

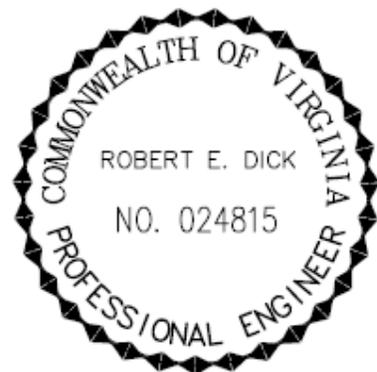
Invitation for Bids No. SW-23-012

Landfill Gas Collection System Expansion: Stage 1

Bristol Integrated Solid Waste Management Facility



City of Bristol
300 Lee Street
Bristol, Virginia 24201
276-645-7380



SCS ENGINEERS

02218208.14-1 | December 9, 2022

15521 Midlothian Turnpike, Suite 305
Midlothian, VA 23113
804-378-7440

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SECTION 00 11 10**INVITATION FOR BIDS
IFB# SW-23-012****LANDFILL GAS COLLECTION SYSTEM EXPANSION:
STAGE 1
BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY**

Sealed bids will be received by the City of Bristol, Virginia (referred to as City or OWNER) in the Purchasing Department Office, 300 Lee Street, Bristol, VA 24201, until **2:00 pm on Thursday, January 12, 2023** and immediately thereafter publicly opened and read aloud for providing labor, material and equipment pertaining to the installation of the Stage 1 Landfill Gas (LFG) Collection System Expansion at the Bristol Integrated Solid Waste Management Facility in Bristol, VA. The sealed envelope shall be addressed to City of Bristol Purchasing Department, attention of Emily Compton. The City reserves the right to reject any or all bids and to waive informalities and irregularities.

A Non-Mandatory on-site, in-person Pre-Bid Meeting will be held at **10:00 am on Friday, December 16, 2022**. There will be an option to participate remotely in the Pre-Bid Meeting via video conference. Bidders that do not attend the on-site in-person Pre-Bid Meeting must schedule and conduct a separate site visit prior to submitting the Bid. All questions proposed by potential Bidders must be submitted in writing by 5:00 pm on Thursday, January 5, 2023.

- ◆ Invitations to participate in the Pre-Bid Meeting remotely via video conference can be obtained by contacting Mr. Bob Dick, PE of SCS Engineers at (804) 486-1911 or BDick@scsengineers.com.
- ◆ Separate site visits may be scheduled by contacting Mike Martin, Solid Waste Administrator, at (423) 571-7332 or mmartin@bristolva.org, or Joey Lamie, Project Manager, at (276) 645-3726 or Joey.Lamie@bristolva.org.

All work will be in accordance with the Drawings and Specifications which are on file with the City of Bristol and SCS Engineers.

Bids will be received under the Single-Prime bidding method only. Bids must be on the standard form provided in the Project Manual. Bids may be submitted via courier, mail, or hand delivered. Bids submitted via fax or electronic mail or other means will not be accepted.

The scope of work includes, but is not limited to, installation of approximately 35 vertical LFG extraction wells, approximately 4,000 linear feet of belowgrade HDPE LFG collection piping, approximately 4,100 linear feet of belowgrade forcemain/pneumatic supply piping, approximately 25 dedicated dewatering pumps (exact number dependent on drilling activities), various connections to the existing LFG Collection System, isolation valves, and related site work.

The Bidding Documents may be obtained by contacting SCS Engineers at 15521 Midlothian Turnpike, Suite 305, Midlothian, Virginia 23113, (804) 486-1911. Requests for electronic copies of the Bidding Documents should be directed to Mr. Bob Dick, PE at (804) 486-1911 or BDick@scsengineers.com.

CITY OF BRISTOL

Jacob Chandler, PE, Director of Public Works

END OF SECTION 00 11 10

SECTION 00 21 10

INSTRUCTIONS TO BIDDERS

For a Bid to be considered, it must be in accordance with the following instructions:

1. BIDS

Bids must be made on the Bid Forms provided herein, and all blank spaces for Bids, Alternates and Unit Prices, applicable to bidder's work, shall be properly filled in. When requested Alternates are not Bid, the Bid may be considered non responsive. The Bidders agree that Bids submitted on the specified Bid Forms, which are detached from specifications, will be considered and will have the same force and effect as if attached thereto. Numbers shall be stated both in writing and in figures for the Base Bids and Alternates.

Any modification to the Bid Forms (including Alternates and/or Unit Prices) may disqualify the Bid and may cause the Bid to be rejected.

The Contractor shall fill in the Bid Forms as follows:

- A. If the documents are executed by a sole Owner, that fact shall be evidenced by the word "Owner" appearing after the name of the person.
- B. If the documents are executed by a Partnership, that fact shall be evidenced by the word "Co-Partner" appearing after the name of the partner executing them.
- C. If the documents are executed on the part of a Corporation, they shall be executed by either the President or the Vice-President and attested by either the Secretary or Assistant Secretary. In all cases the title of the office of such person shall appear after their signatures.
- D. If the Bid is made by a Joint Venture, it shall be executed by each member of the Joint Venture in the above form for sole Owner, Partnership, or Corporation, whichever form is applicable.
- E. All signatures shall be properly witnessed or attested as applicable.
- F. Each Bid shall be addressed and delivered as indicated in Item 5 of the Instructions to Bidders. The address of the Bidder, the Bidder's license number and, if applicable, the designated portion of the Work for which Bid is submitted should also be referenced on the Bid envelope.
- G. It shall be the specific responsibility of the Bidder to deliver the Bid to the proper official at the appointed place and prior to the announced time for the opening of Bids. Later delivery of a Bid for any reason, including delivery by the United States Mail, shall disqualify the Bid.
- H. Modifications of previously deposited Bids or requests for withdrawal will be acceptable only if delivered in person or in writing to the place of the Bid opening prior to the time for opening Bids.

- I. Unit Prices quoted in the Bid shall include overhead and profit and shall be the full compensation for the Contractor's cost involved in the work.
- J. Failure to submit a Bid on the official City of Bristol Virginia form provided for that purpose shall be a cause for rejection of the Bid. Modification of or additions to any portion of the Invitation for Bid/Request for Bid may be cause for rejection of the Bid; however, the City of Bristol Virginia reserves the right to decide, on a case by case basis, in its sole discretion, whether to reject such a Bid as nonresponsive. As a precondition to its acceptance, the City of Bristol Virginia may, in its sole discretion, request that the bidder/proposer withdraw or modify nonresponsive portions of a Bid which do not affect quality, quantity, price, or delivery. No modification of or addition to the provisions of the contract shall be effective unless reduced to writing and signed by the parties.

2. QUALIFICATIONS OF BIDDERS

The Bidder shall provide a summary of relevant experience with active landfill gas collection system construction, involving well drilling, wellhead installation, pipe and valve installation, condensate management infrastructure installation, and dewatering pump installation. The Bidder shall submit as part of the Bid, information related to previous relevant projects including job location and work summary, contract amount and duration, and contact name and phone number on the forms provided herein. A minimum of three (3) relevant active landfill gas collection system construction projects shall be submitted with the Bid. It is the Bidder's responsibility to submit sufficient documentation to demonstrate relevancy.

The City of Bristol Virginia may make such reasonable investigations as deemed proper and necessary to determine the ability of the bidder/proposer to perform the services/furnish the goods and the bidder/proposer shall furnish to the City of Bristol Virginia all such information and data for this purpose as may be requested. The City of Bristol Virginia reserves the right to inspect bidder's/proposer's physical facilities prior to award to satisfy questions regarding the bidder/proposer's capabilities. The City of Bristol Virginia further reserves the right to reject any Bid if the evidence submitted by, or investigations of, such bidder/proposer fails to satisfy the City of Bristol Virginia that such bidder/proposer is properly qualified to carry out the obligations of the contract and to provide the services and/or furnish the goods contemplated therein.

3. EXAMINATION OF CONDITIONS

It is understood and mutually agreed that by submitting a Bid the Contractor acknowledges his/her careful examination of the Bidding Documents pertaining to the work, the location, accessibility and general character of the site of the work and all existing buildings and structures within and adjacent to the site; and has satisfied himself/herself as to the nature of the work, the condition of existing infrastructure, the conformation of the ground, the character, quality and quantity of the materials to be encountered; the general and local conditions; the construction hazards; and all other matters, including but not limited to, the labor situation which can in any way affect the work under the Contract; and including all safety measures required by the latest edition of the Occupational Safety Health Act and all rules and regulations issued pursuant thereto. It is further mutually agreed that by submitting a Bid, the Contractor acknowledges that he/she has satisfied himself/herself as to the feasibility and meaning of the plans, drawings, specifications, and other Contract Documents for the construction of the work and that he/she accepts all the terms, conditions and stipulations contained therein; and that he/she is prepared to work in cooperation with the Owner and all other Contractors performing work on the site.

Reference is made to the Contract Documents for the identification of those surveys and investigative reports of subsurface or latent physical conditions at the site or otherwise affecting performance of the work which have been relied upon by the Licensed Professional who prepared the documents. Copies of all such surveys and reports are available to the Bidders, upon request. All Bidders are responsible for reviewing these documents prior to submission of their Bid.

Each Bidder may, at his/her own expense, make such additional surveys and investigations, as he/she may deem necessary to determine his/her Bid price for the performance of the work. Any on-site investigation shall be done at the convenience of the Owner. The Owner will honor any reasonable request for access to the site.

4. ADDENDA

Any Addenda to bidding documents issued during the time of bidding will be sent to each Bidder, and are to be considered covered in the Bid. It is the Contractor's responsibility to ascertain prior to Bid time, which Addenda have been issued and confirm that his/her Bid includes any changes covered by the Addenda.

Should the Bidder find discrepancies in, or omissions from, the drawings or documents or should he/she be in doubt as to their meaning, he/she shall at once notify the Licensed Professional who prepared said drawings or documents. Neither the Owner nor the Licensed Professional who prepared the bidding documents will be responsible for any oral instructions.

The Bidder on his/her Bid shall acknowledge all Addenda. Failure to do so may disqualify the Bid and may cause the Bid to be rejected.

5. RECEIPT OF BIDS

All copies of the Bid, the Bid security, if any, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. All sealed Bid envelopes shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof and marked on the outside of the envelope as follows:

City of Bristol Purchasing Department
Emily Compton, Procurement Specialist
City Hall
300 Lee Street
Bristol, Virginia 24201

LANDFILL GAS COLLECTION SYSTEM EXPANSION: STAGE 1
BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY

Due Date: **Thursday, January 12, 2023 at 2:00 P.M. ET**
IFB# SW-23-012

To be considered for selection, Bids must be received by the City of Bristol Virginia Purchasing Department 300 Lee Street, Bristol, VA 24201, by the designated date and hour. Bids received in the City of Bristol Virginia Purchasing Department after the date and hour designated are automatically disqualified and will not be considered. The City of Bristol Virginia is not responsible for delays in the delivery of mail by the U.S. Postal Service, private couriers, or other means of delivery. It is the sole

responsibility of the bidder/proposer to ensure that its Bid reaches the City of Bristol Virginia Purchasing Department by the designated time and hour.

6. REJECTION OF BIDS

The Owner reserves the unqualified right to reject any and all Bids. Reasons for rejection may include, but shall not be limited to, the following:

- A. If the Form of Bid furnished to the Bidder is not used or is altered.
- B. If the Bidder fails to insert a price for all Bid items, Alternates and Unit Prices requested.
- C. If the Bidder adds any provisions reserving the right to accept or reject any award.
- D. If there are unauthorized additions or conditional Bids, or irregularities of any kind which tend to make the Bid incomplete, indefinite, or ambiguous as to its meaning.
- E. If the Bidder fails to complete the Bid forms where information is requested so the Bid may be properly evaluated by the Owner.
- F. If the Unit Prices contained in the Bid Schedule are unacceptable to the Owner.
- G. If the Bidder fails to demonstrate relevant experience to the satisfaction of the Owner in accordance with the criteria outlined under Qualifications of Bidders.
- H. If the Bidder fails to comply with other instructions stated herein.

7. BID EVALUATION AND AWARD

The City of Bristol, Virginia will make the award on a Grand Total or Total Bid Price to the lowest responsive and responsible bidder. Should the successful Bidder default and fail to execute a Contract, the Contract may be awarded to the next lowest responsive and responsible Bidder.

In accordance with Section 00 45 13, Bidder must submit certain information pertaining to Bidder's qualifications along with the Bid. Before awarding a Contract, the Owner may require the apparent low Bidder to supply supplemental information and documentation, or request clarifications, to qualify himself/herself to be a responsible Bidder by furnishing any or all of the following data:

- A. The latest financial statement showing assets and liabilities of the company or other information satisfactory to the Owner.
- B. A listing of similar completed projects of similar size, with contact persons and telephone numbers.
- C. Permanent name and address of place of business.
- D. The number of regular employees of the organization and length of time the organization has been in business under present name and percentage of work typically performed by the contractor's firm.
 1. Qualifications of key employees assigned to this Project.

2. References for key employees assigned to this Project.
- E. The name and home office address of the Surety proposed and the name and address of the responsible local claim agent.
- F. The names of members of the firm who hold appropriate trade licenses, together with license numbers.
- G. Complete list of all subcontractors and suppliers proposed.
- H. Any pending arbitration or mediation cases or lawsuits. This may include all arbitration, mediation and lawsuits settled or resolved within last ten (10) years.

Failure or refusal to furnish any of the above information if requested shall constitute a basis for disqualification of any Bidder.

In determining the lowest responsible Bidder, the Owner may consider the past performance of the Bidder on construction contracts. Particular concern will be given to completion times, quality of work, cooperation with other Contractors, and cooperation with the Designer and Owner.

Should the Owner adjudge that the apparent low Bidder is not the lowest "responsible" Bidder by virtue of the above information, said apparent low Bidder will be so notified and his/her Bid Security shall be returned to him/her.

The Owner shall have the right to accept Alternates in any order or combination and to determine the low Bidder on the basis of the sum of the Base Bid and the Alternates accepted.

The Owner reserves the right to reject any and all Bids, to waive all technicalities and irregularities, and to make the award as considered to be in the best interest of the Owner.

Upon the award or the announcement of the decision to award a contract as a result of this solicitation, the City of Bristol Virginia will publicly post such notice on the City of Bristol Virginia website (www.bristolva.org) if the amount of the transaction is \$30,000 or more. Award information may also be obtained by contacting the buyer whose name appears on this solicitation.

8. BID SECURITY

Each Bid shall be accompanied by bid security in accordance with the instructions specified in Section 00 43 10. Bids shall be accompanied by a cashier's or bank check or Bid Guarantee Bond in the amount of not less than five percent (5%) of the bid made payable to the City of Bristol, Virginia, Owner, and subject to the conditions provided in the Instruction to Bidders.

9. PERFORMANCE BOND

The successful Bidder, upon award of Contract, shall furnish a Performance Bond in an amount equal to one hundred percent (100%) of the Contract price. A "performance bond" is one executed in connection with a contract to secure fulfillment of all the contractor's requirements under such contract.

During execution of the Work, Contractor's inability to achieve the Proposed Borehole Depth values shown on the Drawings, or inability to install LFG extraction wells to these Proposed Borehole Depth values, shall not constitute non-performance or failure to fulfill the undertakings, covenants, terms,

conditions, and agreements of the Contract, provided such inability is solely attributed to landfill subsurface characteristics or conditions encountered during drilling of the boreholes and/or installation of the LFG extraction wells.

10. PAYMENT BOND

The successful Bidder, upon award of Contract, shall furnish a Payment Bond in an amount equal to one hundred percent (100%) of the Contract price. A “payment bond” is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract.

11. PRE-BID CONFERENCE

Bidders are required to attend either an on-site, in-person Pre-Bid Conference at the time and place stipulated in the Bidding Documents or to conduct a separate site visit prior to submitting the bid.

Site visits may be scheduled by contacting Mike Martin, Solid Waste Administrator, at (423) 571-7332 or mmartin@bristolva.org, or Joey Lamie, Project Manager, at (276) 645-3726 or Joey.Lamie@bristolva.org.

12. BIDS TO BE BID

Landfill Gas Collection System Expansion: Stage 1 for the City of Bristol Integrated Solid Waste Management Facility

13. INFORMATION TO BIDDER

All questions concerning the plans and specifications should be directed to the Licensed Professional who prepared said documents, which is Mr. Bob Dick, PE of SCS Engineers at (804) 486-1911 or BDick@scsengineers.com.

Address all inquiries and correspondence regarding this ITB to:

Emily Compton, Procurement Specialist
300 Lee Street Bristol, VA 24201
Email: emily.compton@bristolva.org
Phone: (276) 645-7328

END OF SECTION 00 21 10

SECTION 00 41 13
BID FORM
LANDFILL GAS COLLECTION SYSTEM EXPANSION:
STAGE 1
BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY
Engineer's Project No. 02218208.14-1

1.0 OWNER AND BIDDER

1.1

This Bid is submitted to: City of Bristol, Purchasing Department

1.2

The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

2.0 ATTACHMENTS TO THIS BID

The following documents are submitted with and made a condition of this Bid:

- List of Proposed Subcontractors;
- List of Proposed Suppliers;
- Evidence of authority to do business in the Commonwealth of Virginia; or a written covenant to obtain such authority within the time for acceptance of Bids;
- Contractor's license number as evidence of Virginia Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids; and,
- Required Bidder Qualification Statement with supporting data.

