuously recorded and saved on USB drives in .mp4 format, supported by complete defect inspection logs and summary reports.

G. A color high resolution sonar still image of cross-sections of the pipeline must be taken and recorded every 50 feet or more frequently should the internal profile of the pipeline change and at every defect. These images are to be cross referenced to the reports and databases for ease of reference.

MULTI-SENSOR INSPECTION OF SEWER PIPE

Profiling LIDAR

A. The Light Detection And Ranging (LIDAR) must be specifically configured as a pipe profiling LIDAR that uses time-of-light ranging principle. Specifically excluded is Structured Light (SL) ranging systems that use a camera and laser wand/light ring or other types of scanner with degrading z-axis accuracy as the pipe diameter increases. In addition, the pipe profiling LIDAR must have the following characteristics:

   a. The LIDAR unit (sensor that is placed within the pipeline) must be protected by a mechanical housing that is specifically designed to survive the rigors of the sewer environment.
   b. The LIDAR housing shall have IP 67 or better.
   c. The LIDAR unit shall be "fog" resistance by providing at least 3 multi-echo distance measurements per step. (Note this is an essential feature for obtaining accurate LIDAR data in cold weather, hot condensing, or high humidity conditions where the tendency to induce fog into the pipeline or condensation on the sensor is the greatest.)

B. The LIDAR system shall be capable of transmitting continuous, multi-echo range and bearing data from the LIDAR unit within the pipeline to topside viewing station.

   a. The transmission of the LIDAR data shall be digital.
   b. The transmission of the LIDAR data shall be continuous.
   c. The transmitted data shall be logged in digital format for subsequent viewing and analysis operations.

C. The LIDAR unit shall have the following properties:

   a. The range estimation mode of the LIDAR unit shall be time-of-flight.
   b. The LIDAR unit shall be capable of scanning at least 40 times per second.
   c. The Near Field Ranging Limit shall not exceed 0.1 meters.
   d. The Far Field Ranging Limit shall be at least 30 meters.
   e. The LIDAR sensor Field of View shall be 270 degree arch.
   f. The Operating Wavelength shall be near infrared range (not visible to the naked eye) with a nominal value of 905 nm.
   g. The Angular Resolution shall be 0.25 degrees or better.
   h. The Accuracy shall be at least +- 30mm at 10 meters.

Profiling SONAR

A. The SONAR system must be specifically designed as a sewer pipe profiling system that uses high frequency sound waves to obtain profiles from the submerged section

of the pipes. In addition, the pipe profiling sonar must have the following general characteristics:

a. The SONAR unit (sensor that is placed within the pipeline) must be protected by a mechanical housing that is specifically designed to survive the rigors of the sewer environment.
b. The SONAR unit shall be depth rated to at least 1000m.
c. The SONAR unit shall have integrated pitch and roll sensing.

B. The SONAR system shall be capable of transmitting continuous SONAR data from the SONAR unit within the pipeline to topside viewing station.

a. The transmission of the SONAR data shall be digital.
b. The transmission of the SONAR data shall be continuous.
c. The transmitted data shall be logged in digital format for subsequent viewing and analysis operations.

C. The SONAR unit shall have the following properties:

a. The Near Field Ranging Limit shall be at least 0.125 meters.
b. The Far Field Ranging Limit shall be at least 6 meters.
c. The Min Detectable Range shall be at least 50 millimeters.
d. The SONAR unit shall support the following Variable Range Scales:
    i. 0.125 m, 0.25m , 0.5 m, 0.75 m, and [1-6] m.
e. The SONAR unit Step Size shall be at least 0.9 degrees.
f. The SONAR unit shall support continuous Train Angles, e.g. Continuous Rotation.
g. The SONAR unit shall have an unobstructed Field of View: of 360 degree.
h. The SONAR unit shall support a Scanning Speed no smaller than 360 degrees in 1.3 sec.
i. The SONAR unit Frequency shall be at least 2.25 Mhz. to ensure the highest possible resolution of resultant data.
j. The SONAR unit Transducer Beam Width shall not exceed 1.4 degree conical.
k. The SONAR unit Range Resolution shall be at least 1/250 (e.g. 1mm at 250 mm).

HD CCTV Camera

A. The CCTV camera system must be waterproof, corrosion resistant, and have a protective enclosure specifically designed to survive the rigors of the sewer environment.

B. The CCTV camera system must operate over the temperature range -10 C to 50 C.

C. The CCTV camera system shall contain an imaging sensor that has full resolution color.

   a. The imaging sensor shall have selectable automatic or manual exposure.
   b. The imaging sensor shall have a dynamic range of 55db.
   c. The imaging sensor shall have sensitivity of 1.5 lux at F1.0.
   d. The imagine sensor shall have selectable automatic or manual white balance.

D. The CCTV System shall be capable of transmitting live video from the CCTV camera within the pipeline to the topside viewing station.

   a. The transmission of the video signal from the CCTV camera to the topside viewing station shall be digital.
   b. The digital video signal must be capable of transporting full frame rate video at distances of at least 2,000 linear feet (600 linear meters) without distortion of the topside video image.

ACCURATE MEASURING PROBE (AMP) PIPE ASSESSMENT

A. The as-builts location of the pipe shall be determined by use of the AMP that measures up to 100 angular and linear velocity changes, in multiple gyroscopic orientation measurement units per second as the AMP moves through the pipeline structure. The changes shall be stored within the AMP and be able to be downloaded to plot the pipeline location in both a plan (X, Y) and profile (X, Z) view. Additionally, the location of the pipeline in both the plan and profile dimensions will be tied to an approved and reproducible coordinate system accepted within the State that the project is being performed.