3.0 BASIS OF BID—UNIT PRICES

3.1 UNIT PRICE BIDS

A. Unit Price

#	Description	Estimated Quantity	Unit	Unit Price	Subtotal
Base Bid Items					
1	Mobilization/Demobilization	1	Lump Sum	\$	\$
2	8-inch PVC LFG Extraction Well w/ 36-inch Borehole (less than or equal to 150 feet deep)	1,911	VF	\$	\$
3	12-inch CPVC LFG Extraction Well w/ 36-inch Borehole (less than or equal to 150 feet deep)	2,100	VF	\$	\$
4	12-inch CPVC LFG Extraction Well w/ 36-inch Borehole (greater than 150 feet deep)	933	VF	\$	\$
5	2-inch LFG Dual Extraction Wellheads	20	EA	\$	\$
6	3-inch LFG Dual Extraction Wellheads	14	EA	\$	\$
7	4-inch LFG Collection Piping (belowgrade)	500	FT	\$	\$
8	6-inch LFG Collection Piping (belowgrade)	450	FT	\$	\$
9	8-inch LFG Collection Piping (belowgrade)	3,100	FT	\$	\$
10	2-inch Airline Piping and 4-inch Liquids Forcemain Piping (belowgrade)	100	FT	\$	\$
11	2-inch Airline Piping and 4-inch Liquids Forcemain Piping (belowgrade in common trench w/ LFG piping)	4,050	FT	\$	\$
12	8-inch LFG Butterfly Isolation Valve (belowgrade)	9	EA	\$	\$
13	2-inch Airline Isolation Valve (abovegrade)	9	EA	\$	\$
14	4-inch Forcemain Isolation Valve (abovegrade)	9	EA	\$	\$
15	Liquid Forcemain Air Release Valve (abovegrade)	4	EA	\$	\$
16	2-inch Airline and 4-inch Forcemain Stub-Ups	34	EA	\$	\$
17	Leachate Forcemain Cleanouts	5	EA		
18	One Pump or QED Dewatering Pneumatic Pump w/ Standard Tubing and Accessories	6	EA	\$	\$
19	Blackhawk Dewatering Pneumatic Pump w/ High Temp Tubing and Accessories	6	EA	\$	\$
20	Jeneer Dewatering Pneumatic Pump w/ High Temp Tubing and Accessories	6	EA	\$	\$
21	Lorentz Dewatering Solar-Powered Electrical Pump w/ High Temp Tubing and Accessories	4	EA	\$	\$
22	Blackhawk Dewatering Solar-Powered Electrical Pump w/ High Temp Tubing and Accessories	4	EA	\$	\$

#	Description	Estimated Quantity	Unit	Unit Price	Subtotal
Base Bid Items					
23	4-inch Tie-In to Existing 4-inch LFG Lateral	18	EA	\$	\$
24	8-inch Tie-In to Existing 8-inch LFG Header	7	EA	\$	\$
25	2-inch Tie-In to Existing 2-inch Airline and 4-inch Tie-In to Existing 4-inch Liquids Forcemain	25	EA	\$	\$
26	8-inch Access Riser	10	EA	\$	\$
27	Road Crossing	6	EA	\$	\$

B. Total Bid Price

Total Base Bid Price (Items #1 through #27)	\$
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C. Alternate Bid Items – Unit Price

#	Description	Estimated Quantity	Unit	Unit Price	Subtotal
Alternate Bid Items					
28	Introduction of Drilling Polymer into Borehole	1	Gallon	\$	\$
29	Hourly Drilling Rate for Drill Rig w/ Crew using Muck Bucket	1	Hour	\$	\$
30	Sonic Drill Rig Mobilization/Demobilization	1	Lump Sum	\$	\$
31	6-inch CPVC LFG Extraction Well w/ 12-inch Borehole (less than or equal to 150 feet deep)	1,200	VF	\$	\$
32	6-inch CPVC LFG Extraction Well w/ 12-inch Borehole (greater than 150 feet deep)	400	VF	\$	\$

4.0 TIME OF COMPLETION

4.1

Bidder agrees that the Work will be substantially complete within the durations associated with the Milestone Dates outlined below, as measured after the date when the Contract Times commence to run, and will be completed and ready for final payment within the durations associated with the Milestone Dates outlined below, as measured after the date when the Contract Times commence to run.

Milestone Schedule Governing Contract Times		
#	Description	Times
1	Installation and Activation of Perimeter LFG Extraction Wells	Substantial Completion w/in 50 Calendar Days
2	Installation and Activation of Deep Dual-Extraction Interior LFG Extraction Wells	Substantial Completion w/in 75 Calendar Days
3	Installation of All Dewatering Pumps and Air LFG/Dewatering System Components Fully Functional	Substantial Completion w/in 90 Calendar Days
4	Final Completion	w/in 15 Calendar Days of Achieving #3

4.2

Bidder accepts the provisions of the Agreement as to liquidated damages.

5.0 BIDDER’S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

5.1 BID ACCEPTANCE PERIOD

This Bid will remain subject to acceptance for 30 calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner. At the end of the 30 calendar days, the bid/proposal may be withdrawn at the written request of the bidder/proposer. If the bid/proposal is not withdrawn at that time, it remains in effect until an award is made or the solicitation is cancelled

5.2 INSTRUCTIONS TO BIDDERS

Bidder accepts all of the terms and conditions of the Instructions to Bidders.

5.3 RECEIPT OF ADDENDA

Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

6.0 BIDDER’S REPRESENTATIONS AND CERTIFICATIONS

6.1 BIDDER’S REPRESENTATIONS

In submitting this Bid, Bidder represents the following:

- A. Bidder has examined and carefully studied the Bidding Documents, including Addenda.

- B. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.
- E. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
- F. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- G. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- H. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
- I. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.
- J. The Bid/Proposal price shall be an all-inclusive price to deliver the specified goods and/or services FOB Destination to the address specified per the specifications. Invoices must be itemized and will be paid at the unit price in the Bid. The City will not accept or pay for additional line items such as freight, shipping and handling, delivery, downtime, equipment, lost time due to inclement weather or any other charges additional to the unit prices quoted in the Bid/Proposal.
- K. By submitting their bids/proposals, all bidders/proposers certify and warrant that the price offered for FOB destination includes only the actual freight rate costs at the lowest and best rate and is based upon the actual weight of the goods to be shipped. Except as otherwise specified herein, standard commercial packaging, packing and shipping containers shall be used. All shipping containers shall be legibly marked or labeled on the outside with purchase order number, commodity description, and quantity.

- L. The bid price shall be for complete delivery of equipment, ready for use by the City of Bristol Virginia, and shall include all applicable freight and installation charges; extra charges will not be allowed.

6.2 BIDDER'S CERTIFICATIONS

The Bidder certifies the following:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding.
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 6.2.D:
 - 1. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
 - 2. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
 - 3. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.
 - 4. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

Bidder:

(typed or printed name of organization)

By:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(typed or printed)

If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.

Attest:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(typed or printed)

Address for giving notices:

Bidder's Contact:

Name:

(typed or printed)

Title:

(typed or printed)

Phone:

Email:

Address:

Bidder's Contractor License No.: (if applicable)

END OF SECTION 00 41 13



SECTION 00 43 10

BID BOND

LANDFILL GAS COLLECTION SYSTEM EXPANSION: STAGE 1 BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY

Bids shall be accompanied by a cashier's or bank check or Bid Guarantee Bond in the amount of not less than five percent (5%) of the bid made payable to the City of Bristol, Virginia, Owner, and subject to the conditions provided in the Instruction to Bidders.

BID GUARANTY

The undersigned bidder submits herewith bid guaranty in an amount of not less than five percent (5%) of the total amount of the bid offered and agrees and consents that the bid guaranty shall be forfeited to the City as liquidated damages if the required contract bond is not executed within fifteen (15) days from the date of the notice of award and work has not been started as required. The following documents are attached to and made a condition of this bid and constitute required Bid Security:

_____ Certified Check or Bank Check

_____ Bid Bond

BID AMOUNT: \$ _____

BIDDER: _____

PERSON PREPARING BID: _____

TELEPHONE NUMBER: _____

ADDRESS: _____

Submittal of signed BID Form signifies understanding and acceptance of all stated terms and conditions and acknowledgment of requirement of compliance with all applicable local, state and federal ordinances, laws, rules and regulations whether expressly stated herein or not.



SIGNATURE: _____

PRINTED NAME: _____

TITLE: _____

COMPANY: _____

DATE: _____

SECTION 00 45 13 BIDDERS QUALIFICATIONS

1.0 GENERAL INFORMATION

1.1

Provide contact information for the Business:

Legal Name of Business:			
Corporate Office			
Name:		Phone number:	
Title:		Email address:	
Business address of corporate office:			
Local Office			
Name:		Phone number:	
Title:		Email address:	
Business address of local office:			

1.2

Provide information on the Business's organizational structure:

Form of Business:	<input type="checkbox"/> Sole Proprietorship <input type="checkbox"/> Partnership <input type="checkbox"/> Corporation		
<input type="checkbox"/> Limited Liability Company <input type="checkbox"/> Joint Venture comprised of the following companies:			
1.			
2.			
3.			
Provide a separate Qualification Statement for each Joint Venturer.			
Date Business was formed:		State in which Business was formed:	
Is this Business authorized to operate in the Project location?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Pending	
SCC Identification Number:			

1.3

Identify all businesses that own Business in whole or in part (25% or greater), or that are wholly or partly (25% or greater) owned by Business:

Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			

1.4

Provide information regarding the Business’s officers, partners, and limits of authority.

Name:		Title:	
Authorized to sign contracts:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Limit of Authority:	\$
Name:		Title:	
Authorized to sign contracts:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Limit of Authority:	\$
Name:		Title:	
Authorized to sign contracts:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Limit of Authority:	\$
Name:		Title:	

2.0 LICENSING

Provide information regarding licensure for Business:

Name of License:			
Licensing Agency:			
License No:		Expiration Date:	
Name of License:			
Licensing Agency:			
License No:		Expiration Date:	

3.0 DIVERSE BUSINESS CERTIFICATIONS

Provide information regarding Business’s Diverse Business Certification, if any. Provide evidence of current certification.

Certification	Certifying Agency	Certification Date
<input type="checkbox"/> Disadvantaged Business Enterprise		
<input type="checkbox"/> Minority Business Enterprise		
<input type="checkbox"/> Woman-Owned Business Enterprise		
<input type="checkbox"/> Small Business Enterprise		
<input type="checkbox"/> Disabled Business Enterprise		
<input type="checkbox"/> Veteran-Owned Business Enterprise		
<input type="checkbox"/> Service-Disabled Veteran-Owned Business		
<input type="checkbox"/> HUBZone Business (Historically Underutilized) Business		
<input type="checkbox"/> Other		
<input type="checkbox"/> None		

4.0 SAFETY

4.1

Provide information regarding Business’s safety organization and safety performance.

Name of Business’s Safety Officer:			
Safety Certifications			
Certification Name	Issuing Agency	Expiration	

4.2

Provide Worker’s Compensation Insurance Experience Modification Rate (EMR), Total Recordable Frequency Rate (TRFR) for incidents, and Total Number of Recorded Manhours (MH) for the last 3 years and the EMR, TRFR, and MH history for the last 3 years of any proposed Subcontractor(s) that will provide Work valued at 10% or more of the Contract Price. Provide documentation of the EMR history for Business and Subcontractor(s).

Year									
Company	EMR	TRFR	MH	EMR	TRFR	MH	EMR	TRFR	MH

5.0 FINANCIAL

Provide information regarding the Business’s financial stability. Provide the most recent audited financial statement, and if such audited financial statement is not current, also provide the most current financial statement.

Financial Institution:			
Business address:			
Date of Business’s most recent financial statement:		<input type="checkbox"/> Attached	
Date of Business’s most recent audited financial statement:		<input type="checkbox"/> Attached	
Financial indicators from the most recent financial statement			
Contractor’s Current Ratio (Current Assets ÷ Current Liabilities)			
Contractor’s Quick Ratio ((Cash and Cash Equivalents + Accounts Receivable + Short Term Investments) ÷ Current Liabilities)			

6.0 SURETY INFORMATION

Provide information regarding the surety company that will issue required bonds on behalf of the Business, including but not limited to performance and payment bonds.

Surety Name:			
Surety is a corporation organized and existing under the laws of the state of:			
Is surety authorized to provide surety bonds in the Project location?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Is surety listed in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” published in Department Circular 570 (as amended) by the Bureau of the Fiscal Service, U.S. Department of the Treasury? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

7.0 INSURANCE

Provide information regarding Business’s insurance company(s), including but not limited to its Commercial General Liability carrier. Provide information for each provider.

Name of insurance provider, and type of policy (CLE, auto, etc.):			
Insurance Provider		Type of Policy (Coverage Provided)	
Are providers licensed or authorized to issue policies in the Project location?			<input type="checkbox"/> Yes <input type="checkbox"/> No
Does provider have an A.M. Best Rating of A-VII or better?			<input type="checkbox"/> Yes <input type="checkbox"/> No
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

8.0 CONSTRUCTION EXPERIENCE

8.1

Provide information that will identify the overall size and capacity of the Business.

Average number of current full-time employees:	
Estimate of revenue for the current year:	
Estimate of revenue for the previous year:	

8.2

Provide information regarding the Business’s previous contracting experience.

Years of experience with projects like the proposed project:			
As a general contractor:		As a joint venturer:	
Has Business, or a predecessor in interest, or an affiliate identified in Paragraph 1.03:			
Been disqualified as a bidder by any local, state, or federal agency within the last 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Been barred from contracting by any local, state, or federal agency within the last 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Been released from a bid in the past 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Defaulted on a project or failed to complete any contract awarded to it? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Refused to construct or refused to provide materials defined in the contract documents or in a change order? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Been a party to any currently pending litigation or arbitration? <input type="checkbox"/> Yes <input type="checkbox"/> No			

Provide full details in a separate attachment if the response to any of these questions is Yes.

8.3

List all projects currently under contract in Schedule A and provide indicated information.

8.4

List a minimum of three and a maximum of six projects completed in the last 5 years in Schedule B and provide indicated information to demonstrate the Business's experience with projects similar in type and cost of construction.

8.5

In Schedule C, provide information on key individuals whom Business intends to assign to the Project. Provide resumes for those individuals included in Schedule C. Key individuals include the Project Manager, Project Superintendent, Quality Manager, and Safety Manager. Resumes may be provided for Business's key leaders as well.

9.0 REQUIRED ATTACHMENTS

9.1

Provide the following information with the Statement of Qualifications:

- A. If Business is a Joint Venture, separate Qualifications Statements for each Joint Venturer, as required in Paragraph 1.2.
- B. Diverse Business Certifications if required by Paragraph 3.1.
- C. Certification of Business's safety performance if required by Paragraph 4.1.
- D. Financial statements as required by Paragraph 5.1.
- E. Attachments providing additional information as required by Paragraph 8.2.
- F. Schedule A (Current Projects) as required by Paragraph 8.3.
- G. Schedule B (Previous Experience with Similar Projects) as required by Paragraph 8.4.
- H. Schedule C (Key Individuals) and resumes for the key individuals listed, as required by Paragraph 8.5.
- I. Additional items as pertinent.

This Statement of Qualifications is offered by:

Business: _____
(typed or printed name of organization)

By: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(date signed)

(If Business is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address for giving notices:

Designated Representative:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address: _____

Phone: _____

Email: _____

Schedule A—Current Projects

Name of Organization					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project Completed		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project Completed		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project Completed		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule B—Previous Experience with Similar Projects

Name of Organization					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project Completed		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project Completed		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project Completed		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule B—Previous Experience with Similar Projects

Name of Organization					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project Completed		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project Completed		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project Completed		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule C—Key Individuals

Project Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	
Project Superintendent			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

Safety Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	
Quality Control Manager			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

END OF SECTION 00 45 13

SECTION 00 70 00

TERMS AND CONDITIONS

The Agreement for Service ("Contract" or "Agreement") with the successful Offeror will contain the following Terms and Conditions. Offerors taking exception to these Terms and Conditions or intending to propose additional or alternative language must (a) identify with specificity the City Terms and Conditions to which they take exception or seek to amend or replace; and (b) include any additional or different language with their bid. Failure to both identify with specificity those terms and conditions Offeror takes exception to or seeks to amend or replace as well as to provide Offeror's additional or alternate terms and conditions may result in rejection of the bid.

A. Procedures

The extent and character of the services to be performed by the Offeror shall be subject to the general control and approval of the City and their authorized representative(s). Any change to the Contract must be approved in writing by the City.

B. Delays and Delivery Failures

The Offeror must keep the City advised at all times of services' status relative to the schedule as agreed upon by the parties. If delay is foreseen, the Offeror shall give immediate written notice to the Purchasing Department and include an expected resolution timeframe. Should the Offeror fail to deliver the proper item(s)/service(s) at the time and place(s) contracted for, or within the resolution timeframe submitted with the delay notification or should the Offeror fail to make a timely replacement of rejected items /services when so required, the City may purchase items/services of comparable quality and quantity in the open market to replace the undelivered or rejected items/services. The Offeror shall reimburse the City for all costs in excess of the Agreement price when purchases are made in the open market; or in the event that there is a balance the City owes to the Offeror from prior transactions, an amount equal to the additional expense incurred by the City as a result of the Offeror's nonperformance shall be deducted from the balance as payment.

C. Business, Professional, & Occupational License Requirement

All firms or individuals doing business in the City are required to be licensed in accordance with the City Code Section 18-28. - License Requirement.

Questions regarding licensing should be directed to the Office of Commissioner of Revenue, telephone (276) 645-7316.

D. Authorization to Conduct Business in the Commonwealth

A contractor organized as a stock or nonstock corporation, limited liability company, business trust, or limited partnership or registered as a registered limited liability partnership shall be authorized to transact business in the Commonwealth as a domestic or foreign business entity if so required by Title 13.1 or Title 50 of the Code of Virginia or as otherwise required by law. Any business entity described above that enters into a contract with a public body pursuant to the Virginia Public Procurement Act shall

not allow its existence to lapse or its certificate of authority or registration to transact business in the Commonwealth, if so required under Title 13.1 or Title 50, to be revoked or cancelled at any time during the term of the contract. A public body may void any contract with a business entity if the business entity fails to remain in compliance with the provisions of this section.