B. Application of the AMP within a pipeline/conduit structure will be performed under the following procedures:

   a. Surveyed coordinates and elevations from both access points of the pipeline/conduit collected from the top, center, or invert portion of the pipeline material will be provided by the OWNER to the CONSULTANT.

   b. Inside and outside diameters will be recorded and input into the software under the appropriate fields.

   c. The appropriate wheel sets will be affixed to the AMP body via threaded ends.

   d. The AMP along with the wheels sets will be sized accordingly to the inside diameter of the pipeline/conduit.

   e. The AMP will then be attached to the tag line that has been previously installed.

f. The AMP will be turned on and placed within the pipeline/conduit for a period of 1-minute to allow for the AMP sensors to calibrate.

g. The AMP will then be advanced within the pipeline/conduit via the aid of mechanical or manual reels/winches and will be collecting 3D positional measurements.

h. Once the AMP has arrived at the other end of the pipeline/conduit it will again rest within the pipeline for a period of 1-minute for calibration purposes, and then it will be advanced back to its original starting position.

i. The AMP will calibrate for a final time and then be removed from the pipeline/conduit and the unit will be turned off.

j. Once the AMP is connected to the field laptop then the 3D positional measurement data will be uploaded to the computer.

k. The software on the computer provides the analyst diagnostic analysis via reviewing information on the AMP's linear measurements, velocity, roll, pitch, and heading.

l. The CONSULTANT will then review all positional measurements in determining that the positional measurements are within the tolerance specification for the AMP. Note: additional positional measurement runs maybe required based on this review.

C. Upon collection of the positional 3D positional measurements with the AMP and processing of the positional measurement data, the resulting positional data can be exported to as-built file(s) for record keeping purposes.

Deliverables

A. As-built map (plan and profile view) in .PDF format of pipe segment

B. Horizontal (x,y) and vertical (z) coordinates of the as-built in .CSV format

C. Bending radius analysis and inclination report of the as-built in .XLS format

D. ESRI shape file and Google Earth in .KML format of the pipe segment

ACOUSTIC PIPE ASSESSMENT

A. The CONSULTANT shall furnish all labor, equipment, supplies, and supervision and shall perform all work required in accordance with these specifications. Acoustic pipe assessment shall be performed in the areas selected and approved by the OWNER.

B. The purpose of the acoustic pipe assessment is to identify blockages in sewer lines.

C. The acoustic pipe assessment system shall be capable of inspecting 6"-12" lines using active acoustic transmission (transmit on one end of the pipe, receive on the other end of the pipe). Active transmission of sound for an individual inspection should be limited to no more than four (4) minutes of transmission time.

D. The system shall be capable of inspecting an individual pipe length up to 800 linear feet.

E. The device shall contain a USB connection or similar to allow for downloading of inspection data to a computer.

F. Acoustic inspection results shall be provided on the device within three (3) minutes of completion of each individual inspection.

G. The device(s) shall not need to come into contact with the waste flow and shall not require penetration of more than two (2) feet into the manhole or access point.

H. The device(s) shall be battery-powered with the capability of performing at least 35 measurements on a fully charged battery.

MEASUREMENT AND PAYMENT

9000.01 Traffic Control: Payment shall be made when a flagger or uniformed police officer is required to control traffic during any inspection or cleaning activity.

9000.02 Cleaning Wet Wells: All costs associated with the cleaning of wet wells to include operators, combination truck, hoses, pipe, and confined space entry equipment shall be billed at the proposed unit rate. A 4 hour minimum will be charged anytime this item is utilized.

9000.03-.04 Dye Testing In Conjunction with CCTV Inspection: All costs associated with the dye testing of sewer lines in conjunction with CCTV inspection and preparation and delivery of data. CONSULTANT will be paid per each dye testing setup performed.

9000.05 Dye Testing NOT In Conjunction with CCTV Inspection: All costs associated with the dye testing of sewer lines NOT in conjunction with CCTV inspection and preparation and delivery of data. CONSULTANT will be paid per each dye testing setup performed.

9000.06 Sonar Inspection of Sewer Pipe: All costs associated with the sonar inspection of sewer lines and preparation and delivery of data.

CONSULTANT will be paid for the actual linear footage of pipe sonar inspected at the unit rates specified.

9000.07 Multi-Sensor Inspection of Sewer Pipe: All costs associated with the multi-sensor inspection of sewer lines and preparation and delivery of data. CONSULTANT will be paid for the actual linear footage of pipe assessed with measurement being made between centerlines of consecutive manholes for the line segments being assessed at the unit rates specified.

9000.08 Accurate Measuring Probe Pipe Assessment: All costs associated with the AMP assessment of sewer lines and preparation and delivery of data. CONSULTANT will be paid for the actual linear footage of pipe assessed with measurement being made between centerlines of consecutive manholes for the line segments being assessed at the unit rates specified. AMP will be paid for in addition to CCTV and cleaning when necessary.

9000.09 Zoom Camera Pipe Assessment: All costs associated with inspecting all designated pipes and documentation including but not limited to labor, equipment, transportation, tools and all other related procedures and materials necessary to produce the results in the form, format and of the quality specified in the structure and pipe condition assessment section. CONSULTANT will be paid per each pipe assessed.

9000.10 Acoustic Pipe Assessment: All costs associated with the acoustic pipe assessment of sewer lines and preparation and delivery of data. CONSULTANT will be paid for the actual linear footage of pipe assessed with measurement being made between centerlines of consecutive manholes for the line segments being assessed at the unit rates specified.

9000.11 Combination Cleaning Truck with Operator and Helper (Min. 8 Hours) < 10,000 LF: All costs associated with the port-to-port mobilization/demobilization of one (1) combination cleaning truck with operator and helper. This item is to be used for projects of less than 10,000 LF.

9000.12 CCTV Inspection Unit with Operator and Helper (Min. 8 Hours) < 10,000 LF: All costs associated with the port-to-port mobilization/demobilization of one (1) CCTV inspection unit with operator and helper. This item is to be used for projects of less than 10,000 LF.

9000.13 Combination Cleaning Truck with Operator and Helper AND CCTV Inspection Unit with Operator and Helper (Min. 8 Hours) < 10,000 LF: All costs associated with the port-to-port mobilization/demobilization of one (1) combination cleaning truck with operator and helper and one (1)

CCTV inspection unit with operator and helper. This item is to be used for projects of less than 10,000 LF.

9000.14 Emergency Sewer Hauling: All costs associated with the vacuuming/removal and hauling of sanitary sewer liquid from downed lift stations and/or overflowing manholes to the designated discharge site. Load tickets signed by an authorized representative of the Owner must be provided with invoice.

9000.15 Easement Machine with Operator (Min. 8 Hours) < 10,000 LF: All costs associated with the emergency port-to-port mobilization/demobilization of one (1) easement machine with operator. This item is to be used for projects of less than 10,000 LF.

ORDINANCE NO. _____, M-C SERIES

ORDINANCE AUTHORIZING MAYOR DANAHAY TO ENTER INTO A MASTER SERVICES AGREEMENT WITH COMPIANCE ENVIROSYSTEMS, LLC, FOR STORM DRAIN EVALUATON SERVICES.

BE IT ORDAINED by the City Council of the City of Sulphur, Louisiana, the governing authority thereof, that they do hereby authorize Mayor Danahay to enter into a Master Services Agreement with Compliance Envirosystems, LLC, for Storm Drain Evaluation Services.

BE IT FURTHER ORDAINED that this Ordinance shall become effective upon the Mayor's approval, or upon proper re-adoption by the Council pursuant to Section 2-13(C) of the Home Rule Charter of the City of Sulphur.

APPROVED AND ADOPTED by City Council of the City of Sulphur, Louisiana, on this _____ day of _____, 2022.

_____
MANDY THOMAS, Chairman

I HEREBY CERTIFY that the foregoing Ordinance has been presented to the Mayor on this ____ day of _____, 2022, at _____ o'clock ____.m.

_____
ARLENE BLANCHARD, Clerk

I HEREBY CERTIFY that I have received from the Mayor at _____ o'clock ___.m. on this _____ day of _____, 2022, the foregoing ordinance which has approved/vetoed by the Mayor.

_____
ARLENE BLANCHARD, Clerk

AGREEMENT

FOR

MASTER PROFESSIONAL SERVICES AGREEMENT

OWNER: **CITY OF SULPHUR, LA**

Address: 101 N. Huntington St.
Sulphur, LA 70663

Administrative Contact: Austin Abrahams

Phone: 337.527.4510

Email: aabrahams@sulphur.org

CONSULTANT: **COMPLIANCE ENVIROSYSTEMS, LLC**

Address: 1401 Seaboard Drive
Baton Rouge, LA 70810

Administrative Contact: Brad Dutruch, President

Phone: 225.769.2933

Email: brad@ces-sses.com

PROJECT: **Storm Drain Evaluation Services**

THIS AGREEMENT, is made effective this _____ day of _____, 2021, by and between OWNER and CONSULTANT, a limited liability company domiciled in the State of Louisiana.

WITNESSETH:

WHEREAS, the OWNER desires to employ the CONSULTANT to provide services related to the PROJECT; and

WHEREAS, the CONSULTANT is willing and able to provide services related to the PROJECT in accordance with the terms and conditions set forth in this Agreement;

WHEREAS, the parties agree that the method of approach set forth in Attachment "A" is the basis for the services to be performed by the CONSULTANT under this Agreement.

NOW, THEREFORE, IT IS CONTRACTED, COVENANTED AND AGREED THAT:

ARTICLE 1 – CONSULTANT'S SERVICES

1. The CONSULTANT agrees to furnish the services identified and described in Attachments A and B, attached hereto and incorporated herein.
2. This Agreement shall commence once it has been executed by both parties and a Purchase Order issued by the OWNER.

ARTICLE 2 – COMPENSATION

1. The OWNER shall compensate the CONSULTANT for providing the services identified and described in Attachments A and B in accordance with the Fee Schedule set forth and attached to this agreement.
2. The CONSULTANT shall be paid in accordance with the Fee Schedule for any and all services performed in connection with the PROJECT. For those services that may arise from time to time that are not included in the Fee Schedule, the CONSULTANT shall work with the OWNER to negotiate a reasonable fee.

ARTICLE 3 – PAYMENT

Payment to the CONSULTANT, as described in Article 2, is to be made as follows:

1. Each month the CONSULTANT shall submit an invoice to the OWNER describing the services performed and expenses incurred by the CONSULTANT during the preceding month. OWNER shall review the CONSULTANT's invoice within ten (10) business days of receipt and either recommend it for payment or return it to the CONSULTANT with comments.

2. The OWNER shall pay the CONSULTANT the amount set forth in the invoice within thirty (30) days from the date the OWNER receives the CONSULTANT'S invoice.
3. If the CONSULTANT does not receive payment of the entire amount set forth in the CONSULTANT'S invoice within ninety (90) days from the date the OWNER receives the invoice, the CONSULTANT may suspend services until payment of the entire amount of the outstanding invoice is received by the CONSULTANT.