E. Insurance

1. The Offeror shall be responsible for its work and every part thereof, and for all materials, tools, equipment, appliances, and property of any and all description used in connection therewith. The Offeror assumes all risk of direct and indirect damage or injury to the property or persons used or employed on or in connection with the work contracted for, and of all damage or injury to any person or property wherever located, resulting from any action, omission, commission or operation under the Contract.
2. The Offeror and all sub-offerors shall, during the continuance of the work under the Contract, provide the following:
 - a. Workers' Compensation and Employer's Liability to protect the Offeror from any liability or damages for any injuries (including death and disability) to any and all of its employees, including any and all liability or damage which may arise by virtue of any statute or law in force within the Commonwealth of Virginia.
 - b. Comprehensive General Liability insurance to protect the Offeror, and the interest of the City, its officers, employees, and agents against any and all injuries to third parties, including bodily injury and personal injury, wherever located, resulting from any action or operation under the Contract or in connection with the contracted work. The General Liability insurance shall also include the Broad Form Property Damage endorsement, in addition to coverage for explosion, collapse, and underground hazards, where required.
 - c. Automobile Liability insurance, covering all owned, non-owned, borrowed, leased, or rented vehicles operated by the Offeror.
 - d. Professional Liability against any and all wrongful acts, errors, or omissions on the part of the Offeror resulting from any action or operation under the Contract or in connection with the contracted work.
3. The Offeror agrees to provide the above referenced policies with the following limits. Liability insurance limits may be arranged by General, Automobile and Professional Liability policies for the full limits required, or by a combination of underlying policies for lesser limits with the remaining limits provided by an Excess or Umbrella Liability policy.
 - a. Workers' Compensation: Statutory requirements and benefits. Coverage is compulsory for employers of three or more employees, to include the employer.
 - b. Employer's Liability:

- i. Each Accident: \$1,000,000
 - ii. Disease, Each Employee: \$1,000,000
 - iii. Disease, Policy Limit: \$2,000,000
 - c. Commercial General Liability:
 - i. General Aggregate \$2,000,000
 - ii. Each Occurrence \$1,000,000
 - iii. Commercial General Liability shall include bodily injury and property damage, personal injury, advertising injury, products and completed operations coverage. General Aggregate limit shall apply separately to the project. Contractor's insurance coverage shall be primary and non-contributory.
 - d. Automobile Liability: Combined Single Limit of \$1,000,000
 - e. Professional Liability:
 - i. General Aggregate \$2,000,000
 - ii. Each Occurrence \$1,000,000
 - f. Umbrella Liability: \$2,000,000 per occurrence.
4. The following provisions shall be agreed to by the Offeror:
- a. No change, cancellation, or non-renewal shall be made in any insurance coverage without a forty-five (45) day written notice to the City. The Offeror shall furnish a new certificate prior to any change or cancellation date. The failure of the Offeror to deliver a new and valid certificate will result in suspension of all payments until the new certificate is furnished.
 - b. Liability Insurance "Claims Made" basis:

If the liability insurance purchased by the Offeror has been issued on a "claims made" basis, the Offeror must comply with the following additional conditions. The limits of liability and the extensions to be included as described previously in these provisions, remain the same. The Offeror must either:

 - i. Agree to provide, prior to commencing work under the Contract, certificates of insurance evidencing the above coverage for a period of two (2) years after final payment for the Contract for General Liability policies and five (5) years for Professional Liability policies. This certificate shall evidence a "retroactive date" no later than the beginning of the Offeror's work under this Contract,
 - or
 - ii. Purchase the extended reporting period endorsement for the policy or policies in force during the term of this Contract and evidence the purchase of this extended reporting period endorsement by means of a certificate of insurance or a copy of the endorsement itself.
 - c. The Offeror must disclose the amount of deductible/self-insured retention

applicable to the General Liability, Automobile Liability and Professional Liability policies, if any. The City reserves the right to request additional information to determine if the Offeror has the financial capacity to meet its obligations under a deductible /self-insured plan. If this provision is utilized, the Offeror will be permitted to provide evidence of its ability to fund the deductible /self-insured retention.

- d. Origin of Insurance
 - i. The Offeror agrees to provide insurance issued by companies admitted within the Commonwealth of Virginia, with the Best's Key Rating of at least A:VII.
 - ii. European markets including those based in London, and the domestic surplus lines market that operate on a non-admitted basis are exempt from this requirement provided that the Offeror's broker can provide financial data to establish that a market's policyholder surpluses are equal to or exceed the surpluses that correspond to Best's A:VII Rating.
 - e. Required Certificates
 - i. The Offeror will provide an original signed Certificate of Insurance and such endorsements as prescribed herein.
 - ii. The Offeror will provide on request certified copies of all insurance coverage related to the Contract within ten (10) business days of request by the City. These certified copies will be sent to the City from the Offeror's insurance agent or representative. Any request made under this provision shall be deemed confidential and proprietary.
 - iii. Any certificates provided shall indicate the Contract name and number.
 - f. The City, its officers and employees shall be Endorsed to the Offeror's Automobile and General Liability policies as an "additional insured" with the provision that this coverage "is primary to all other coverage the City may possess." (Use "loss payee" where there is an insurable interest). A Certificate of Insurance evidencing the additional insured status must be presented to the City along with a copy of the Endorsement.
 - g. Compliance by the Offeror with the foregoing requirements as to carrying insurance shall not relieve the Offeror of their liabilities provisions of the Contract.
5. Contractual and other Liability insurance provided under this Contract shall not contain a supervision, inspection or engineering services exclusion that would preclude the City from supervising and/or inspecting the project as to the end result. The Offeror shall assume all on-the-job responsibilities as to the control of persons directly employed by it.
6. Precaution shall be exercised at all times for the protection of Persons (including employees) and property.
7. The Offeror is to comply with the Occupational Safety and Health Act of 1970,

Public Law 91-956, as it may apply to this Contract.

8. If an "ACORD" Insurance Certificate form is used by the Offeror's insurance agent, the words "endeavor to" and ". . . but failure to mail such notice shall impose no obligation or liability of any kind upon the company" in the "Cancellation" paragraph of the form shall be deleted.
9. The Offeror agrees to waive all rights of subrogation against the City, its officers, employees, and agents.

F. Hold Harmless

The Offeror shall indemnify and hold harmless the City, including its officials and employees, from all liability, losses, costs, damages, claims, causes of action, and suits of any nature (specifically including reasonable attorney's fees and defense costs incurred with the defense of third party claims) incidental to or brought as a consequence of any negligent act, error, omission, or breach of the applicable professional standard of care by the Offeror and /or its subcontractors. The Offeror agrees that this clause shall include, but is not limited to, claims involving infringement of patent or copyright. This section shall survive completion of the Contract. The City is prohibited from indemnifying Offeror and/or any other third parties.

G. Safety

All Offerors and sub-offerors performing services for the City are required and shall comply with all Occupational Safety and Health Administration (OSHA), State and City Safety and Occupational Health Standards and any other applicable rules and regulations. Also, all Offerors and sub-offerors shall be held responsible for the safety of their employees and any unsafe acts or conditions that may cause injury or damage to any persons or property within and around the work site area under this Contract.

H. Anti-Discrimination

The City of Bristol, VA in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

By submitting their bids, offerors certify to the City that they will conform to the provisions of the Federal Civil Rights Act of 1964, as amended, as well as the Virginia Fair Employment Contracting Act of 1975, as amended, where applicable, the Virginians With Disabilities Act, the Americans With Disabilities Act and § 2.2-4311 of the Virginia Public Procurement Act (VPPA). If the award is made to a faith-based organization, the organization shall not discriminate against any recipient of goods, services, or disbursements made pursuant to the contract on the basis of the recipient's religion, religious belief, refusal to participate in a religious practice, or on the basis of race, age, color, gender sexual orientation, gender identity, or national origin and shall be subject to the same rules as other organizations that contract with public bodies to account for the use of the funds provided; however, if the faith-based organization segregates public

funds into separate accounts, only the accounts and programs funded with public funds shall be subject to audit by the public body. (Code of Virginia, § 2.2-4343.1E).

In every contract over \$10,000 the provisions in 1. and 2. below apply:

1. During the performance of this contract, the contractor agrees as follows:
 - a. The contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, sexual orientation, gender identity, national origin, age, disability, or any other basis prohibited by state law relating to discrimination in employment, except where there is a bona fide occupational qualification reasonably necessary to the normal operation of the contractor. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
 - b. The contractor, in all solicitations or advertisements for employees placed by or on behalf of the contractor, will state that such contractor is an equal opportunity employer.
 - c. Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.
 - d. If the contractor employs more than five employees, the contractor shall (i) provide annual training on the contractor's sexual harassment policy to all supervisors and employees providing services in the Commonwealth, except such supervisors or employees that are required to complete sexual harassment training provided by the Department of Human Resource Management, and (ii) post the contractor's sexual harassment policy in (a) a conspicuous public place in each building located in the Commonwealth that the contractor owns or leases for business purposes and (b) the contractor's employee handbook.
 - e. The requirements of these provisions 1. and 2. are a material part of the contract. If the Contractor violates one of these provisions, the City may terminate the affected part of this contract for breach, or at its option, the whole contract. Violation of one of these provisions may also result in debarment from State contracting regardless of whether the specific contract is terminated.
 - f. In accordance with Executive Order 61 (2017), a prohibition on discrimination by the contractor, in its employment practices, subcontracting practices, and delivery of goods or services, on the basis of race, sex, color, national origin, religion, sexual orientation, gender identity, age, political affiliation, disability, or veteran status, is hereby incorporated in this contract.
2. The contractor will include the provisions of 1. above in every subcontract or purchase order over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

I. Ethics in Public Contracting

The provisions contained in § 2.2-4367 through § 2.2-4377 of the Virginia Public Procurement Act as set forth in the 1950 Code of Virginia, as amended, shall be applicable to all Contracts solicited or entered into by the City. A copy of these provisions may be obtained from the Purchasing Department upon request.

The above-stated provisions supplement, but do not supersede, other provisions of law including, but not limited to, the Virginia State and Local Government Conflict of Interests Act (§ 2.2-3100 et seq.), the Virginia Governmental Frauds Act (§ 18.2-498.1 et seq.) and Articles 2 and 3 of Chapter 10 of Title 18.2. The provisions apply notwithstanding the fact that the conduct described may not constitute a violation of the Virginia Conflict of Interests Act.

J. Drug-free Workplace

Every Contract of over \$10,000 shall include the following provisions:

During the performance of this Contract, the Offeror agrees to (i) provide a drug-free workplace for the Offeror's employees; (ii) post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the Offeror's workplace and specifying the actions that will be taken against employees for violations of such prohibition; (iii) state in all solicitations or advertisements for employees placed by or on behalf of the Offeror that the Offeror maintains a drug-free workplace; and (iv) include the provisions of the foregoing clauses in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each sub-offeror or vendor.

For the purposes of this section, "drug-free workplace" means a site for the performance of work done in connection with a specific Contract awarded to an Offeror in accordance with this chapter, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana during the performance of the Contract.

K. Immigration Reform and Control Act of 1986

By entering this Contract, the Offeror certifies that it does not and will not during the performance of this Contract violate the provisions of the Federal Immigration Reform and Control Act of 1986, which prohibits employment of illegal aliens.

L. Exemption from Taxes

Pursuant to Va. Code § 58.1-609.1, the City is exempt from Virginia State Sales or Use Taxes and Federal Excise Tax, therefore the Offeror shall not charge the City for Virginia State Sales or Use Taxes or Federal Excise Tax on the finished goods or products provided under the Contract. However, this exemption does not apply to the Offeror, and the Offeror shall be responsible for the payment of any sales, use, or excise tax it incurs in providing the goods required by the Contract, including, but not limited to, taxes on materials purchased by an Offeror for incorporation in or use on a construction project. Nothing in this section shall prohibit the Offeror from including its own sales tax expense in connection with the Contract in its Contract price.

M. Ordering, Invoicing and Payment

All work requested under this Contract shall be placed on a City issued Purchase Order. The Offeror shall not accept credit card orders or payments.

The Offeror shall submit invoices, at the completion of tasks and submission of deliverables; such statement to include a detailed breakdown of all charges for that deliverable.

Payments for services are to be requested as monthly billings submitted by Offeror by the end of the calendar month and payable by the City within 30 days of receipt.

All such invoices will be paid timely by the City unless any items thereon are questioned, in which event payment will be withheld pending verification of the amount claimed and the validity of the claim. The Offeror shall provide complete cooperation during any such investigation.

All invoices shall be forwarded to the following address:

Director of Public Works
City of Bristol, Virginia
2515 Valley Drive
Bristol, VA 24201

Individual Offerors shall provide their social security numbers and proprietorships, partnerships, and corporations shall provide their federal employer identification number on the pricing form.

Offeror shall provide a current Form W-9 – Request for Taxpayer Identification Number and Certification.

N. Payments to Subcontractors

Within seven (7) days after receipt of amounts paid by the City for work performed by a subcontractor under this Contract, the Offeror shall either:

1. Pay the subcontractor for the proportionate share of the total payment received from the City attributable to the work performed by the subcontractor under this Contract; or
2. Notify the City and subcontractor, in writing, of his/her intention to withhold all or a part of the subcontractor's payment and the reason for non-payment.

The Offeror shall pay interest to the subcontractor on all amounts owed that remain unpaid beyond the seven (7) day period except for amounts withheld as allowed in item 2 above.

Unless otherwise provided under the terms of this Contract interest shall accrue at the rate of one percent (1 %) per month.

The Offeror shall include in each of its subcontracts a provision requiring each subcontractor to include or otherwise be subject to the same payment and

interest requirements as set forth above with respect to each lower-tier subcontractor.

The Offeror's obligation to pay an interest charge to a subcontractor pursuant to this provision may not be construed to be an obligation of the City.

O. Substitutions

NO substitutions, additions or cancellations, including those of key personnel are permitted after Contract award without written approval by the Purchasing Department. Where specific employees are proposed by the Offeror for the work, those employees shall perform the work as long as that employee works for the Offeror, either as an employee or subcontractor unless the City agrees to the substitution. Requests for substitutions will be reviewed by the City and approval may be given by the City at its sole discretion. The City shall be notified immediately by the Offeror when the substitution of key personnel or those identified in the bid may be necessary. The substitution process shall be complete within 14 calendar days of the Offerors notification to the City.

P. Assignment

The Agreement may not be assigned in whole or in part without the prior written consent of the Purchasing Department. The rights and obligations of the Offeror are personal and may be performed only by the Offeror. Any purported assignment that does not comply with this provision is void. This Agreement is binding upon and inures to the benefit of the parties and their respective permitted successors and assigns.

Q. Termination

Subject to the provisions below, the Contract may be terminated by the City upon thirty (30) days advance written notice to the Offeror; but if any work or service hereunder is in progress, but not completed as of the date of termination, then the Contract may be extended upon written approval of the City until said work or services are completed and accepted.

1. Termination for Convenience

The City may terminate this Contract for convenience at any time in which case the parties shall negotiate reasonable termination costs.

2. Termination for Cause

In the event of Termination for Cause, the thirty (30) days advance notice is waived and the Offeror shall not be entitled to termination costs.

3. Termination Due to Unavailability of Funds in Succeeding Fiscal Years

If funds are not appropriated or otherwise made available to support continuation of the performance of this Contract in a subsequent fiscal year, then the Contract shall be canceled and, to the extent permitted by law, the Offeror shall be reimbursed for the reasonable value of any non-recurring costs incurred but not amortized in the price of the supplies or services delivered under the Contract.

4. Availability of Funds

It is understood and agreed between the parties herein that the City of Bristol Virginia shall be bound hereunder only to the extent of the funds appropriated and available or which may hereafter become available for the purpose of this agreement.

R. Contractual Disputes

The Offeror shall give written notice to the City Manager of intent to file a claim for money or other relief within ten (10) calendar days of the occurrence giving rise to the claim or at the beginning of the work upon which the claim is to be based, whichever is earlier.

The Offeror shall submit its invoice for final payment within thirty (30) days after completion or delivery.

The claim, with supporting documentation, shall be submitted to the City Manager by US Mail, return receipt requested, courier, or overnight delivery service, no later than sixty (60) days after final payment. If the claim is not disposed of by agreement, the City Manager shall reduce his decision to writing and mail via U.S. mail or otherwise forward a copy thereof to the Offeror within thirty (30) days of the City's receipt of the claim.

The City Manager's decision shall be final unless the Offeror appeals within thirty (30) days by submitting a written letter of appeal to the City Manager, or his designee. The City Manager shall render a decision within sixty (60) days of receipt of the appeal.

No Offeror shall institute any legal action until all statutory requirements have been met. Each party shall bear its own costs and expenses resulting from any litigation, including attorney's fees.

S. Prime Offeror Responsibilities

The Offeror(s) shall be responsible for completely supervising and directing the work under the resulting Contract(s) and all subcontractors that they may utilize. Subcontractors who perform work under the resulting Contract shall be responsible to the prime Offeror. The Offeror agrees to be fully responsible for the acts and omissions of their subcontractors and of persons employed by them.

T. Ownership of Documents

Any reports, specifications, drawings, blueprints, negatives, electronic files or other documents prepared by the Offeror in the performance of its obligations under the Contract shall be the exclusive property of the City, and all such materials shall be returned to the City upon completion, termination, or cancellation of this Contract. The Offeror shall not use, willingly allow, or cause such materials to be used for any purpose other than performance of all Offeror's obligations under the resulting Contract without the prior written consent of the City. However, the Offeror may retain file copies which cannot be used without prior written consent of the City. The City agrees that the Offeror shall not be liable for damages, loss, or injury resulting from the future use of the provided documents for other than the project specified when the Offeror is not the firm of record.

U. Submissions

All Project correspondence, design/review documents, reports etc., prepared by the Offeror shall be distributed to the City Manager for each major phase and sub phase of the Project in the quantities as directed. Within thirty (30) days of completion of each Project phase, submit a Project phase completion report with phase documents to the City Manager.

V. Responsibility for Claims and Liabilities

The City's review, approval, or acceptance of, or payment for, any services required shall not be construed to operate as a waiver by the City of any rights or of any cause of action arising out of the Contract. The Offeror shall be and remains liable to the City for the accuracy and competency of plans, specifications, or other documents or work and Offeror is responsible to the City for any costs incurred resulting from any errors, acts or omissions in the performance of any services furnished.

W. Severability

In the event that any provision shall be adjudged or decreed to be invalid, by a court of competent jurisdiction, such ruling shall not invalidate the entire Agreement but shall pertain only to the provision in question and the remaining provisions shall continue to be valid, binding and in full force and effect.

X. Governing Law /Forum

This Agreement shall be governed and construed in all respects by its terms and by the laws of the Commonwealth of Virginia, without giving effect to its conflicts of law's provisions. Any judicial action shall be filed in the Circuit Court for the City of Bristol, Virginia. Offeror expressly waives any objection to venue or jurisdiction of the Circuit Court for the City of Bristol, Virginia. Offeror expressly consents to waiver of service of process in an action pending in the Circuit Court for the City of Bristol, Virginia pursuant to Virginia Code § 8.01-286.1.

Y. Notices

All notices and other communications hereunder shall be deemed to have been given when made in writing and either (a) delivered in person, (b) delivered to an agent, such as an overnight or similar delivery service, or (c) deposited in the United States mail, postage prepaid, certified or registered, addressed as follows:

TO OFFEROR:
TBD

TO CITY OF BRISTOL VIRGINIA:
City of Bristol Virginia
Purchasing Department
Attn: Emily Compton
300 Lee Street
Bristol, VA 24201

Notice is deemed to have been received: (i) on the date of delivery if delivered in person; (ii) on the first business day after the date of delivery if sent by same day or overnight courier service; or (iii) on the third business day after the date of mailing, if sent by certified or registered United States Mail, return receipt requested, postage and charges

prepaid.

Z. Counterparts

This Contract and any amendments or renewals hereto may be executed in a number of counterparts, and each counterpart signature, when taken with the other counterpart signatures, is treated as if executed upon one original of this Contract or any amendment or renewal. A signature by any party to this Contract provided by facsimile or electronic mail is binding upon that party as if it were the original.

AA. Force Majeure

A party is not liable for failure to perform the party's obligations if such failure is as a result of Acts of God (including fire, flood, earthquake, storm, hurricane or other natural disaster), war, invasion, act of foreign enemies, hostilities (regardless of whether war is declared), civil war, rebellion, revolution, insurrection, military or usurped power or confiscation, terrorist activities, nationalization, government sanction, blockage, embargo, strikes at national level or industrial disputes at a national level, or strike or industrial disputes by labor not employed by the affected party, its subcontractors or its suppliers and which affect an essential portion of the contracted for works but excluding any industrial dispute which is specific to the performance of the works or this contract, interruption or failure of electricity or telephone service.

If a party asserts Force Majeure as an excuse for failure to perform the party's obligation, that party must immediately notify the other party giving full particulars of the event of force majeure and the reasons for the event of force majeure preventing that party from, or delaying that party in performing its obligations under this contract that party must use its reasonable efforts to mitigate the effect of the event of force majeure upon its or their performance of the contract and to fulfill its or their obligations under the contract.

An event of force majeure does not relieve a party from liability for an obligation which arose before the occurrence of that event, nor does that event affect the obligation to pay money in a timely manner which matured prior to the occurrence of that event.

The Offeror has no entitlement and City has no liability for: (1) any costs, losses, expenses, damages or the payment of any part of the contract price during an event of force majeure; and (2) any delay costs in any way incurred by the Offeror due to an event of force majeure.

BB. Survival of Terms

Upon discharge of this Agreement, Sections (Notice, Hold Harmless, Warranties, Governing Law/Forum, Contractual Disputes) of these Terms and Conditions continue and survive in full force and effect.

CC. Non-Waiver

No waiver of any provision of this Agreement shall constitute a waiver of any other provision nor shall any waiver of this Agreement constitute a continuing waiver unless otherwise expressly provided.

DD. Workmanship and Inspection

All services provided under this Contract shall be performed in a skillful, workmanlike and professional manner. The Offeror and its employees shall be professional and courteous at all times. The City may, in writing, require the Offeror to remove any employee from work for reasonable cause, as determined by the City. Further, the City may, from time to time, make inspections of the services performed under this Agreement. Any inspection by the City does not relieve the Offeror of any responsibility in meeting the Agreement requirements. Offeror employees that have been removed at the direction of the City shall be replaced within seven calendar days after City notification.

EE. Debarment Status

By participating in this procurement, the vendor certifies that they are not currently debarred by the Commonwealth of Virginia or Federal Government from submitting a response for the type of goods and/or services covered by this solicitation. Vendor further certifies that they are not debarred from filling any order or accepting any resulting order, or that they are an agent of any person or entity that is currently debarred by the Commonwealth of Virginia or Federal Government. If a vendor is created or used for the purpose of circumventing a debarment decision against another vendor, the nondebarred vendor will be debarred for the same time period as the debarred vendor.

FF. Supremacy Clause

Notwithstanding any provision in the bidder's/proposer's response to the contrary, the bidder/proposer agrees that the terms and conditions contained in the City of Bristol, Virginia's Invitation to Bid or Request for Proposal prevail over contrary terms and conditions contained in the bidder's/proposer's response.

GG. Equal Employment Opportunity

The offeror hereby agrees that it will incorporate or cause to be incorporated into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 CFR Chapter 60, which is paid for in whole or in part with funds obtained from the Federal Government or borrowed on the credit of the Federal Government pursuant to a grant, contract, loan, insurance, or guarantee, or undertaken pursuant to any Federal program involving such grant, contract, loan, insurance, or guarantee, the following equal opportunity clause:

During the performance of this contract, the contractor agrees as follows:

1. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:

Employment, upgrading, demotion, or transfer; recruitment or recruitment

advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

2. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
3. The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.
4. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
5. The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
6. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
7. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

8. The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

The offeror further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: Provided, that if the offeror so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

The offeror agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

The offeror further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the offeror agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the offeror under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such offeror; and refer the case to the Department of Justice for appropriate legal proceedings.

HH. Antitrust

By entering into a contract, the contractor conveys, sells, assigns, and transfers to the City of Bristol Virginia all rights, title and interest in and to all causes of action it may now have or hereafter acquire under the antitrust laws of the United States and the Commonwealth of Virginia, relating to the particular goods or services purchased or

acquired by the City of Bristol Virginia under said contract.

II. Liquidated Damages

If the Contractor fails to achieve Substantial Completion of the Work within the Contract Time and as otherwise required by the Contract Documents, the Owner shall be entitled to retain or recover from the Contractor, as Step One Liquidated Damages and not as a penalty, the following per diem amount commencing upon the first day following expiration of the Contract Time and continuing until the actual date of Substantial Completion. Such liquidated damages are hereby agreed to be a reasonable pre-estimate of damages the Owner will incur as a result of delayed Substantial Completion of the Work:

One Thousand Dollars (\$1,000.00) per consecutive calendar day for up to 15 Calendar Days beyond expiration of the Contract Times; then,

Two Thousand Dollars (\$2,000.00) per consecutive calendar day after 15 Calendar Days beyond expiration of the Contract Times

If the Contractor fails to achieve Final Completion of the Work within the Contract Time and as otherwise required by the Contract Documents, the Owner shall be entitled to retain or recover from the Contractor, as Step Two Liquidated Damages and not as a penalty, the following per diem amount commencing upon the first day following the actual date of Substantial Completion and continuing until the actual date of Final Completion. Such liquidated damages are hereby agreed to be a reasonable pre-estimate of damages the Owner will incur as a result of delayed Final Completion of the Work:

One Thousand Dollars (\$1,000.00) per consecutive calendar day for up to 15 Calendar Days beyond expiration of the Contract Times; then,

Two Thousand Dollars (\$2,000.00) per consecutive calendar day after 15 Calendar Days beyond expiration of the Contract Times

The Owner may deduct liquidated damages described above from any unpaid amounts then or thereafter due the Contractor under this Agreement. Should the amount of any liquidated damages exceed the amount due or to become due to the Contractor, then the Contractor and his sureties shall be liable for and shall pay to the Owner the amount of any such excess.

JJ. Good Housekeeping

In accordance with the Clean Water Act, established by the Environmental Protection Agency (EPA) and enforced by the Virginia Department of Environmental Quality (DEQ), the City of Bristol Virginia is required to implement and enforce written procedures as part of the Municipal Separate Storm Sewer System (MS4) permit program requirements to prevent, to the maximum extent practicable, potential pollutants that will lead to a point discharge at a natural drainage way. The City of Bristol Virginia's written procedures are provided in the Good Housekeeping/Pollution Prevention (GH/PP) manual provided to the Contractor. The Contractor shall employ good housekeeping practices outlined in the GH/PP manual and as directed in response to City inspection reports on all City properties and immediately remediate all spills containing potential

pollutants as directed in the manual. If, through an audit or inspection, the EPA or DEQ renders fines to the City on account of poor practices determined to be the fault of Contractor, the City reserves the right to collect compensation from the Contractor. Contractors applying pesticides and herbicides shall provide evidence of appropriate certification in accordance with Virginia Law.

By signing the Contract, the Contractor acknowledges receipt of the GH/PP manual and certifies Contractor's understanding of its roles, responsibilities and liabilities associated with the City's MS4 Program. If the Contractor has any questions during the term of this contract concerning the Good Housekeeping and Pollution Prevention Manual, the Contractor may contact the Landfill Environmental & Safety Compliance Officer.

KK. Contract Provisions for Non-Federal Entity Contracts Under Federal Awards

1. All contracts awarded in excess of \$100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations, 29 CFR Part 5. Each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. No laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.
2. Contracts in excess of \$150,000 must contain a provision requiring compliance with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Contract Act as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency.
3. A contract award will not be made to parties listed on the government-wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180.
4. Contractors that apply or bid for an award exceeding \$100,000 must file the required certification per the Byrd Anti-Lobbying Amendment (31 U.S.C. 1352). The contractor certifies that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award will be disclosed.
5. As appropriate and to the extent consistent with law, the non-Federal entity should, to the greatest extent practicable under a Federal award, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cements, and other manufactured products). The requirements of this section

must be included in all subawards including all contracts and purchase orders for work or products under this award. For purposes of this section:

- a. “Produced in the United States” means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.
 - b. “Manufactured products” means items and construction materials composed in whole or in part of nonferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.
6. Contractor must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds \$10,000 or the value of the quantity acquired during the preceding fiscal year exceeded \$10,000; procuring solid waste management services in a manner that maximized energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

ATTACHMENT A

Sample Contract

(to be completed later)

CONTRACT FOR

Contract Number:

This contract entered into this ___ day of _____ 2022, by _____ hereinafter called the "Contractor" and the City of Bristol Virginia, hereinafter called the "City".

WITNESSETH that the Contractor and the City, in consideration of mutual covenants, promises and agreements herein contained, agree as follows:

SCOPE OF SERVICES: The Contractor shall provide the services to the City as set forth in the Invitation for Bid attached hereto.

CONTRACT PERIOD: The contract period is from _____.

COMPENSATION AND METHOD OF PAYMENT: The Contractor shall be paid in accordance with the Contract Documents in the amount of _____, subject to the Contract Document, Section 01 22 00 Measurement and Payment and Section 00 41 13 Bid Form. There shall be no addition(s) or deletion(s) to the Contract without the prior written approval of a Change Order issued by the City.

CONTRACT DOCUMENTS: The Contract Documents shall consist of the contract, Invitation for Bid and all attachments to the Invitation for Bid.

CONTRACTOR:

CITY OF BRISTOL VIRGINIA:

By: _____

By: _____

Title: _____

Title: _____

Date: _____

Date: _____

END OF SECTION 00 70 00

APPENDIX A
Contractor/ Consultant/Supplier Agreement: U.S. DOT 1050.2A -- Appendix A

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Nondiscrimination in Federally-assisted programs of the U.S. Department of Transportation, the Federal Highway Administration, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Nondiscrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Nondiscrimination on the grounds of race, color, or national origin.
4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the Federal Highway Administration to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the Federal Highway Administration, as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:
 - a. withholding payments to the contractor under the contract until the contractor complies; and/or
 - b. cancelling, terminating, or suspending a contract, in whole or in part.

6. Incorporation of Provisions: The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

APPENDIX E

Contractor/ Consultant/Supplier Agreements: U.S. DOT 1050.2A -- Appendix E

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the “contractor”) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Nondiscrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21;
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq.*), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq.*), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq.*), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms “programs or activities” to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 -- 12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration’s Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 *et seq.*)

SECTION 01 11 00

SUMMARY OF WORK

PART 1 – GENERAL

1.1 PROJECT DESCRIPTION

- A. Scope: The project work to be performed by the CONTRACTOR consists of furnishing all labor, materials, equipment, tools, transportation, services, incidentals, and performing all work necessary to complete the project, in place and ready for service in accordance with the plans and specifications prepared for the Landfill Gas Collection System Expansion: Stage 1. The work generally involves expansion of the active Landfill Gas Collection and Dewatering System at the Bristol, Virginia ISWMF, including but not limited to the following items:
1. Construction mobilization and demobilization. Also, mobilization and demobilization of a sonic drill rig as a contingency, if necessary to achieve installation of the wells to design depths.
 2. Coordinating with ENGINEER and OWNER'S SURVEYOR.
 3. Drilling and installation of LFG vertical extraction wells, dual extraction well caps, wellheads, wellbore geomembrane skirt seals, and wellbore reinforcement grates.
 4. Installation of new landfill gas collection piping, access risers, road crossings, valves, and fittings to connect the wells to the existing collection piping network.
 5. Installation of new pneumatic supply and forcemain piping and valves and fittings to connect this piping to the existing dewatering liquids piping network.
 6. Installation of dedicated dewatering pumps and associated appurtenances and connection to the pneumatic supply and forcemain piping.
 7. Connection to existing piping infrastructure and condensate management features.
 8. Restoration of landfill surface and providing as-built record documentation.

1.2 WORK SEQUENCE

- A. The CONTRACTOR shall sequence construction work to accommodate continued installation of remedial measures by other contractors and/or OWNER forces. The CONTRACTOR shall sequence construction work to accommodate continued landfill gas (LFG) system operations by OWNER forces and third-party O&M personnel.

- B. The CONTRACTOR shall sequence construction work so that transport of LFG to the utility flare and/or landfill gas-to-energy (LFGE) Facility (power plant) is continuous and uninterrupted, to the extent practicable. The number and durations of LFG system shutdowns and/or instances of reduced LFG flowrates to the flare and/or power plant shall be minimized. Durations of LFG system shutdowns shall be limited to no more than 6 hours within any 24-hour period.
- C. The CONTRACTOR shall sequence construction work so that installation of perimeter LFG extraction wells along Quarry Sidewall, along with collection piping and wellheads to enable activation of these wells, is prioritized.

1.3 CONTRACTOR USE OF PREMISES

- A. Limit use of premises for work, storage, and access to allow work by other contractors, owner occupancy, and normal landfill and LFG system operations.
- B. Facility Hours: The CONTRACTOR shall have equipment and material delivery access to and from the site under the site's normal operating hours from 7:00 A.M. to 4:00 P.M.
- C. Access: No later than 5 days after notice to proceed, the CONTRACTOR shall arrange with the OWNER a sequence of procedures, means of access, space for storage of materials and equipment, and use of approaches and roadways. CONTRACTOR's use of the premises shall be confined to the areas approved by the OWNER.
- D. Odor Mitigation: CONTRACTOR shall not initiate drilling of borehole into waste unless the well can be fully constructed, completed, and capped prior to the end of the workday. Refer to Section 33 23 10.3.1.E for exceptions to this requirement under unique circumstances. Similarly, CONTRACTOR shall not initiate trenching into waste, accomplishing piping connections, or other activity that could potentially contribute to odor emissions or gas venting unless such activity can be fully completed prior to the end of the workday. No exposed wastes in boreholes, trenches or stockpiles shall remain overnight.
- E. CONTRACTOR shall not dispose of waste oils, fuels, cleaners or other potentially hazardous substances on site.

1.4 OWNER OCCUPANCY AND LANDFILL OPERATIONS

The OWNER will occupy the site and continue to conduct landfill remedial measures and pre-closure construction activities. The CONTRACTOR shall cooperate with the OWNER during construction operations to minimize conflicts and facilitate OWNER usage. The CONTRACTOR shall cooperate with the OWNER during construction operations to minimize duration of LFG and dewatering system shutdown and facilitate continued LFG system operations. Durations of LFG system shutdowns shall be limited to no more than 6 hours within any 24-hour period. The CONTRACTOR shall perform the Work so as not to interfere with the OWNER's landfill remedial measures and pre-closure construction activities, LFG collection and control, maintenance, odor mitigation, environmental monitoring, and other OWNER activities at the site.

1.5 SITE CONDITIONS

- A. Existing Grades: The existing grades may vary from those indicated on the Plans due to landfill settlement and waste filling activities.
- B. Existing Features: The Contract Documents require the CONTRACTOR to field verify the location of existing features.
- C. The CONTRACTOR shall enforce safety procedures to minimize hazards to workers, the public, and the environment.
- D. CONTRACTOR shall be aware that drilling or excavating within the waste, as well as accomplishing connections to existing leachate and LFG collection pipes, will expose workers to hazardous/flammable gases as well as leachate, potentially under high pressure.

1.6 SUPERINTENDENT

CONTRACTOR shall provide a single qualified full time English-speaking superintendent for the duration of the project. CONTRACTOR shall not change superintendent without the OWNER's prior written permission. CONTRACTOR's proposal to change personnel must be justifiable to the OWNER, and must demonstrate that the proposed replacement possesses adequate qualifications to the satisfaction of the OWNER.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01 11 00

SECTION 01 14 00

PROJECT COORDINATION

PART 1 – GENERAL

1.1 SUMMARY

- A. The CONTRACTOR shall prepare schedules, work staging and sequencing plan, odor mitigation procedures and submittals, as well as participate in project meetings necessary to coordinate the Work with construction and operations activities at the site conducted by others. This Section specifies administrative and procedural requirements for project meetings including the Pre-Construction Conference and routine Progress Meetings.
- B. The CONTRACTOR shall coordinate the Work being performed under this contract to recognize and accommodate relevant activities associated with the remedial activities of the landfill, routine operation of the landfill gas (LFG) collection and control system, continuous and uninterrupted delivery of LFG to the landfill gas-to-energy (LFGE) Facility, to the extent practicable, and other associated activities.

1.2 DESCRIPTION

- A. The OWNER will schedule and administer a preconstruction conference, construction progress meetings, and specially called meetings throughout the progress of work. The ENGINEER or OWNER will be responsible for preparing the agenda, making arrangements, preparing the meeting summaries and presiding at these meetings.
- B. Representatives of CONTRACTOR, Subcontractor(s), and Suppliers attending these meetings shall be qualified and authorized to act on behalf of the entity each represents.
- C. The CONTRACTOR shall attend meetings to ascertain that work is expedited consistent with Contract Documents and construction schedules.

1.3 SCHEDULES

- A. The CONTRACTOR shall submit construction progress schedules to the OWNER and ENGINEER in accordance with Section 01 33 00 as necessary to coordinate site activities.
- B. The CONTRACTOR shall submit the proposed date, time, and anticipated duration of any planned shutdowns or interruptions of the existing LFG collection and control system to the OWNER, ENGINEER, and LFGE Facility Operator at least 48 hours in advance of the proposed event.