ARTICLE 4 – GENERAL TERMS AND CONDITIONS

1. PROFESSIONAL STANDARDS. The CONSULTANT shall be responsible, to the level of care and skill ordinarily used by practicing professionals in the same type of work in the U.S.A., for the professional and technical soundness, accuracy and adequacy of all data, reports, recommendations and other services and materials furnished under this Agreement.
2. PROJECT PROGRESS. The CONSULTANT'S services and compensation under this Agreement have been agreed to in anticipation of the orderly and continuous progress of the PROJECT through completion.
3. CONTRACT TIME. The duration of this contract shall be for a period of 36 months, commencing on the date that this agreement is signed by OWNER. At the end of the contract time, the OWNER will retain the option of renewing the contract for an additional 36 months, if mutually agreeable by OWNER and CONSULTANT.
4. CONFIDENTIALITY. The CONSULTANT shall not disclose nor permit disclosure of any information designated by the OWNER as confidential, except to its employees and other consultants who need such information in order to properly execute the services of this Agreement.
5. ASSIGNMENTS. The CONSULTANT binds himself and his partners, administrators and assigns to the other party of this Agreement, and to the partners, successors, executors, administrators and assigns of such other party, in respect to all covenants of this Agreement. The CONSULTANT shall not assign his or their interest in this Agreement without the written consent of the OWNER.
6. INSURANCE. Before commencing the work and until completion, CONSULTANT shall obtain and maintain, at its expense, the following insurance coverages. All policies required below shall contain provisions to the effect that the insurer(s) waive all rights of subrogation against the OWNER and their officers, directors, partners, employees and other consultants and subcontractors of each and any of them.

6.1 WORKERS COMPENSATION

CONSULTANT shall carry Workers Compensation coverage as follows:

(1) Worker's Compensation — Statutory

(2) Employer's Liability — $1,000,000

(3) CONSULTANT'S policy shall contain a Blanket Waiver of Subrogation granting a waiver of subrogation in favor of those that require it in a written contract.

6.2 COMPREHENSIVE AUTOMOBILE LIABILITY

CONSULTANT'S policy shall include all owned (private and others), hired and non-owned vehicles. CONSULTANT'S policy shall contain a Blanket Additional Insured endorsement and Blanket Waiver of Subrogation endorsement that is applicable if required in a written contract.

(1) Bodily Injury and Property Damage $1,000,000 Combined Single Limit

6.3 COMMERCIAL GENERAL LIABILITY INCLUDING PREMISE/OPERATIONS; EXPLOSION, COLLAPSE AND UNDERGROUND PROPERTY DAMAGE, PRODUCTS/COMPLETED OPERATIONS, BROAD FORM CONTRACTUAL, INDEPENDENT CONTRACTORS, BROAD FORM PROPERTY DAMAGE AND PERSONAL INJURY LIABILITIES

(1) Bodily Injury:	$1,000,000	Each Occurrence
	$2,000,000	Annual Aggregate
(2) Property Damage:	$1,000,000	Each Occurrence
	$2,000,000	Annual Aggregate
(3) Personal Injury:	$1,000,000	Annual Aggregate

CONSULTANT'S policy shall contain a Blanket Additional Insured and Blanket Waiver of Subrogation Endorsement as well as Primary Wording that is applicable if required in a written contract.

6.4 PROFESSIONAL LIABILITY

CONSULTANT carry's a professional liability policy with a $1,000,000 limit for each Act, Error or Omission and has a $1,000,000 Aggregate.

6.5 POLLUTION LIABILITY

CONSULTANT carry's a pollution liability policy with a $2,000,000 limit for each Pollution condition and a $4,000,000 aggregate.

6.6 UMBRELLA LIABILITY

CONSULTANT carry's an umbrella policy with a $5,000,000 limit Each Occurrence Limit and $5,000,000 Aggregate. Umbrella policy sits over CONSULTANT'S Auto Liability, General Liability and Employers Liability.

7. TERMINATIONFOR CONVENIENCE. Either party shall have the right to terminate this Agreement for any cause or for its own convenience, by providing a thirty (30) day written notice to the other party. In such event, OWNER shall pay CONSULTANT for that portion of the work actually performed plus any profits earned up to the date of termination. Notice of termination shall be given by the terminating party through certified mail, return receipt requested, to the office address of the other party listed on page 1 of this Agreement. The effective date of termination shall be thirty (30) days after date on which the notice of termination is received by the non-terminating party.

8. INDEMNIFICATION. To the fullest extent permitted by law, the CONSULTANT agrees to defend, indemnify and hold harmless the OWNER harmless from and against any liabilities, claims, damages and costs (including reasonable attorney's fees) caused solely by the negligence of the CONSULTANT in the performance of services under this Agreement.

9. DISPUTE RESOLUTION. The parties shall endeavor to resolve any disputes through informal negotiations between parties. If a dispute is not resolved within thirty (30) days from the date a party receives initial written notice of the dispute, the dispute shall be resolved by litigation in the _____(Name of Court).The terms and conditions of this Agreement shall be governed by and interpreted in accordance with the laws of the State of Louisiana without regard to the application of any conflicts of law principles.

ARTICLE 5 – EXTENT OF AGREEMENT

This Agreement constitutes the entire understanding of and between the parties and supersedes any prior proposals, negotiations, representations, understandings, correspondence and agreements, either oral or written.

ARTICLE 6 – GOVERNING LAW

The terms of the Agreement shall be construed and interpreted under, and all respective rights and duties of the parties shall be governed by the laws of the State of _____.

ARTICLE 7 – MISCELLANEOUS PROVISIONS

1. NOTICES. Any notice required under this Agreement will be in writing, addressed to the appropriate party at its address on the signature page and sent, by electronic mail, by registered or certified mail postage prepaid, or by a commercial courier service. All notices shall be effective upon the date of receipt.

2. SURVIVAL. All express representations, waivers, indemnifications and limitations of liability included in this Agreement will survive its completion or termination for any reason.

3. SEVERABILITY. Any provision or part of the Agreement held to be void or unenforceable under any Laws or Regulations shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon CONSULTANT and OWNER, which agree that the Agreement shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

4. WAIVER. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Agreement.

5. AMENDMENT. This Agreement may be amended only by a written instrument signed by both CONSULTANT and OWNER.

Executed the _____ day of _____, 2022.

City of Sulphur, LA

Signature: _____

Print Name: _____

Title: _____

WITNESSES:

BY: _____ BY: _____

Print Name: _____ Print Name: _____

Compliance EnviroSystems, LLC

Signature: _____

Print Name: Brad Dutruch

Title: President

WITNESSES:

BY: _____ BY: _____

Print Name: _____ Print Name: _____

Attachment A
Master Services Agreement (MSA)
Storm Drain Evaluation Services
MASTER FEE SCHEDULE

ITEM NO.	SERVICE DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
SECTION 1000 MOBILIZATION DEMOBILIZATION					
1000.01	Mobilization and Demobilization of Crews and Equipment		EA	$1,000.00	
SECTION 2000 STRUCTURE AND PIPE EVALUATION SERVICES					
2000.01	360 Degree Structure Evaluation with GPS Data Collection		EA	$125.00	
2000.02	Zoom Camera Pipe Assessment		EA	$100.00	
2000.03	CCTV Inspection < 30" Diameter Storm Drain Pipe		LF	$2.00	
2000.04	CCTV Inspection > 30" Diameter Storm Drain Pipe		LF	$2.00	
2000.05	Sonar Inspection of > 18" Diameter Storm Drain Pipe		LF	$10.00	
2000.06	Additional Setup of Inspection Equipment		EA	$150.00	
2000.07	Structure Rehabilitation Recommendations		EA	$14.00	
2000.08	Storm Drain Pipe Rehabilitation Recommendations		LF	$0.25	
2000.09	CCTV Inspection Unit with Operator and Helper < 5,000 LF (Minimum of 5 Hours)		HR	$350.00	
SECTION 3000 STORM DRAIN LINE CLEANING SERVICES					
3000.01	High Pressure Cleaning of 8"-18" Storm Drain Pipe		LF	$3.00	
3000.02	High Pressure Cleaning of 21"-32" Storm Drain Pipe		LF	$3.00	
3000.03	High Pressure Cleaning of 36"-48" Storm Drain Pipe		LF	$3.00	
3000.04	High Pressure Cleaning of greater than 48" Storm Drain Pipe		LF	$3.00	
3000.05	Removal, Hauling and Disposal of Debris From Storm Drain Structures and Pipes		TON	$875.00	
3000.06	Combination Cleaning Truck with Operator and Helper < 5,000 LF (Minimum of 5 Hours)		HR	$350.00	
3000.07	Combination Cleaning Truck with Operator and Helper and CCTV Inspection Unit with Operator and Helper < 5,000 LF (Minimum of 5 Hours)		HR	$550.00	
3000.08	Traffic Control for Evaluation and Cleaning Crews		HR	$55.00	
				TOTAL:	**$0.00**

Attachment B
Master Services Agreement
Storm Drain Evaluation Services
SPECIFICATIONS

City of Sulphur, LA (OWNER)

Compliance EnviroSystems, LLC (CONSULTANT)

SECTION 1000
MOBILIZATION / DEMOBILIZATION

A. Mobilization and demobilization consist of the preparatory work and operations including, but not limited to the movement of supplies, equipment, personnel, and incidentals to and from the project location.

B. Equipment includes, but is not limited to CCTV inspection units, combination vacuum trucks, sonar inspection units, fully equipped structure condition assessment units or any other equipment necessary to complete the project.

MEASUREMENT AND PAYMENT

1000.01 Mobilization / Demobilization of Equipment & Crews: All costs associated with the initial and subsequent mobilizations / demobilizations of equipment, as defined above.

SECTION 2000
STRUCTURE AND PIPE EVALUATION SERVICES

The CONSULTANT shall provide all labor, material, supplies, equipment, and transportation necessary to complete the 360 degree structure evaluation and zoom camera pipe assessment with GPS data collection.

360 DEGREE STRUCTURE EVALUATION AND ZOOM CAMERA PIPE ASSESSMENT WITH GPS DATA COLLECTION

A. The CONSULTANT shall perform each assessment by locating and identifying each structure, characterizing its components, and classifying it based on its conditions.

B. During inspections, the structure will be illuminated with high-intensity LED lighting. High-resolution 360 video of each structure will be obtained, capturing both the inside of each structure as well as the area surrounding it. This video shall provide a

full illustration of the condition of the structure interior, the pipelines connecting to the structure, as well as the general conditions in the area surrounding the structure. A digital photograph of each structure will be taken from above ground, showing the structure and its proximity to identifying features or landmarks.

C. The purpose of structure assessment is to determine the location, physical condition and possible defects in all structures designated and approved by the OWNER. Information obtained during the physical survey will be utilized in determining rehabilitation costs and methods.