1.4 SUBMITTALS

- A. When specified in individual specification sections, submit drawings, product data, samples, and other documentation in accordance with Section 01 33 00. Revise and resubmit as required by the ENGINEER.
- B. Submit applications for payment on approved OWNER forms to ENGINEER for review, and for transmittal to OWNER.
- C. Submit requests for interpretation of Contract Documents, and obtain instructions through the OWNER.
- D. Process requests for substitutions, and change orders, through the OWNER.

1.5 PRECONSTRUCTION CONFERENCE

- A. After award of the contract, but prior to the Notice-to-Proceed, a joint meeting shall be held with representatives of the OWNER, ENGINEER, CONTRACTOR and Project Superintendent and other invited parties which may be affected by the project.
- B. This meeting is intended to introduce the various key personnel from each organization and to discuss the Contract Documents, the start of construction, order of work, labor and legal requirements, approved insurance requirements, names of the major subcontractors, method of payment, shop drawing submittal schedule, protection of existing facilities and other pertinent items associated with the Project. The CONTRACTOR shall bring copies of a construction schedule, work sequencing and staging plan, odor mitigation procedures, schedule of values, and shop drawing submittals to this meeting, as specified in Section 01 33 00.

1.6 PROGRESS MEETINGS

Progress meetings will be organized and conducted by the OWNER to discuss the progress of the Work on a routine basis. The CONTRACTOR and Project Superintendent shall attend these meetings.

1.7 CONTRACT CHANGES

Changes can be made to the contract in any of the following ways:

- A. The parties may agree in writing to modify the scope of the contract. An increase in the price of the contract resulting from such modification shall be agreed to by the parties pending City Council approval as a part of their written agreement to modify the scope of the contract.
- B. The City of Bristol Virginia may order changes within the general scope of the contract at any time by written notice to the contractor. Changes within the scope of the contract include, but are not limited to, things such as services to be performed, the

method of packing or shipment, and the place of delivery or installation. The contractor shall comply with the notice upon receipt. The contractor shall be compensated for any additional costs incurred as the result of such order and shall give the City of Bristol Virginia a credit for any savings. Said compensation shall be determined by one of the following methods:

1. By mutual agreement between the parties in writing; or
2. By agreeing upon a unit price or using a unit price set forth in the contract, if the work to be done can be expressed in units, and the contractor accounts for the number of units of work performed, subject to the City of Bristol Virginia's right to audit the contractor's records and/or to determine the correct number of units independently; or
3. By ordering the contractor to proceed with the work and keep a record of all costs incurred and savings realized. A markup for overhead and profit may be allowed if provided by the contract. The same markup shall be used for determining a decrease in price as the result of savings realized. The contractor shall present the City of Bristol Virginia with all vouchers and records of expenses incurred and savings realized. The City of Bristol Virginia shall have the right to audit the records of the contractor as it deems necessary to determine costs or savings. Any claim for an adjustment in price under this provision must be asserted by written notice to the City of Bristol Virginia within thirty (30) days from the date of receipt of the written order from the City of Bristol Virginia. If the parties fail to agree on an amount of adjustment, the question of an increase or decrease in the contract price or time for performance shall be resolved in accordance with the procedures for resolving disputes provided by the Disputes Clause of this contract. Neither the existence of a claim nor a dispute resolution process, litigation or any other provision of this contract shall excuse the contractor from promptly complying with the changes ordered by the City of Bristol Virginia or with the performance of the contract generally.

1.8 DEFAULT

In case of failure to deliver goods or services in accordance with the contract terms and conditions, the City of Bristol Virginia, after due oral or written notice, may procure them from other sources and hold the contractor responsible for any resulting additional purchase and administrative costs. This remedy shall be in addition to any other remedies which the City of Bristol Virginia may have. In addition, the City of Bristol Virginia reserves the right to cancel any orders placed that are not delivered by the date specified in the Invitation for Bid.

END OF SECTION 01 14 00

SECTION 01 22 00

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.1 DESCRIPTION

- A. The CONTRACTOR shall receive and accept the compensation provided in the Contract as full payment for furnishing all labor, equipment, and materials and for performing all construction/operations necessary to complete the Work as described in the Contract, and in full payment for all losses or damages incurred during the Work, for any discrepancies between actual and estimated quantities, or from any unanticipated difficulties which may arise during the Work until final acceptance by the OWNER.
- B. The prices included in the Bid Proposal Form shall include all costs for labor, equipment, materials, taxes, freight, permits, handling and tests required to perform the Work as shown on the Contract Documents.
- C. The CONTRACTOR shall field verify all quantities and dimensions shown on the Plans or contained in the Contract Specifications including the Bid Proposal Form.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 MEASUREMENT AND PAYMENT – GENERAL

- A. Item No. 1: Mobilization/Demobilization
 - 1. Measurement. The Work required for this item will not be measured for payment.
 - 2. Payment. Payment for this item will be at the contract lump sum price, and shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents. Payment shall cover all Work as per Section 01 11 00. This includes, but is not limited to, movement of personnel, equipment, supplies and incidentals to the project site; obtaining all permits, insurance, and bonds; and any other pre-construction expense necessary for the start of the Work. No price adjustments will be made for this item due to changes in the Work. Demobilization includes removal from the site of all materials, resources, equipment, temporary support facilities, utilities, and all remaining construction debris at the completion of the project and includes release of liens and other incidentals as specified as requirements of project closeout.

A partial payment of 50 percent of the contract lump sum price may be made once mobilization is completed. However, the remainder of the contract lump sum price shall not be paid until demobilization is completed at project closeout. The maximum amount allowed to be paid for mobilization/demobilization is 5 percent of the total bid price.

- B. Item Nos. 2 through 4: Landfill Gas Extraction Wells – 8” SCH 80 PVC, 12” SCH 80 CPVC
1. Measurement. Landfill gas wells will be measured on an installed vertical linear foot basis from the existing ground surface to the bottom of the well bore as measured in the field by the ENGINEER.
 2. Payment. Payment for this item will be at the contract unit price per foot installed, depending on depth less than or greater than 150 feet. Payment will include all drilling, boring, transport of waste materials, installation of stone, soil, bentonite plug/foam sealant, wellbore geomembrane skirt, wellbore reinforcement grate, piping (slotted and solid-walled), backfilling, health and safety requirements, fittings and connections, and shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents.
- C. Item Nos. 5 and 6: 2” and 3” Landfill Gas Extraction Wellheads
1. Measurement. Measurement for this item shall be on a completed and installed unit basis.
 2. Payment. Payment for this item will be at the contract unit price per installed unit. Payment will include valves, fittings, piping, connections, gauges, monitoring/access ports, flow measurement devices, testing, and other incidentals. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents.
- D. Item Nos. 7 through 9: 4”, 6”, and 8” LFG Collection Piping (belowgrade)
1. Measurement. LFG Collection Lateral and Header piping will be measured on a linear foot basis above ground as measured in the field by the OWNER’S Surveyor and confirmed by the ENGINEER.
 2. Payment. Payment for this item shall be at the contract unit price per horizontal linear foot. Payment includes excavation, transport of excavated unsuitable materials, pipe bedding, backfilling, soil compaction, fittings, piping, connections, risers for connections to laterals, pipe location markings, restoration of disturbed areas, quality control surveying, testing, and incidentals. Payment shall constitute full compensation for all material, labor, equipment and work incidental thereto, necessary to complete this item in accordance with the Contract Documents.

- E. Item Nos. 10 and 11: 2" Airline Piping and 4" Liquids Forcemain Piping (belowgrade in Dedicated or Common Trench with LFG Piping)
1. Measurement. Measurement for this item shall be on an installed linear foot basis of the pipes as measured in the field by the OWNER'S Surveyor and confirmed by the ENGINEER.
 2. Payment. Payment for this item shall be at the contract unit price per horizontal linear foot. Payment includes excavation, pipe bedding, backfilling, soil compaction, fittings, piping, connections to existing piping, pipe location markings, restoration of disturbed areas, quality control surveying, testing, and incidentals. Payment shall constitute full compensation for all material, labor, equipment and work incidental thereto, necessary to complete this item in accordance with the Contract Documents.
- F. Item No. 12: 8" LFG Isolation Valves
1. Measurement. Landfill gas isolation valves will be installed by the CONTRACTOR and verified and counted in the field by the ENGINEER.
 2. Payment. Payment for this item will be at the contract unit price per installed unit. Payment will include excavation, transport of excavated unsuitable materials, backfilling, valves, fittings, stem extension, gear wheel, and other incidentals. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents.
- G. Item No. 13: 2" Airline Isolation Valve (abovegrade)
1. Measurement. Measurement for this item shall be on a completed and installed unit basis.
 2. Payment. Payment for this item will be at the contract unit price per installed unit. Payment will include excavation, transport of excavated unsuitable materials, backfilling, valves, fittings, support posts, and other incidentals. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents.
- H. Item No. 14: 4" Forcemain Isolation Valve (abovegrade)
1. Measurement. Measurement for this item shall be on a completed and installed unit basis.
 2. Payment. Payment for this item will be at the contract unit price per installed unit. Payment will include excavation, transport of excavated unsuitable materials, backfilling, valves, fittings, support posts, and other incidentals. Payment shall constitute full compensation for all material, labor, equipment,

and work incidental thereto, necessary to complete this item in accordance with the Contract Documents.

- I. Item No. 15: Liquid Forcemain Air Release Valve (abovegrade)
 - 1. Measurement. Measurement for this item shall be on a completed and installed unit basis.
 - 2. Payment. Payment for this item will be at the contract unit price per installed unit. Payment will include excavation, transport of excavated unsuitable materials, backfilling, valves, fittings, support posts, and other incidentals. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents.

- J. Item No. 16: 2" Airline and 4" Forcemain Stub-Ups
 - 1. Measurement. Measurement for this item shall be on a completed and installed unit basis.
 - 2. Payment. Payment for this item will be at the contract unit price per installed unit. Payment will include connection to existing belowgrade airline and forcemain piping, valves, fittings, and other incidentals. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents.

- K. Item No. 17: Liquid Forcemain Cleanouts
 - 1. Measurement. Measurement for this item shall be on a completed and installed unit basis.
 - 2. Payment. Payment for this item will be at the contract unit price per installed unit. Payment will include excavation, transport of waste or excavated unsuitable materials, backfilling, piping, valves, fittings, connections to existing piping, restoration of disturbed areas, quality control surveying, and incidentals. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents.

- L. Item Nos. 18 through 20: Dewatering Pneumatic Pumps (One Pump, QED, Blackhawk, and Jeneer)
 - 1. Measurement. Measurement for this item shall be on a completed and installed unit basis.
 - 2. Payment. Payment for this item will be at the contract unit price per installed unit. Payment includes, but is not limited to, pneumatic pump, dual extraction well cap, cycle counter, regulators and controls, valves, piping/hose installation and connections, pneumatic and forcemain piping connections,

testing, and demonstration of the dewatering pump and associated controls. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents.

- M. Item Nos. 21 and 22: Dewatering Solar-Powered Electrical Pump (Lorentz and Blackhawk)
1. Measurement. Measurement for this item shall be on a completed and installed unit basis.
 2. Payment. Payment for this item will be at the contract unit price per installed unit. Payment includes, but is not limited to, electric pump, photo-voltaic panel, dual extraction well cap, flowmeter, controls, valves, piping/hose installation and connections, forcemain piping connections, testing, and demonstration of the dewatering pump and associated controls. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents.
- N. Item Nos. 23 through 25: 2", 4", and 8" Tie-Ins to Existing Piping
1. Measurement. Connections to the existing LFG collection piping and air supply and forcemain piping will be installed by the CONTRACTOR and verified and counted by the ENGINEER.
 2. Payment. Payment for this item will be at the contract unit price for each connection of new LFG/air/forcemain piping to the existing functional piping. Payment will include all earthwork, installation of all affiliated components to accomplish appropriate connections, and testing necessary to complete this item in accordance with the Contract Documents.
- O. Item Nos. 26 and 27: Access Riser and Road Crossing
1. Measurement. Access risers or road crossings will be installed by the CONTRACTOR and verified and counted by the ENGINEER.
 2. Payment. Payment for this item will be at the contract unit price for each access riser or road crossing installed. Payment will include all installation of all affiliated components, excavation and backfilling, and connections incidental thereto, necessary to complete this item in accordance with the Contract Documents.
- P. Alternate Bid Item No. 28: Drilling Polymer Into Borehole
1. Measurement. Quantity of drilling polymer installed by the CONTRACTOR will be verified and counted by the ENGINEER.
 2. Payment. Payment for this item will be at the contract unit price for each unit of drilling polymer introduced and applied into the borehole.

- Q. Alternate Bid Item No. 29: Hourly Drilling Rate for Muck Bucket
1. Measurement. The time during which the CONTRACTOR is drilling the boreholes utilizing a muck bucket shall be verified and recorded by the ENGINEER.
 2. Payment. Payment for this item will be at the contract unit price for time that advancement of the borehole to achieve design depths necessitates the use of a muck bucket.
- R. Alternate Bid Item No. 30: Sonic Drill Rig Mobilization/Demobilization
1. Measurement. The Work required for this item will not be measured for payment.
 2. Payment. Payment for this item will be at the contract lump sum price, and shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents. Payment shall cover all Work as per Section 01 11 00. This includes, but is not limited to, movement of personnel, equipment, supplies and incidentals to the project site; obtaining all permits, insurance, and bonds; and any other pre-construction expense necessary for the start of the Work. No price adjustments will be made for this item due to changes in the Work. Demobilization includes removal from the site of all materials, resources, equipment, temporary support facilities, utilities, and all remaining construction debris at the completion of the project and includes release of liens and other incidentals as specified as requirements of project closeout. A partial payment of 50 percent of the contract lump sum price may be made once mobilization is completed. However, the remainder of the contract lump sum price shall not be paid until demobilization is completed at project closeout. The maximum amount allowed to be paid for mobilization/demobilization is 5 percent of the total bid price.
- S. Alternate Bid Item Nos. 31 and 32: Landfill Gas Extraction Wells – 6” SCH 80 CPVC
1. Measurement. Landfill gas wells will be measured on an installed vertical linear foot basis from the existing ground surface to the bottom of the well bore as measured in the field by the ENGINEER.
 2. Payment. Payment for this item will be at the contract unit price per foot installed, depending on depth less than or greater than 150 feet. Payment will include all drilling, boring, transport of waste materials, installation of stone, soil, bentonite plug/foam sealant, wellbore geomembrane skirt, wellbore reinforcement grate, piping (slotted and solid-walled), backfilling, health and safety requirements, fittings and connections, and shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Contract Documents.

END OF SECTION 01 22 00

SECTION 01 33 00

SUBMITTALS

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope of Work: The CONTRACTOR shall develop and distribute project submittals in accordance with procedures specified herein. The required submittals include, but are not limited to the following:

1. Construction progress schedules
2. Work Staging and Sequence Plan
3. Odor Mitigation Procedures
4. Proposed products list
5. Product data
6. Shop drawings
7. Design data
8. Test reports
9. Certificates
10. Manufacturer's instructions, Maintenance Manuals, and Warranty
11. Health and Safety Plan
12. Record Drawings
13. Project Photographs
14. Survey data

B. Related Work Described Elsewhere

1. All Sections.

1.2 SUBMITTAL PROCEDURES

- A. Transmit each submittal with ENGINEER accepted form.
- B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- C. Identify Project, CONTRACTOR, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate.
- D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.

- E. Schedule submittals to expedite the Project, and deliver to ENGINEER at their business address. Coordinate submission of related items.
- F. For each submittal, allow 3 days for review excluding delivery time to and from the CONTRACTOR.
- G. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- H. When revised for resubmission, identify all changes made since previous submission.
- I. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- J. Submittals not requested will not be recognized or processed.

1.3 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial schedule in duplicate within 5 days after date of OWNER-CONTRACTOR Agreement.
- B. Revise and resubmit as required by the OWNER or ENGINEER.
- C. Submit revised schedules with each Application for Payment, identifying changes since previous version.
- D. Submit a chart with separate line for each major portion of Work, identifying first workday of each week.
- E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities.
- F. Indicate estimated percentage of completion for each item of Work at each submission.

1.4 WORK STAGING AND SEQUENCING PLAN

- A. Submit proposed Work staging and sequencing plan within 3 days after issuance of Notice-to-Proceed.
- B. Revise and resubmit plan if field conditions change or as required by OWNER to accommodate landfill or landfill gas-to-energy Facility operations.

1.5 ODOR MITIGATION PROCEDURES

- A. Submit proposed odor mitigation procedures within 3 days after issuance of Notice-to-Proceed.

- B. Introduce additional procedures if field conditions warrant or as required by OWNER to accommodate odor abatement measures.

1.6 PROPOSED PRODUCTS LIST

- A. Within 5 days after date of OWNER-CONTRACTOR Agreement, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.
- C. Unless otherwise provided in this solicitation, the name of a certain brand, make or manufacturer does not restrict proposers to the specific brand, make or manufacturer named, but conveys the general style, type, character, and quality of the article desired. Any article which the public body, in its sole discretion, determines to be the equivalent of that specified, considering quality, workmanship, economy of operation, and suitability for the purpose intended, shall be accepted. The bidder/proposer is responsible to clearly and specifically identify the product being offered and to provide sufficient descriptive literature, catalog cuts and technical detail to enable the City to determine if the product offered meets the requirements of the solicitation. This is required even if offering the exact brand, make or manufacturer specified. Normally in competitive sealed bids only the information furnished with the bids will be considered in the evaluation. Failure to furnish adequate data for evaluation purposes may result in declaring a bid/proposal nonresponsive. Unless the bidder/proposer clearly indicates in its bid/proposal that the product offered is an equivalent product, such bid/proposal will be considered to offer the brand name product referenced in the solicitation.

1.7 PRODUCT DATA

- A. Product Data for Review:
 - 1. Submitted to ENGINEER for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
 - 2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01 70 00.
- B. Product Data for Information:

Submitted for the ENGINEER'S knowledge as contract administrator or for the OWNER.

- C. Product Data for Project Closeout:
Submitted for the OWNER'S benefit during and after project completion.
- D. Submit the number of copies required by the CONTRACTOR, plus two copies which will be retained by the ENGINEER.
- E. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- F. Indicate Product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- G. After review distribute in accordance with the Submittal Procedures article above and provide copies for record documents described in Section 01 70 00.