D. As a component of the inspection, CONSULTANT will collect GPS coordinates (x, y and z) of every structure with centimeter-grade precision. CONSULTANT will utilize real-time corrections to collect the GPS data directly into ESRI's ArcGIS Online platform. This data can be imported into the OWNER's GIS mapping system. A digital photograph taken from above ground to show the structure and its proximity to identifying features or landmarks will be associated as an attribute of the GIS data.

E. CONSULTANT shall utilize pole-mounted, HD zoom cameras to assess pipes during the structure evaluation. Zoom camera inspection will allow for the rapid assessment of how clean or dirty a pipe segment is as well as allowing for the location of significant defects within the pipes such as pipe collapses, considerable offset joints and intruding taps or roots. The process involves lowering a high definition, pole-mounted camera equipped with an integrated laser rangefinder to the invert of a structure. Once positioned on the incoming or outgoing pipe segments inside the structure, CONSULTANT will zoom the camera down the pipe segment while watching the footage real-time on a handheld tablet above ground.

F. Zoom camera pipe inspections will be reviewed using a custom database that utilizes NASSCO PACP guidelines as the basis for making an assessment of each pipe. Debris levels will be categorized on a scale of 0-10.

Documentation

The following is an example of the data required during a structure condition assessment, but is not necessarily limited to:

A. General Information:
   a. Structure number
   b. Basin
   c. Address/ location description
   d. Surface conditions, etc.

B. Structure Characteristics:
   a. Type
   b. Surface cover
   c. Primary construction materials

d. Depth
e. Cover type
f. Grate type
g. Condition

C. Pipe Data
   a. Size
   b. Shape
   c. Material
   d. Depth to invert
   e. Flow depth
   f. Pipe ID or connecting structure

D. Structure connectivity will be documented in GIS

E. General Inspection Data
   a. Inspector
   b. Inspection date
   c. Status
   d. Weather/ground condition

F. Defects in structures
   a. Visible defects
   b. Roots
   c. Debris

G. Defects in pipes
   a. Significant PACP defects capable of impeding flow
   b. PACP defects that may create adverse conditions in the future

Deliverables

A. GIS database with inventory, condition data and photographs shall be submitted to the OWNER.

B. ESRI ArcMap file, or PDF map if preferred by OWNER.

C. 360 videos in mp4 format.

D. Zoom camera videos in mp4 format.

E. Zoom camera inspection reports.

F. Zoom camera inspection database.

G. Once the structure inspection data has been obtained and analyzed and professional reports compiled, a recommended protocol for repairs will be recommended by the CONSULTANT.

H. All rehabilitation recommendations will be approved by a registered licensed engineer in the state of Louisiana with a minimum of 10 years of experience analyzing structure inspection data. Engineer must be MACP certified.

CCTV INSPECTION

A. The CONSULTANT shall furnish all labor, equipment, supplies, and supervision and shall perform all work required in accordance with these specifications. CCTV inspection shall be performed on pipes selected and approved by the OWNER.

B. If flows are such that they interfere with the CONSULTANT's ability to collect accurate data, then the CONSULTANT shall be responsible to schedule his work during low flow periods or to request written permission to perform sonar inspection of the surcharged pipes.

C. Inspection of storm drain infrastructure by means of CCTV equipment shall be performed to determine the location and extent of any obstructions and defects such as offset joints, protruding tees, broken pipe and more. Logs shall note the existence of any significant defects. Cleaning by the CONSULTANT shall be performed prior to each CCTV inspection on each pipeline to be inspected.

D. CCTV inspections shall be performed on one structure-to-structure pipe segment at a time. The inspection shall be performed by moving the CCTV camera through the line along the axis of the pipe at a rate not to exceed 30 feet per minute. Any means of propelling the camera through the storm drain line that would exceed this rate of speed or produce non-uniform or jerky movements shall not be acceptable. The camera shall be stopped for a minimum of 5 seconds at each identifiable defect to ensure proper documentation of the lines condition. In addition, the camera shall be stopped at each service connection, and the camera shall pan the service connection to video inside the service line. CCTV inspection is performed from the upstream structure to the downstream structure when the conditions allow. If conditions do not allow an upstream to downstream inspection, the inspection will be performed in reverse (from the downstream to the upstream structure).

E. The pipe segment length, with respect to the referenced structure, shall be determined with a meter device, accurate to within ±2%. Markings on the cable, instruments requiring observation inside a structure, or correction of each reading for the depth of the reference structure shall not be allowed. Accuracy of the measurement meters shall be checked daily by use of a walking meter, roll-a-tape, or other suitable device.

F. A header screen showing segment number, structure numbers, and starting structure shall be recorded for 10 seconds at the beginning of each televised line segment.

G. At the CONSULTANT's discretion the camera shall be stopped or backed up to view and analyze conditions that appear to be unusual or uncommon for a sound storm drain line. At all times, the operating technician shall be able to move the camera through the line in either direction without loss of quality in the video presentation on the monitor. The picture shall be free of electrical interference and provide a clear, stable image of the specified resolutions at all times. The camera lens shall be cleaned, as required, to provide a clear image within the storm drain lines.

H. In the event that equipment becomes lodged in the storm drain line, the CONSULTANT shall notify the OWNER immediately. If equipment becomes lodged through no fault of CONSULTANT, the OWNER will remove the camera at no cost to the CONSULTANT. Timely excavation is necessary to maintain project schedules and to eliminate the possibility of overflows resulting from the lodged equipment creating a blockage.