1.8 SHOP DRAWINGS

- A. Shop Drawings for Review:
 - 1. Submitted to ENGINEER for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
 - 2. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01 70 00.
- B. Shop Drawings for Information to be submitted for the ENGINEER'S knowledge as contract administrator or for the OWNER.
- C. Shop Drawings for Project Closeout to be submitted for the OWNER'S benefit during and after project completion.
- D. Submit the Shop Drawings to ENGINEER in suitable electronic file format, such as Adobe (pdf), or similar.

1.9 DESIGN DATA

- A. Submit for the ENGINEER'S knowledge as contract administrator or for the OWNER.
- B. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

1.10 TEST REPORTS

- A. Submit for the ENGINEER'S knowledge as contract administrator or for the OWNER.
- B. Submit test reports for information for the limited purpose of assessing conformance with the design concept expressed in the contract documents.

1.11 CERTIFICATES

- A. When specified in individual specification sections, submit certification by the manufacturer, installation/application subcontractor, or the CONTRACTOR to ENGINEER, in quantities specified for Product Data.
- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to ENGINEER.

1.12 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to ENGINEER for delivery to OWNER in quantities specified for Product Data.
- B. Indicate special procedures, parts list, spare parts to be kept on hand, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.13 HEALTH AND SAFETY PLAN

- A. The CONTRACTOR shall develop a Health and Safety Plan, which specifically addresses the Work to be performed, in accordance with OSHA requirements, SWANA Compilation of Landfill Gas Field Practices and Procedures (August 2011), and other health and safety reference materials published by solid waste management industry organizations such as NWRA. The CONTRACTOR is directed particularly in Section H of the SWANA document with regard to drilling procedures, if applicable. The Health and Safety Plan shall include provisions which anticipate possible exposure to waste materials, landfill gas, condensate, leachate, and other related conditions during installation of the wells, collection piping, pumps, tie-in connections, and other aspects of the Work as outlined in Section 01 35 29.
- B. The CONTRACTOR shall submit a complete Health and Safety Plan to the OWNER and ENGINEER prior to commencing the Work for informational purposes. **The CONTRACTOR will not be allowed to commence the Work until a Health and Safety Plan has been submitted and reviewed.** The CONTRACTOR and Subcontractor shall be solely responsible for the health and safety of their employees.

1.14 RECORD DRAWINGS

Submit record drawings in accordance with Section 01 70 00.

END OF SECTION 01 33 00

SECTION 01 35 29

HEALTH AND SAFETY PLAN

PART 1 – GENERAL

1.1 GENERAL

- A. In the event that the ENGINEER or OWNER identify an exclusion zone, the CONTRACTOR will use only site crew members in the identified area that are trained in accordance with the United States Occupational Safety and Health Administration (OSHA) regulations 29 CFR 1910.120. The workers also need to have completed the minimum 40-hour Hazardous Materials training course and necessary refresher courses. This applies to both the CONTRACTOR's workers and any Subcontractor site workers.
- B. All site workers that work in the identified exclusion zone must be under a Medical Monitoring Program as outlined in 29 CFR 1910.120, and be physically capable of wearing a respirator, if necessary.
- C. Actions that potentially endanger workers shall be stopped immediately and brought to the OWNER's attention. Health and Safety is the responsibility of the CONTRACTOR.

1.2 SITE-SPECIFIC HEALTH AND SAFETY PLAN

- A. The CONTRACTOR shall prepare a written site-specific Health and Safety Plan (Plan) for use by the CONTRACTOR and Subcontractor site workers. This plan must be prepared to meet the 29 CFR 1910.120 OSHA regulations and shall include as a minimum, the following:
 - 1. Organizational Structure: to include general supervision, Health and Safety officer, lines of authority, and responsibility and communication. The Health and Safety Officer shall be a worker who will be present at all times during site construction, in addition to his/her other site duties.
 - 2. Comprehensive Work Plan: to include the work tasks and objectives, resources needed, and training requirements for workers (health and safety, machine operations license, etc.). This shall also include a section on safety procedures to be followed for excavation and well drilling in landfill waste and work in areas where exposure to landfill gas, condensate, and/or leachate is likely.
 - 3. Health and Safety: to include identification of possible site hazards (e.g., solid waste, landfill gas, and leachate), training levels for each category of site

- workers, personal protective equipment and medical surveillance needed, site control measures, and confined space entry procedures.
4. Emergency Response Plans: to include all emergency telephone numbers, a highlighted map showing the quickest route to the nearest emergency care facility and written directions to such facility.
 5. Air Monitoring Procedures: to include frequency and type of air monitoring of exposed refuse, landfill surfaces, boreholes and excavations, and site worker areas, calibration of air monitoring equipment, and action levels of air contaminants for site worker protection. All equipment calibration and field gas measurements shall be recorded with the date and time of sample, and the sampler's name. Sampling shall be done by a CONTRACTOR's worker trained in the use of the gas sampling equipment. These trained workers shall be designated in the CONTRACTOR's Plan.
 6. Respiratory Protection Program: to include written documentation of the CONTRACTOR's respiratory program, including respirator fit testing demonstration for site workers.
 7. Well Drilling Installation and Excavation Safety Procedures: to include prevention of fall hazards and controlled access zones, positive ventilation equipment to reduce demonstrations of emissions from boreholes and trenches, and prevention of exposure to artesian leachate conditions.
 8. A signature page for all site workers covered by the Plan (CONTRACTOR and Subcontractor site workers).
- B. Acceptance of the CONTRACTOR's Plan by the OWNER is necessary prior to the start of site operations. The Plan should incorporate and be consistent with the OWNER's and the LANDFILL OPERATOR's health and safety policies and procedures.
- C. The CONTRACTOR shall consider the various materials disposed of (municipal solid waste, construction and demolition debris) that may be encountered, as well as the various constituents that may be present in the landfill gas and leachate, during excavation in preparing the Health and Safety Plan.
- D. The Health and Safety Plan should reflect information contained in "A Compilation of Landfill Gas Field Practices and Procedures, Solid Waste Association of North America (SWANA), August 2011."

1.3 SITE OPERATIONS

- A. The Plan will be kept on site in an easily accessible spot during all site operating hours. All site workers will be notified of the location of the Plan.

- B. A Safety Meeting will be held by CONTRACTOR and attended by all CONTRACTOR site workers prior to starting construction. At this safety meeting, the Plan will be reviewed with the site workers, and all site workers will sign the Plan indicating that they have been apprised of the Plan's contents. New site workers must review the Plan with the CONTRACTOR's Health and Safety Officer prior to beginning work on site, and must sign that they have been apprised of the Plan's contents.
- C. Site operations will take place in conditions of adequate light only.
- D. Areas of open refuse (i.e., excavations, trenches and boreholes) will be periodically monitored for combustible gases, methane, carbon monoxide, benzene, hydrogen sulfide and oxygen through the use of field gas meters. Respiratory protection for acid gases and organic vapors will be used by the worker while monitoring gas levels, if deemed necessary by the CONTRACTOR. Appropriate respiratory protection will be taken by site workers, as necessary to conform to OSHA, NIOSH, and/or ACGIH exposure limits.
- E. No workers will be allowed in any trench or excavation while excavation of the area is in progress. Entry into the excavation shall be made only after the CONTRACTOR's site worker has monitored the air in the excavation, and determined the appropriate level of personal protection required for entry into the excavation. Site workers in excavations must be supervised at all times.
- F. Site workers will limit their dermal exposure to landfill gas, leachate, condensate, and excavated refuse. Minimal skin protection includes puncture resistant shoes meeting ANSI standards, long pants, long-sleeved shirts, safety glasses, safety vests, hard hats, and rubber gloves to be used when handling refuse.
- G. Start-up and shutdown of engines will not be done in areas of excavated refuse or where elevated landfill gas emissions have been documented.

END OF SECTION 01 35 29

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SECTION 01 70 00

CONTRACT CLOSEOUT

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope of Work: The CONTRACTOR shall provide all labor, materials, equipment and incidentals necessary to closeout the project as specified herein. Activities may include, but are not limited to final cleaning, preparation of record documents, operations and maintenance documents, delivery of spare parts, and transfer of warranties.
- B. Related Work Described Elsewhere
 - 1. All Sections.

1.2 CLOSEOUT PROCEDURES

- A. The CONTRACTOR shall submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for ENGINEER'S review.
- B. Provide submittals to OWNER that are required by governing or other authorities.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- D. The City of Bristol Virginia reserves the right to conduct any test/inspection it may deem advisable to assure goods and services conform to the specifications.

1.3 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
- B. Clean equipment and fixtures with cleaning materials appropriate to the surface and material being cleaned. Clean filters of operating equipment, clean debris from manholes, and other areas of the site. CONTRACTOR shall remove all dirt, stones and other debris from the roadways, parking lot and other paved surfaces.
- C. Remove from the site all waste and surplus materials, rubbish, and construction facilities installed by the CONTRACTOR.
- D. Verify that grading, seeding, mulching, landscaping replacement, landfill surface restoration, access road restoration, and repair of all disturbed areas have been

accomplished to the satisfaction of OWNER and ENGINEER. Verify that temporary erosion and sediment control structures and features installed by the CONTRACTOR have been removed and that permanent structures and features have been repaired as necessary and left in place.

1.4 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents and record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed Shop Drawings, Product Data, and Samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
 - 7. Well Boring Logs, as specified in Section 33 23 10.
 - 8. Pressure Test Reports, as specified in Section 33 51 10.
- B. Ensure entries are complete and accurate, enabling future reference by OWNER.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications. Legibly mark and record for each Product section a description of actual Products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and modifications.
- F. As-built drawings shall include the following:
 - 1. Title Sheet (includes project name and number, site location map, site address and phone number, and names, addresses and phone numbers of design engineer and CONTRACTOR).
 - 2. Well, Collector, Collection Piping, and Valves Layout (as-built and drawn using surveyed horizontal and vertical coordinates).
 - 3. Condensate Management System layout, including sumps, forcemain, pneumatic supply lines, and valves.
 - 4. Wellfield liquid dewatering system layout, including pumps, forcemain, pneumatic supply lines, and valves.

5. Record Construction Well and Pipe Survey showing coordinates and elevations of surveyed top of pipe, fittings, tie-ins and appurtenances, length of pipe segments, pipe slope between each surveyed station, and ground surface elevation. Each pipe segment shall be given a unique description as approved in advance by the ENGINEER. Well and Pipe Survey data shall be provided in a tabular format, which shall be approved by the ENGINEER.
 6. As-Built Typical Details.
- G. Submit documents to ENGINEER with claim for final Application for Payment.

1.5 OPERATION AND MAINTENANCE DATA

- A. The Contractor shall provide with each piece of equipment an operations and maintenance manual with diagrams, parts list, and a copy of all warranties when applicable.
- B. Submit data in suitable electronic file format, such as Adobe (pdf), or similar.
- C. Contents. Prepare a Table of Contents for each volume, with each Product or system description identified, typed in three parts as follows:
1. Part 1: Directory, listing names, addresses, and telephone numbers of ENGINEER, CONTRACTOR, Subcontractors, and major equipment suppliers.
 2. Part 2: Operation and maintenance instructions, arranged and subdivided by subsystem. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
 3. Part 3: Project documents and certificates, including the following:
 - a. Shop drawings and product data.
 - b. Certificates.
 - c. Photocopies of warranties.
- D. Submit a draft copy of completed volumes 5 days prior to final inspection. This copy will be reviewed and returned, with ENGINEER comments. Revise content of all document sets as required prior to final submission.

- E. Submit documentation in suitable electronic file format, such as Adobe (pdf), or similar, within 10 days after final inspection.

1.6 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Provide spare parts, maintenance, and extra Products in quantities specified in individual specification sections.
- B. Deliver to OWNER'S office and place in location as directed; obtain receipt prior to final payment.

1.7 WARRANTIES AND BONDS

- A. The Contractor agrees that the supplies or services furnished under any award resulting from this solicitation shall be covered by the most favorable commercial warranties the contractor gives any customer for such supplies or services and that the rights and remedies of those available to the City of Bristol Virginia by any other clause of this solicitation. A copy of this warranty must be furnished with the Closeout Documentation. Provide two notarized copies.
- B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers. Clearly distinguish between manufacturer's and installer's warranties.
- C. Provide Table of Contents and assemble in suitable electronic file format, such as Adobe (pdf), or similar.
- D. Submit prior to final Application for Payment.
- E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.

END OF SECTION 01 70 00

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SECTION 31 23 10

EARTHWORK

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope of Work: The CONTRACTOR shall provide all labor, materials, equipment and, incidentals required to perform all clearing, excavating, trenching, and backfilling as specified herein, and indicated for the purpose of constructing and installing the landfill gas (LFG) collection system and dewatering system expansion, including but not limited to the LFG wellheads, LFG collection piping, road crossings, isolation valves, air release valves, condensate management features, forcemain and pneumatic supply piping, forcemain cleanouts, and associated facilities required to complete the work.
- B. The CONTRACTOR shall provide all temporary means needed to maintain excavations in a continuously dewatered condition.
- C. The CONTRACTOR shall stockpile suitable existing cover material during earthwork activities and use the material as backfill. Suitable existing soils shall be removed and stockpiled separately for use as topsoil.
- D. The CONTRACTOR shall perform all earthwork in such a manner as to minimize the disturbed area. The disturbed area along LFG pipelines shall be limited to within 20 feet of the centerline of piping.
- E. The CONTRACTOR shall exercise caution during excavation of cover soils within the waste footprint and in the vicinity of the anchor trench for the bottom liner system.
- F. Work under this Section may include trenching activities within municipal solid waste (MSW).
- G. Related Work Described Elsewhere
 - 1. Section 33 23 10: Landfill Gas Extraction Wells and Wellheads
 - 2. Section 33 51 10: Pipe, Pipe Fittings, and Valves

1.2 PROJECT CONDITIONS

Existing Structures: Shown on the Drawings may be certain surface and underground structures adjacent to the work. Such structures may include, but are not limited to, leachate management features and forcemain piping, LFG extraction wells and piping, condensate sumps and forcemain piping, temperature monitoring probes, settlement plates, sidewall odor mitigation system, monitoring well locations, utilities, and drainage culverts. This information has been obtained from existing records. It is not guaranteed to be correct or

complete and is shown for the convenience of the CONTRACTOR. The CONTRACTOR shall explore ahead of the required excavation to determine the exact location of all structures. They shall be supported and protected from damage by the CONTRACTOR. If they are broken or damaged, they shall be restored to their original condition by the CONTRACTOR at no cost to the OWNER.

1.3 EXCAVATION CLASSIFICATION

All excavation shall be considered unclassified. The expense of excavating, removal, hauling, dewatering and disposal of all materials including waste, hard materials, rock materials and other materials specified herein shall be included in the contract pricing. No additional compensation will be made for excavation of waste or rock material.

PART 2 – PRODUCTS

2.1 SOIL MATERIALS

- A. If applicable, pipe bedding material used in LFG collection pipe trenches and/or condensate and dewatering liquids pipe trenches shall be a clean, dry sand or granular soil, free of clay, muck, organic matter, and other deleterious substances. Material data sheets shall be submitted to the ENGINEER for approval prior to use on-site.
- B. Soil backfill material shall be clean structural fill free of stones larger than 2 inches, construction debris, refuse, muck, soft clay, loam, sponge material, vegetation/organic matter, or angular rock. Suitable excavation material may be used for backfilling around installed pipe, subject to approval by ENGINEER.

2.2 STONE MATERIALS

Coarse aggregate used in LFG extraction wells shall be VDOT No. 3 or other washed crushed stone between 1 inch and 2 inches in diameter, and shall be composed of clean, hard and durable fragments, free of silt, clay, dirt, vegetation, and other objectionable matter. Sieve analysis shall be performed at the source at least weekly by ASTM 6913/2487 or other acceptable test method. Stone backfill shall be non-calcareous rock with a minimum of 90 percent non-calcium-carbonate material. Calcium carbonate content shall be measured by ASTM D4373 test method at a frequency of at least one test per 500 tons. Additional testing shall be performed upon a change of source.

PART 3 – EXECUTION

3.1 GENERAL

- A. Excavations for structures and pipelines shall be open excavations, shored and braced where necessary to prevent possible injury to workmen and to new and existing structures or pipelines.

- B. Stability of Excavations: Slope sides of excavations, when necessary, to comply with codes and ordinances of agencies having jurisdiction. Shore and brace where sloping is not possible either because of space restrictions or stability of material excavated. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.
- C. Stockpile excavated materials to be reused as backfill on the up-gradient side of the excavation. Segregate differing excavation materials as to type. Provide positive drainage for all existing and newly graded areas and other construction areas, including stockpile locations, during each phase of the work. All necessary temporary controls shall be provided to prevent washout and erosion.
- D. Dry conditions shall be maintained by the CONTRACTOR in all excavations for structures.

3.2 PIPE TRENCH PREPARATION (NON-LANDFILL AND LANDFILL AREAS)

- A. In the event that piping associated with the LFG system is installed belowgrade, no more than 200 feet of trench may be opened in advance of pipe installation unless approved by the ENGINEER.
- B. Trench width shall be minimized to greatest extent practical but shall conform to the following:
 - 1. Sufficient to provide room for installing, jointing, and inspecting piping, but in no case wider at top of pipe than pipe barrel outside diameter plus 2 feet, unless otherwise indicated.
 - 2. Enlargements at pipe joints may be made if required and approved by the ENGINEER.
 - 3. Sufficient for sheeting, bracing, sloping, and dewatering as required.
 - 4. Sufficient to allow thorough compaction of backfill adjacent to bottom half of pipe.
 - 5. Do not use excavating equipment which requires the trench to be excavated to excessive width.
- C. Depth of trench as indicated on the Drawings shall be field-located by the CONTRACTOR with approval of the ENGINEER. If approved by the ENGINEER, depths may be revised provided the minimum slope and cover requirements are maintained.
- D. In the event that piping associated with the LFG system is installed belowgrade, the trench shall be backfilled with materials as indicated on the Drawings and as specified herein. The trench shall be backfilled and compacted to provide a firm, uniform grade. The backfill material shall be compacted using vibrating plate-type equipment. Place backfill materials in horizontal layers not more than 8 inches in

loose depth. Compact each layer with at least 2 passes by compaction equipment. If the ENGINEER suspects adequate compaction is not being achieved, the CONTRACTOR shall test the backfill material to demonstrate a density of at least 90 percent of the maximum density as determined by ASTM D698 (Standard Proctor).