I. If during the inspection the camera cannot pass through the entire pipe segment, the CONSULTANT shall set up his equipment so that the inspection can be performed from the opposite structure. Should this occur, CONSULTANT will be paid for an additional set-up. If the camera again fails to pass through the entire pipe segment, the inspection shall be abandoned and considered complete. The CONSULTANT will be paid for the actual footage inspected, and no additional inspection work shall be required in that pipe segment until the pipe has been rehabilitated. CONSULTANT will be paid for the actual footage inspected during each subsequent attempt.

Submittals

A. Copy of completed CCTV log

B. Schedule for cleaning and inspecting each storm drain line

C. Daily report form

D. Confined space entry form

Data Submittals

I. All line pictures will be digital .mpeg video, clear, legible, and free of "snow" or haze.

J. Electronic copies (data files) shall be submitted in a PACP Exchange Database.

K. The CONSULTANT shall prepare and submit a list of defects, which appear to require immediate corrective action, based on their size and/or type, on a daily and weekly basis. This submittal is not a final deliverable.

L. To establish the working criteria for video picture quality which must be maintained throughout the project, the CONSULTANT shall furnish a USB drive with .mpg video footage of an actual storm drain line inspection that is satisfactory to the OWNER, and meets the job specifications for CCTV inspection. This USB drive shall become the property of the OWNER and shall be used throughout the project as a standard that the CONSULTANT's video picture quality must meet.

M. The CONSULTANT shall furnish the OWNER a hard drive or USB drive that contains both data files and video files. The data files shall be able to upload into PACP compliant software. If a specific naming convention of file is required, OWNER shall provide labeling and file naming standards at the pre-construction meeting.

N. All inspections shall be made by PACP certified operators and data shall be documented using NASSCO's Pipeline Assessment and Condition Program.

O. Once the CCTV inspection data has been obtained and analyzed and professional reports compiled, a recommended protocol for repairs will be recommended by the CONSULTANT.

P. All rehabilitation recommendations must be approved by a registered licensed engineer in the state of Louisiana with a minimum of 10 years of experience analyzing storm drain line inspection data. Engineer must be PACP certified.

SONAR INSPECTION

A. The CONSULTANT shall determine the inspection technology method or combination of methods to be utilized in each pipeline segment. Generally, sonar alone will be used where the depth of fluid in the pipeline is greater than 75% of the full diameter of the pipe. CCTV and sonar will be used together when the fluid levels are between 25% and 75% of the full pipe diameter. Sonar will not be used where the fluid depth is generally less than 25% of the pipe diameter or more specifically where there is insufficient depth to pass the sonar gear on the float or crawler.

B. The speed of the crawler or float shall not be greater than 20 feet per minute when the scanning sonar is in use either alone or in combination with the CCTV camera.

C. The sonar equipment shall be purpose built for use in the inspection of storm drain system pipelines and shall be operative in totally submerged conditions. It shall be capable of being traversed by crawler tractor, float or other suitable means through the pipeline on a stable vehicle constructed to situate the sonar inspection equipment below the water level.

D. The maximum beam width of the sonar energy pulse will be no greater than 2 degrees from the center of the transducer. The transducer will be of the continuous scanning type. The sonar image will be in full color during the inspection.

E. The sonar survey will include complete structural and service assessment of the equivalent PACP standard as that obtained through the CCTV survey. The sonar survey will include measurement of fluid depth and silt depth.

F. The sonar survey will be continuously recorded and saved on flash drives in MPEG format, supported by complete defect inspection logs and summary reports.

G. A color sonar still image of cross-sections of the pipeline must be taken and recorded every 50 feet or more frequently should the internal profile of the pipeline change and at every defect. These images are to be cross referenced to the reports and databases for ease of reference.

MEASUREMENT AND PAYMENT

2000.01 360 Degree Structure Evaluation with GPS Data Collection: All costs associated with inspecting all designated structures and documentation including but not limited to labor, equipment, transportation, tools, GPS data collection and all other related procedures and materials necessary to produce the results in the form, format and of the quality specified in the structure and pipe condition assessment section. CONSULTANT will be paid per each structure inspected.

2000.02 Zoom Camera Pipe Assessment: All costs associated with inspecting all designated pipes and documentation including but not limited to labor, equipment, transportation, tools and all other related procedures and materials necessary to produce the results in the form, format and of the quality specified in the structure and pipe condition assessment section. CONSULTANT will be paid per each pipe assessed.

2000.03-.04 CCTV Inspection: All costs associated with the CCTV inspection of storm drain lines. CONSULTANT will be paid for the actual linear footage of pipe inspected at the unit rates specified based on pipe size.

2000.05 Sonar Inspection of > 18" Diameter Storm Drain Pipe: All costs associated with the sonar inspection of storm drain lines and preparation and delivery of data. CONSULTANT will be paid for the actual linear footage of pipe sonar inspected at the unit rates specified.

2000.06 Additional Setup of Inspection Equipment: All costs associated with the additional setup performed during CCTV and sonar inspection. This will occur when the CCTV and/or sonar equipment is unable to traverse the

line segment from one structure and must be setup again at the opposite or connecting structure to attempt the inspection. CONSULTANT will be paid for each additional setup performed.

2000.07 Structure Rehabilitation Recommendations: All costs associated with the preparation and delivery of structure rehabilitation recommendations. Payment will be made per each structure inspected.

2000.08 Storm Drain Pipe Rehabilitation Recommendations: All costs associated with the preparation and delivery of storm drain pipe rehabilitation recommendations. Payment will be made per linear foot of storm drain pipe inspected.

2000.09 CCTV Inspection Unit with Operator and Helper < 5,000 LF (Minimum of 5 Hours): All costs associated with the port-to-port mobilization/demobilization of one (1) CCTV inspection unit with operator and helper. This item is to be used for projects of less than 5,000 LF.