- E. All trenches shall be constructed in a uniform grade. Excavations of trenches shall be kept in a dry condition. The CONTRACTOR shall be responsible for maintaining the dry conditions.
- F. The CONTRACTOR shall stockpile, handle, transport, spread, and cover waste materials encountered during earthwork activities as specified in 3.6 - DISPOSAL of this Section.
- G. The CONTRACTOR shall not excavate for pipe installation during inclement weather conditions, as determined by the ENGINEER.
- H. In Landfill areas, CONTRACTOR shall backfill trench so there is no exposed waste at the end of each workday.
- I. In Landfill areas with existing final cap, the pipe shall be installed within the vegetative soil cover layer at least 6 inches above the existing geosynthetic components of the final cap. CONTRACTOR shall exercise caution during excavation and backfill so as to avoid damage to the final cap integrity. CONTRACTOR shall be responsible for repairing and damage to the final cover system caused by his construction activities.
- J. If a sample from the tests outlined in Part 3.2D fails, the CONTRACTOR shall rework the soil and retest until the sample demonstrates conformance with the standard.

3.3 SHEETING, SHORING, AND BRACING

Excavations requiring sheeting, shoring, and bracing are not anticipated for this work. The CONTRACTOR shall notify the OWNER and ENGINEER if such requirement is encountered in the field. Such work shall proceed upon OWNER and ENGINEER approval per the following:

- A. Excavations for structures and pipelines shall be open excavations, sheeted, shored, and braced where necessary to prevent injury to workmen, structures, or pipe lines.
- B. All municipal, OWNER, state, and federal ordinances, codes, regulations, and laws shall be observed.
- C. Used materials shall be in good condition, not damaged or excessively pitted.
- D. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Move shoring and bracing as excavation progresses.
- E. Unless otherwise shown, specified, or ordered, all materials used for construction shall be removed when work is completed. Such removal shall be made in a manner

not injurious to the structure or its appearance or to adjacent work. The CONTRACTOR shall place waste materials encountered during earthwork activities in neat piles for disposal in the active landfill cell.

- F. The clearances and types of the temporary structures, insofar as they affect the character of the finished work, and the design of sheeting to be left in place, will be subject to the approval of the ENGINEER; but the CONTRACTOR shall be responsible for the adequacy of all sheeting, shoring, bracing, coffer damming, etc.
- G. Safe and satisfactory sheeting shall be the entire responsibility of the CONTRACTOR.

3.4 GRADING

Uniformly grade areas within limits of construction under this Section, including adjacent transition areas. Compact with uniform slopes to provide positive drainage.

3.5 SOIL EROSION OR SEDIMENT CONTROL

- A. Install erosion and sediment controls as required by field conditions and in compliance with the Solid Waste Permit, the Supplement to the Erosion and Sediment Control Plan, and the Virginia Erosion and Sediment Planning and Design Manual.
- B. Disturbed areas outside of the waste limits are not anticipated for this work. If areas outside of the waste limits are disturbed, these areas shall be seeded and mulched in accordance with the Supplement to the Erosion and Sediment Control Plan and the Virginia Erosion and Sediment Planning and Design Manual. The seed mixture and application rates shall be in accordance with Table 6.11b of the Manual, or as approved by the ENGINEER. Lime and fertilizer shall be applied along with seed and mulch at rates in accordance with the Handbook. Higher application rates may be necessary at the site to establish vegetation adequate to control erosion and sediment transport.
- C. Disturbed areas within the waste limits will be seeded and mulched to re-establish vegetative growth, where it existed at the start of work, as applicable.
- D. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.
- E. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape, and compact to required density prior to further construction.
- F. The CONTRACTOR is responsible for obtaining all erosion and sediment permits and licenses that are required to perform the Work.

3.6 DISPOSAL

The Bristol ISWMF does not have an active landfill waste placement operations (“working face”) area and is in the process of installing various remedial measures prior to closure. During this interim period, waste that is excavated during construction activities can be relocated and covered within the landfill.

The CONTRACTOR shall place waste materials encountered during earthwork activities in neat piles adjacent to the work area. Prior to the end of the working day, the CONTRACTOR shall haul the excavated waste materials to a designated area for waste relocation at the site, as directed by the OWNER. The CONTRACTOR shall be responsible for stripping off the existing Intermediate Soil Cover material, unloading and spreading the excavated waste, “tracking it in” with suitable equipment, and replacing and restoring the Intermediate Soil Cover layer.

OWNER shall not require the CONTRACTOR to pay tipping fee for disposal of excavated waste materials encountered during work activities. If odors or emissions from the excavated waste become a nuisance as determined by the OWNER, CONTRACTOR shall increase the frequency of excavated waste removal as directed by the ENGINEER.

END OF SECTION 31 23 10

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SECTION 33 23 10

LANDFILL GAS EXTRACTION WELLS AND WELLHEADS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope of Work: The CONTRACTOR shall provide all equipment, materials, and labor needed to install vertical landfill gas (LFG) extraction wells and wellheads as specified herein and as indicated on the Drawings.
- B. It is expected that combustible methane gas, carbon monoxide, hydrogen sulfide, benzene, and other hazardous components will be venting from boreholes drilled to install the wells. It is expected that leachate may be encountered during drilling. Landfill fluids (gases and liquids) may be present under high positive pressures. The CONTRACTOR'S bid price shall include provision for all equipment and procedures necessary to safely install wells under this condition.
- C. All work shall be performed by qualified workers in accordance with the best standards and practices available. The CONTRACTOR shall make provisions for containment of discharged leachate if emitting from borehole.
- D. The CONTRACTOR shall keep the premises free from accumulation of waste materials or rubbish caused by his operations. Upon completion of each day's work, he shall dispose of all drill tailings at the designated area for waste relocation at the landfill, as well as secure all his tools, construction equipment, machinery and surplus materials from the site.
- E. CONTRACTOR shall make every attempt to minimize odors from the wells during construction, by covering borehole between active operations, and as soon as well is completed, by covering or removing any drill tailings and temporarily capping the well riser pipe.
- F. Material requirements vary between wells as shown on the Drawings. Well riser pipes are designated as either PVC or CPVC as shown on the Drawings.
- G. Related Work Described Elsewhere
 - 1. Section 31 23 10: Earthwork
 - 2. Section 33 51 10: Pipe, Pipe Fittings, and Valves

1.2 SUBMITTALS

- A. The CONTRACTOR shall prepare and submit to the ENGINEER for review and approval catalog cuts on materials furnished, and manufacturer's brochures containing complete information and instructions pertaining to the storage, handling, installation, and inspection of wellhead assemblies and other appurtenances furnished.

- B. The CONTRACTOR shall submit to the ENGINEER for review and approval samples of all backfill materials and the name of the vendor(s) and source of materials furnished.
- C. The CONTRACTOR shall prepare and submit to the ENGINEER for review and approval Shop Drawings showing dimensions, materials, and configuration of the wellhead assembly.
- D. Within 10 days after drilling is complete, the CONTRACTOR shall submit to the ENGINEER well logs (drilling and construction) based on information recorded in the field during construction.

1.3 JOB CONDITIONS

- A. Wells are to be drilled through the existing landfill intermediate cover, which consists of at least 12 inches of soil depth. Some well locations may be on sloped portions of the existing landfill surface grades. The CONTRACTOR shall employ whatever temporary means are necessary to provide access to such locations, and return all areas to existing condition.
- B. Certain areas in the southern and middle portions of the Quarry Landfill have demonstrated atypical temperatures, pressures, and landfill gas composition. CONTRACTOR shall exercise caution and be prepared to invoke contingency measures related to subsurface temperature and pressure when drilling wells.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Backfill Materials:
 - 1. Coarse aggregate backfill shall be as specified in Section 31 23 10.
 - 2. Soil backfill material shall be as specified in Section 31 23 10.
 - 3. If “Plug” is shown on the Drawings, this shall refer to a well seal comprised of either hydrated sodium bentonite pellets or chips or foam sealant of a thickness indicated on the Drawings. Bentonite material shall consist of clay greater than 85% sodium montmorillinite, without additives and shall be placed and wetted in 6-inch layers. Engineered foam sealant shall be EFS 24-005 product (EFS 9.0B) manufactured by FOAM Concepts, LLC or approved equal.
- B. Perforated PVC and CPVC Pipe: The piping shall be as specified in Section 33 51 10. The holes in extraction well piping shall be as shown on the Drawings and may be field-fabricated or supplied by the factory.
- C. Rigid and Flexible PVC and CPVC Pipe: Rigid and flexible PVC pipe shall be as specified in Section 33 51 10.

- D. Wellhead Assembly shall be a pre-fabricated unit consisting of a 2-inch or 3-inch globe valve, 2-inch or 3-inch union disconnect, a quick change orifice plate housing with a collar and set of interchangeable orifice plates suitable for flow measurements, adapter bushing or Fernco reducer fitting, stabilizing well cap with support ring, temperature gauge, multiple barbed hose monitoring ports, and dust caps. Wellhead assembly shall be manufactured by QED Environmental Systems/Landtec, Dexter, MI (800-810-9908) or Colton, CA (800-526-3832) or approved equal.
The globe valve shall be constructed of Type 1, Grade 1, PVC with socket fittings stainless steel valve stem and handle. The valve shall meet the requirements of ASTM D-1784 for rigid PVC compounds. The "globe" shall be of a tapered cylindrical plug design made of PVC, thickly lined with Viton material, flanged, stem with position high visibility indicator, or equivalent.
- E. Well caps shall be dual extraction type with flexible couplings and adapter fittings that allow for connection of pneumatic supply and dewatering forcemain lines. Dual extraction well caps shall be manufactured by Pump One or approved equal.
- F. Well Bore Reinforcement Grate shall be constructed of materials and configured to the dimensions as shown on the Drawings.
- G. Wellbore geomembrane skirt seal shall be Landtec/QED WBS wellbore seal, comprised of 30-mil PVC, measuring 10 feet by 10 feet, suitable for attaching to 6-inch, 8-inch, or 12-inch LFG well riser pipe, or approved equivalent. The wellbore geomembrane skirt seal shall be configured as shown on the Drawings.

2.2 SPARE PARTS

No spare parts are included in this work.

PART 3 – EXECUTION

3.1 DRILLING

- A. The CONTRACTOR shall coordinate the start of drilling with the ENGINEER.
- B. The CONTRACTOR shall provide at all times a thoroughly experienced, competent driller during all drilling operations.
- C. The OWNER shall survey and stake the proposed well locations prior to drilling. OWNER shall submit survey information to ENGINEER and well locations, boring depths, and slotted pipe lengths will be approved and may be adjusted by the ENGINEER or the OWNER prior to beginning drilling. Following review of the adjusted well schedule, CONTRACTOR shall obtain authorization from OWNER and ENGINEER prior to drilling.
- D. The CONTRACTOR must use dry drilling equipment. Wet rotary drilling equipment may not be used. The CONTRACTOR should anticipate wet waste with poor shear strength will be encountered and must have drilling tools and supplies for such circumstances, such as a "muck" or "sand" bucket and drilling polymer, such as

SHORE PAC VISCOUS SOIL STABILIZING POLYMER. It is anticipated that drilling will require frequent use of muck bucket and drilling polymer, or other techniques, to enable achieving well design depths in wet, decomposed waste.

- E. In the event that drilling tools (such as muck bucket and/or drilling polymer) mentioned above prove ineffective in achieving well design depths, the OWNER and ENGINEER may instruct CONTRACTOR to mobilize a sonic drilling rig capable of installing a smaller (12-inch-diameter) borehole with a smaller (6-inch-diameter) well riser pipe to attempt to achieve design depths. In this event, extension to the Contract Times will be granted to accommodate sonic rig mobilization, as necessary.
- F. The CONTRACTOR shall not initiate drilling of borehole unless the well can be fully constructed, completed, and capped prior to the end of the workday. However, exceptions to this requirement will be allowed for efforts to install deep (greater than 150 feet) wells or if subsurface conditions exhibit excessive heat, pressures, or liquids that induce a slow drilling pace (less than 2 feet per hour), or if wells require the muck bucket or drilling polymer to be utilized. In the event a well cannot be fully constructed and capped prior to the end of the workday, the borehole shall be covered with a steel plate and a stockpile of soil and the bucket auger placed on top of the soil and plate. No exposed wastes in borehole, trenches, or stockpiles shall remain overnight.
- G. Wells are to be drilled to the depth and diameter as shown on the Drawings. The boring depths shown on the Drawings are estimated and may be adjusted in the field by the ENGINEER. Under no circumstances are the drilling depths from the adjusted well schedule to be exceeded unless approved by the ENGINEER in advance.
- H. Wet Borings: It is likely that liquids will be encountered at some depth during installation of the borings.
 - 1. The CONTRACTOR will likely be directed to drill beyond the point at which liquids are initially encountered. If wet conditions cease (e.g., due to a perched water layer), then drilling will continue to the design depth. If wet conditions remain, the ENGINEER may instruct the DRILLER to utilize a muck bucket and/or drilling polymer in order to continue drilling. Based on subsequent drilling production rate and well depths being achieved, the boring may be terminated (after driller has attempted to advance boring for at least 2 hours) and the length of perforated pipe adjusted by the ENGINEER. Alternatively, the ENGINEER may instruct the DRILLER to abandon the boring and relocate the well.
 - 2. If during the drilling of a hole, an obstruction is reached, the driller must use all reasonable means to advance the drilling. If the drilling rate falls to less than 2 feet per hour and the well cannot be completed as shown on the Drawings, the ENGINEER shall be consulted as to whether the borehole has advanced to a sufficient depth.
- I. Abandoned Borings: If, in the opinion of the ENGINEER, the borehole has not reached a sufficient depth to function as an effective extraction well, the CONTRACTOR shall abandon this borehole by backfilling it with cuttings removed during drilling. If cuttings are unsuitable as backfill (for example, box springs, tires, etc.) the CONTRACTOR shall use soil backfill material. A 2-foot-thick plug (bentonite or foam

sealant) will be placed in the borehole when the depth is 6 feet below the existing grade. The remaining 4 feet of the borehole will then be filled with soil material and compacted to approximately match the elevation of the existing grade. Compensation for abandoned borings shall be at 1/3 the unit price for this pay item.

- J. If the ENGINEER adds or deletes a well, or adjusts the depth of a well, either less than or greater than the depth shown on the well schedule, the CONTRACTOR will be compensated or will credit the OWNER per foot of variance according to the unit price for this pay item.
- K. The bore for the well shall be straight and the well pipe shall be installed in the center of the borehole. The CONTRACTOR shall take all necessary precautions to maintain the well pipe vertically plumbed during the backfill operation of the bored hole to the satisfaction of the ENGINEER. If the pipe installed is out of plumb, as determined by the ENGINEER, the CONTRACTOR, at his own expense, shall correct the alignment.
- L. The well bore reinforcement grate shall be installed in accordance with the procedures outlined on the Drawings.
- M. The wellbore geomembrane skirt seal shall be installed in accordance with the manufacturer's recommendations and as shown on the Drawings.
- N. The CONTRACTOR shall keep detailed well logs for all wells drilled, including the total depth of well, the static water level, the depth, thickness, description of soil or waste strata, the occurrence of any water bearing zones, and temperature of waste cuttings at 10-foot intervals. The logs shall also include detailed well construction diagrams for all wells installed. These diagrams shall include dimensions that indicate total well depth, length of slotted pipe, length of solid pipe, length of stick-up to the top of the wellhead, thickness of stone, thickness of plug, and thicknesses of soil material. Well logs shall be submitted to the ENGINEER.

3.2 PIPE INSTALLATION

- A. Pipe and pipe fittings shall be prepared, aligned, and joined, in accordance with the Drawings and as specified in Section 33 51 10. If threaded pipe is not used, lag screws shall be installed at each bell end of every 20-foot pipe section. Three lag screws per bell fitting shall be installed. The length of the lag screws shall equal the sum of the pipe and bell fitting wall thickness. Three lag screws shall be installed on the end cap at the bottom of the well.
- B. Pipe shall be left above grade to allow for wellhead installation as shown on drawings. Temporary caps shall be placed on all wells.
- C. The bore for the well shall be straight and the well pipes shall be installed vertically plumbed in the center of the bore hole. Derricks, ropes, or other suitable equipment or manual labor shall be used for lowering the pipes into the well borings, subject to the approval of the ENGINEER. Pipe shall be installed with a safety grate installed over the boring.

3.3 BACKFILLING

- A. The CONTRACTOR shall take all necessary precautions to maintain the well pipes vertically plumbed during the backfill operation of the borehole. Care shall be taken during installation of backfill materials to prevent damage to the well piping, the wellbore reinforcement grate, or the wellbore geomembrane skirt seal.
- B. If the bore hole collapses partially or completely during backfill operations, the CONTRACTOR will be required to redrill the bore hole, at no additional cost, upon the direction of the ENGINEER.
- C. Backfilling of the well shall commence immediately after well drilling is completed and the well piping has been installed. Backfill materials shall be placed carefully within the borehole to the dimensions shown on the Drawings and as approved by the ENGINEER. The ENGINEER, on the basis of a visual examination, may reject gravel and soil backfill containing foreign material. Both well piping and backfill shall be installed with a safety grate installed over the boring as outlined in the CONTRACTOR's Health and Safety Plan.
- D. If foam sealant is utilized for the borehole Plug, the product shall be mixed and poured in accordance with the manufacturer's instructions. If bentonite is utilized for the borehole Plug, the bentonite Plug shall be backfilled in 6-inch lifts. The CONTRACTOR shall soak each lift with clean water prior to filling the next one as directed by the ENGINEER.
- E. Soil backfill shall be rodded in the boring to provide even distribution and compaction.
- F. The ENGINEER shall inspect the extraction well boring 4 to 8 weeks after completion. Excessive settlement (6 inches or more below surrounding grade) in the boring shall be repaired by the CONTRACTOR by adding compacted fill around the well casing at no additional cost to the OWNER.
- G. All temporary equipment bench soils and materials shall be removed and the soil cover replaced and re-graded. Suitable erosion control provisions shall be made to prevent erosion of disturbed areas.

3.4 TEMPORARY CAP

The CONTRACTOR shall temporarily cap the riser pipe of the vertical extraction well to prevent direct venting of LFG through the riser pipe. The temporary cap shall be removed during the installation of the wellheads.