SECTION 3000
STORM DRAIN LINE CLEANING

A. Standard line cleaning shall be performed to remove foreign material and restore pipe capacity to 95%. Standard cleaning shall be defined as three (3) complete passes of the storm drain line with the cleaning equipment. The term "complete passes" shall mean cleaning from the upstream structure all the way to the downstream structure.

B. Heavy line cleaning shall be performed to remove foreign material and restore pipe capacity to 95%. Heavy line cleaning shall be defined as four (4) or more complete passes of the cleaning equipment. The term "complete passes" shall mean cleaning from the upstream structure all the way to the downstream structure.

C. Conditions such as broken pipe and major blockages may prevent cleaning from being accomplished, especially where additional damage would result if cleaning were attempted or continued. Should such conditions be encountered, the CONSULTANT shall not be required to clean those specific pipe sections unless the OWNER removes the apparent obstruction.

D. During storm drain cleaning operations, satisfactory precautions shall be taken by the CONSULTANT in the use of cleaning equipment. Precautions shall be taken to ensure that damage to, or flooding of public or private property does not occur during the cleaning procedure.

E. Selection of the equipment shall be the sole discretion of the CONSULTANT and based on the conditions of lines at the time the work commences. The equipment

shall be capable of removing dirt, grease, rocks, sand, and other materials and obstructions from the storm drain lines and structures.

F. If cleaning of an entire section cannot be successfully performed from one structure, the equipment shall be set up at the other structure and cleaning again attempted. If successful cleaning still cannot be performed or the equipment fails to traverse the entire structure-to-structure pipe segment it will be assumed that a major blockage exists and the cleaning operation will be abandoned. The cleaning operator will note these occurrences in his daily cleaning log. The CONSULTANT will be compensated for cleaning the entire length of storm drain line should this occur.

G. All sludge, dirt, sand, rocks, grease, and other solid or semi-solid materials resulting from the cleaning operation shall be removed at the downstream structure of the section being cleaned. Passing materials from pipe segment to pipe segment, which could cause line stoppages, accumulations of debris in wet wells, interference with in-line long term flow monitoring equipment or damage to pumping equipment will not be permitted.

H. If the CCTV inspection shows the cleaning to be unsatisfactory, the CONSULTANT shall re-clean and re-inspect the storm drain line at his sole expense until the cleaning is shown to be satisfactory.

I. All sludge, dirt, sand, rocks, grease, and other solid or semisolid materials removed from the storm drain lines and structures during the cleaning operation shall be drained of water and transported to the approved local dumpsite

J. The OWNER will provide water for cleaning operations from any fire hydrant at no cost to CONSULTANT.

UNCOVER BURIED STRUCTURES LESS THAN 12" DEEP

A. CONSULTANT shall provide all labor, materials and equipment necessary to uncover storm drain structures less than 12" deep requiring access for storm drain line inspection on this project. CONSULTANT will uncover only those structures approved by the OWNER.

B. CONSULTANT will not be required to uncover structures covered in asphalt, concrete or any other permanent or semi-permanent material.

C. After inspection is complete, the CONSULTANT shall close the lid and re-cover the structure only with the material removed to access the structure. The CONSULTANT will not be required to seal structure lid or replace any gasket material that may have been removed or damaged during the opening of the structure.

REMOVAL OF STABILIZED DEBRIS IN STRUCTURE INVERTS

A. CONSULTANT shall provide all labor, materials and equipment necessary to remove stabilized debris from structure inverts on this project. CONSULTANT will only remove stabilized debris from structure inverts approved by the OWNER.

TRAFFIC CONTROL FOR EVALUATION AND CLEANING CREWS

A. CONSULTANT will provide standard traffic control including cones, signs, etc. at no cost to the OWNER

B. CONSULTANT will provide additional traffic control such as a flagman or policeman, as needed and as approved by the OWNER.

C. The CONSULTANT shall notify the local fire department, police department, engineering department, and all other necessary authorities to carry out the requirements of the scope of work. All investigation work shall be coordinated with these authorities on a daily basis to avoid any conflict.

MEASUREMENT AND PAYMENT

3000.01-.04 High Pressure Cleaning of Storm Drain Pipe: High pressure cleaning of storm drain pipe will be billed per linear foot with measurement being made between centerlines of consecutive storm drain access points for the line segments being cleaned. Payment for pipe cleaning shall be made at the unit price per linear foot based on the pipe size being cleaned

3000.05 Removal, Hauling and Disposal of Debris From Storm Drain Structures and Pipes: All costs associated with the cleaning, removal, hauling and disposal of debris from storm drain structures and pipes. Payment will be made per ton of debris removed from the storm drain system and disposed of at the approved landfill. Signed load/dump tickets must be provided with invoices.

3000.06 Combination Cleaning Truck with Operator and Helper (Min. 5 Hours) < 5,000 LF: All costs associated with the port-to-port mobilization/demobilization of one (1) combination cleaning truck with operator and helper. This item is to be used for projects of less than 5,000 LF.

3000.07 Combination Cleaning Truck with Operator and Helper and CCTV Inspection Unit with Operator and Helper (Min. 5 Hours) < 5,000 LF: All costs associated with the port-to-port mobilization/demobilization of one (1) combination cleaning truck with operator and helper and (1) CCTV inspection unit with operator and helper. This item is to be used for projects of less than 5,000 LF.

3000.08 Traffic Control: Payment shall be made when a flagger or uniformed police officer is required to control traffic during any inspection or cleaning activity.