3.5 WASTE DISPOSAL

Excavated waste materials, including well cuttings shall be handled as specified in Section 31 23 10.3.6.

3.6 WELLHEAD INSTALLATION

- A. Wellhead assembly shall be installed on the vertical wells in accordance with the manufacturer's recommendations. Care shall be taken not to damage the impact

the orifice plate during installation. If an orifice plate is damaged during installation, CONTRACTOR shall replace it at no cost to the OWNER.

- B. The wellhead shall be connected to the lateral via flexible PVC pipe, as shown on the Drawings. Install flexible PVC pipe with adequate length to anticipate settlement, but so that no sags are formed.

END OF SECTION 33 23 10

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SECTION 33 51 10

PIPE, PIPE FITTINGS, AND VALVES

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope of Work: The CONTRACTOR shall supply all materials, equipment, and labor needed to install all pipe, pipe fittings, and valves as specified herein and as indicated on the Drawings. Comply with the latest version of any referenced standard. *Provide*, as used herein means furnish and install.
- B. Related Work Described Elsewhere
 - 1. Section 31 23 10: Earthwork
 - 2. Section 33 23 10: Landfill Gas Extraction Wells and Wellheads

1.2 QUALITY ASSURANCE

- A. Provide only pipe and fittings conforming to the requirements of the referenced ASTM standards, ANSI standards, or PPI standards.
- B. Utilize only factory trained and certified welders, equipment, and installers.
- C. Follow all ASTM practices and standards in the manufacture and fabrication of piping and fittings.
- D. Follow manufacturer's written instructions for handling, storage, and installation.

1.3 QUALITY CONTROL

- A. Provide permanent markings on piping, clearly showing ASTM conformance, size and SDR, pressure rating, cell classification number, and the manufacturer's name.
- B. Provide certification of all welders and installers.
- C. Certify compliance with ASTM practices and standards during manufacture and fabrication.
- D. Remove from site any pipe and fittings damaged during shipment, construction, or rejected during testing and/or inspection. Replace with acceptable products without additional expense to the OWNER.

1.4 SUBMITTALS

- A. The CONTRACTOR shall prepare and submit to the ENGINEER, for review and approval, certificates of compliance on materials furnished and manufacturer's brochures containing complete information and instructions pertaining to the storage, handling, installation, inspection, maintenance, and repair of each type of pipe, pipe fitting, and valve furnished.
- B. Submit all certifications listed in the QC section above and as required elsewhere in this Section.
- C. Prepare and submit Shop Drawings to the ENGINEER for review and approval. Shop Drawings shall show all dimensions, slopes, and invert elevations at connections. All tie-ins to the existing system shall be field-verified and shown on the Shop Drawings.

PART 2 – PRODUCTS

2.1 POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS

- A. All PVC pipe and pipe fittings shall be Schedule 80 PVC conforming to ASTM D 1784, ASTM D 1785 (for pipe), and ASTM D 2467 (for fittings). Acceptable manufacturers include Nibco Chemtrol (219-295-3000), CertainTeed (610-341-7768), ASAHI/America (800-343-3618), or approved equal.
- B. PVC pipe and pipe fittings shall be manufactured from a compound which meets the requirements of Type 1, Grade 1, Polyvinyl Chloride PVC 1120, Class 12454-B, as outlined in ASTM D 1784. A Type 1, Grade 1 compound is characterized as having the highest requirements for mechanical properties and chemical resistance.
 - 1. Compound from which pipe is produced shall have a design stress rating of 2000 psi at 73 degrees F, listed by the Plastic Piping Institute.
 - 2. Materials from which pipe and pipe fittings are manufactured shall have been tested and approved by NSF International.
 - 3. Pipe shall be homogenous throughout and shall be free from cracks, holes, foreign inclusions, and other defects.

2.2 CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE

- A. The Schedule 80 CPVC pipe shall be manufactured from a compound which meets the requirements of Type IV, Grade 1, Chlorinated Polyvinyl Chloride CPVC, cell classification 23447 per ASTM D 1784, have a compressive strength of 10,000 psi per ASTM D 695, and conform to the requirements of ASTM F441M-20.

2.3 PVC FLANGES

- A. Flanges shall be Schedule 80 PVC and shall be plate type, ANSI Class 150 pounds.

- B. The bolts, studs, nuts, and washers for the flanges shall be hot dipped galvanized steel. Below-grade flanges shall be wrapped in 5-mil polyethylene sheeting, just after installation and prior to backfilling, to help prevent corrosion.
- C. Flange gaskets shall be full-face Neoprene. Other elastomers, such as Nitrile or Buna-N may be submitted to the ENGINEER for consideration.

2.4 FLEXIBLE PVC PIPE

- A. Flexible PVC pipe shall be as manufactured by QED Environmental Systems, Dexter, MI, 734-995-2547, Solarguard™ Flex Hose, or approved equal.
- B. Fasteners for flexible PVC pipe shall be QED Environmental Systems Solarguard™ Flex Hose Banding Kits, or approved equal.

2.5 HIGH DENSITY POLYETHYLENE (HDPE) PIPE

- A. General:
 - 1. All HDPE pipe and fittings greater than 4-inch-diameter as indicated on the Drawings shall be Iron Pipe Size (IPS) Standard Dimension Rating (SDR) 17 high density polyethylene pipe using a 4710 type resin, or approved equal. HDPE pipe and fittings that are 4-inch-diameter and less shall be IPS SDR 11 for liquid forcemain piping and IPS SDR 9 for pneumatic supply piping.
 - 2. Pipe shall be extruded from a Type III, Class C, Category 5, Grade P47 compound with a hydrostatic design stress of 1000 psi at 73.4 °F, as described in ASTM D 1248. It shall be classified as cell 445574C/E according to ASTM D 3350 and have the material designation of PE 4710. The pipe shall be manufactured to meet the requirements of ASTM F 714. Manufacturer's literature shall be adhered to when "manufacturer's recommendations" are specified. All pipe and pipe fittings shall be provided by manufacturer. Acceptable manufacturers include Plexco (630-350-3700), Driscopipe (800-527-0662), or approved equal.
 - 3. Provide only manufacturer built molded type fittings unless otherwise approved by the ENGINEER. Provide fittings in matching SDR unless unavailable from manufacturer. No field fabricated fittings will be allowed unless approved by the ENGINEER.

2.6 FLANGES FOR HDPE PIPE

- A. Provide molded HDPE flange adaptors with ANSI B16.5 drilling.
- B. Provide convoluted ductile iron back-up rings with a minimum thickness of 1-inch, as manufactured by Improved Piping Products (925-254-0962), Inc., of Orinda, California or approved equal. Back-up rings shall be finished with red oxide primer.

- C. Studs and bolts, nuts, and washers for flanges shall be as specified in Part 2.3 above.

2.7 VALVES

A. General:

1. All valves shall be complete with all necessary operators, actuators, hand-wheels, chain wheels, extension stems, floor stands, worm and gear operators, operating nuts, chains, wrenches, and other accessories or appurtenances which are required for the proper completion of the work. Valves 6-inch-diameter and larger shall be equipped with a geared operator. Operators, actuators, and other accessories shall be sized and furnished by the valve supplier and factory mounted.
2. Valves and operators shall be suitable for the exposure they are subjected to, e.g., above grade or buried, and for conveyance of landfill gas and leachate. Renewable parts including discs, packing, and seats shall be of types recommended by valve manufacturer for intended service, but not of a lower quality than specified herein. Valves shall have all safety features required by OSHA.
3. Unless otherwise shown, valves shall be the same size as the adjoining pipe.
4. Monitoring ports and hoses shall be provided at each abovegrade and buried LFG isolation valve. Ports threaded into header shall be Swagelock 1/4" SS-420-1-4 x1/4" MPT, or approved equal. Monitoring hose shall be stainless steel teflon-lined hose with Swagelock tube ends, model SS-4BHT-36, or approved equal, of adequate length to extend above grade (above-specified length is for 3-foot-long tubing section). Sampling end shall have a 1/4" female connector SS-420-7-4 with a quick-connect polypropylene monitoring port by Ryan Herco, Part No. 0812-002.

B. Butterfly Valves:

1. The LFG Header, condensate forcemain, pneumatic supply isolation valves shall be butterfly bubble tight, wafer design, with a PVC body, nitrile seat, and compatible with a flat face flange, as manufactured by Asahi/America or equal. Stem extensions shall be stainless steel in an epoxy coated steel outer housing with a gear box assembly and visual valve position indicator mounted on top and equipped with a removable manual operating wheel. Monitoring ports at the LFG butterfly valves shall be quick connects. If required, quick connects shall be attached to the pipeline via flexible metal hose connector, Swagelok Part No. SS-4HO-6-L4, or equal.

C. Globe Valves:

Refer to Section 332310 for the wellhead globe valves.

D. Labcock Valves:

Quick connects used for monitoring ports may be replaced by Labcock valves at all monitoring ports in the system, subject to approval by the ENGINEER. Labcock valves shall be 1/4-inch PVC with EPDM seats and seals. Valves shall have 1/4-inch MPT on one end and hose connection on the other end.

2.8 PIPELINE LOCATOR/WARNING TAPE

If applicable, tape shall be a metallic locator/warning tape imprinted with the words "Caution Gas Line Buried Below," as supplied by Terra Tape (800-231-2417).

PART 3 – EXECUTION

3.1 GENERAL

- A. Pipe shall be stored or stacked so as to prevent damage by marring, crushing, or piercing. Maximum stacking height shall be limited to 6 feet.
- B. Pipe and pipe fittings shall be handled carefully in loading and unloading. They shall be lifted by hoists and lowered on skidways in such a manner as to avoid shock. Derricks, ropes, or other suitable equipment shall be used for lowering the pipe into the extraction well borings. Pipe and pipe fittings shall not be dropped or dumped.
- C. Install pipe straight and true to lines, grades, and elevations indicated on the drawings, within acceptable tolerances.
- D. Maintain pipe interior free of mud, debris, tools, clothing, or other foreign objects. Provide secure closure of pipe ends during construction.
- E. Certify to the ENGINEER a clean pipe interior prior to closure.
- F. Makeup threaded connections with Teflon™ tape and/or paste.
- G. Assemble bolts with anti-galling compound. Wrap buried bolted connections in 5-mil polyethylene sheeting prior to backfilling.
- H. Install new gaskets when reassembling an existing flanged fitting.

3.2 PVC/CPVC PIPE STORAGE

For storage of PVC and CPVC pipe and fittings over 5 days, a location shall be chosen out of direct sunlight, or the piping and fittings shall be covered.

3.3 PVC/CPVC PIPE INSTALLATION

PVC/CPVC pipe installation shall conform to these specifications, the manufacturer's recommendations, and as outlined in ASTM D 2774.

3.4 JOINING OF PVC/CPVC PIPE

- A. Joining of pipe shall be in accordance with ASTM D 2855.
- B. Preparation:

All pipes shall be inspected for cuts, scratches, or other damage prior to installation. Pipe with imperfections shall not be used. All burrs, chips, etc. shall be removed from pipe interior and exterior. All pipe cuts shall be square, perpendicular to the center line of pipe. Pipe ends shall be beveled prior to applying primer and solvent cement so that the cement does not get wiped off during insertion into the fitting socket.

- C. Solvent Welding:

A coating of primer as recommended by pipe supplier shall be applied to the entire interior surface of the fitting socket and to an equivalent area on the exterior of the pipe prior to applying solvent cement. The solvent cement shall comply with the requirements of ASTM D 2564 and shall be applied in strict accordance with manufacturer's specifications. Pipe shall not be primed or solvent welded during precipitation or when atmospheric temperature is below 40 degrees F or above 90 degrees F.

- D. Curing:

After solvent welding, the pipe shall remain undisturbed until cement has thoroughly set. As a guideline for joint setting time, use 1 hour for ambient temperatures 60-90 degrees F, or 2 hours when ambient temperature is 40-60 degrees F.

- E. Alignment:

Pipe and pipe fittings shall be selected so that there will be as small a linear deviation as possible at the joints, and so that inverts present a smooth surface. Pipe and fittings which do not fit together to form a tight fitting will be rejected.

3.5 FLEXIBLE PVC PIPE CONNECTIONS

Connections to pipe shall be made with clamps in accordance with manufacturer's step by step procedures and recommendations.

3.6 HDPE PIPE HANDLING

- A. HDPE pipe shall not be bent more than the minimum radius recommended by the manufacturer for type, grade, and SDR. Care shall be taken to avoid imposing strains that will overstress or buckle the HDPE piping or impose excessive stress on the joints.
- B. Joining HDPE Pipe: Only two methods shall be utilized to joining HDPE pipe: heat fusion and mechanical joining.

1. Mechanical Joining shall be accomplished with HDPE flange adapters, neoprene, or other Engineer-approved gaskets, and ductile iron back-up flanges, and shall be used only where shown on the Drawings.
2. Heat Fusion joints shall be made in accordance with manufacturer's step by step procedures and recommendations. Fusion equipment and a trained operator shall be provided by the CONTRACTOR. Pipe fusion equipment shall be of the size and nature to adequately weld all pipe sizes and fittings necessary to complete the project. Heat fusion shall be performed outside of the trench whenever practical. Before heat fusing pipe, each length shall be inspected for the presence of dirt, sand, mud, shavings, and other debris. Any foreign material shall be completely removed. At the end of each day, all open ends of fused pipe shall be capped or otherwise covered to prevent entry by animals or debris.
3. The use of electrofusion branch saddles to connect pipes is prohibited. Different pipes shall be connected using either molded tee fittings, factory-fabricated branch saddle fittings, or field-fabricated branch saddles installed via traditional fusion techniques made in accordance with manufacturer's recommendations and step by step procedures. Branch saddle fusion equipment will be of the size to facilitate saddle fusion within the pipe trench.
4. As per the manufacturer's instructions, no fusion shall be performed in precipitation unless a shelter is provided.

3.7 HDPE PIPE INSTALLATION

- A. Pipe installation shall comply with the requirements of ASTM D 2321, PPI TR-31/9-79, and the manufacturer's recommendations.
- B. Lengths of fused pipe to be handled as one segment shall not exceed 400 feet.
- C. The ENGINEER shall be notified prior to any pipe being installed in the trench in order to inspect the following items:
 1. All butt and saddle fusions.
 2. Pipe integrity.
 3. Trench excavation for rocks and foreign material.
 4. Proper trench slope.
 5. Trench contour to ensure the pipe will have uniform and continuous support.
 6. Pipe locating tape.
- D. Any irregularities found by the ENGINEER during this inspection must be corrected before lowering the pipe into the trench. Pipe shall be allowed sufficient time to adjust to trench temperature prior to any testing, segment tie-ins, and/or backfilling.

- E. Tie-ins shall be made out of the trench whenever possible. When tie-ins are to be made only in the trench, a bell hole shall be excavated large enough to ensure an adequate and safe work area.
- F. Below grade piping shall be marked with metallic locator/warning tape to be buried in the trench approximately 1 foot above the pipe.

3.8 VALVES

- A. Valves shall be installed in accordance with the manufacturer's recommendations and the following:
 - 1. Butterfly valves shall be installed between two flanges. Care shall be taken to avoid stripping bolts when tightening.
 - 2. Flanges shall be joined with hot dipped galvanized steel studs and nuts. Stud and nut diameters shall be sized as recommended by the manufacturer for each size valve. Stud lengths shall accommodate the required distance between flanges including spacers, if necessary.
- B. The CONTRACTOR shall wrap and tape belowgrade valve, flanges, and bolts in 5-mil polyethylene sheeting prior to backfilling to help protect the valve assembly from corrosion.
- C. Flanged butterfly valves may require spacers between the flange adapters and the valve body in order to allow full travel of the internal disk. If spacers are necessary for any butterfly valve, the CONTRACTOR will install valve spacers subject to the approval by the ENGINEER.

3.9 SEGMENT TESTING

- A. The HDPE pipeline shall be subjected to an air test per ASTM F-1417 and as described herein to detect any leaks in the piping. Testing shall be performed abovegrade. The CONTRACTOR shall accept the responsibility for locating, uncovering (if previously backfilled), and repairing any leaks detected during testing.
- B. Like sizes of polyethylene piping shall be butt welded together into testing segment not to exceed 1000 feet. Segments shall be connected to a testing apparatus on one end and fitted with fusion-welded caps on all openings. The segment to be tested should be allowed time to achieve constant and/or ambient temperature before initiating the test.
- C. The test should be performed during a period when the pipe segment will be out of direct sunlight when possible; i.e., early morning, late evening, or cloudy days. This will minimize the pressure changes which will occur during temperature fluctuations.
- D. The test pressure shall be 5 psig for LFG collection piping and 10 psig for pneumatic supply and liquids forcemain piping.

- E. Pressure drop during the test shall not exceed one percent of the testing gauge pressure over a period of one hour. This pressure drop shall be corrected for temperature changes before determining pass or failure. (See Section 3.10 for test failures). The ENGINEER shall sign off on a test form to indicate test compliance.
- F. The ENGINEER shall be notified prior to commencement of the testing procedure and shall be present during the test.
- G. Equipment for this testing procedure will be furnished by the CONTRACTOR. This shall consist of a polyethylene flange adaptor with a PVC blind flange. Polyethylene reducers shall be utilized to adapt test flange to size of pipe being tested. Tapped and threaded into the blind flange shall be a temperature gauge 0 to 100 degrees C, a "Schraeder tire valve" to accommodate an air compressor hose, a ball valve to release pipe pressure at completion of test, and a pressure measuring device. The pressure measuring device shall be a digital manometer capable of measuring positive pressures of air and other non-corrosive gases over a range of 0 to 199.9 in-w.c. Model No. 475-3 as manufactured by Dwyer Instruments, Inc. (770-427-9406), or approved equal.

3.10 TEST FAILURE

- A. The following steps shall be performed when a pipe segment fails the one percent - 1 hour test described in this Section.
 - 1. The pipe and all fusions shall be inspected for cracks, pinholes, or perforations.
 - 2. All blocked risers and capped ends shall be inspected for leaks.
 - 3. Leaks shall be located and/or verified by applying a soapy water solution and observing soap bubble formation.
- B. All pipe and fused joint leaks shall be repaired by cutting out the leaking area and refusing the pipe.
- C. After all leaks are repaired, a retest shall be performed in accordance with this Section.

END OF SECTION 33 51 10

SECTION 43 21 50

LANDFILL GAS WELL DEWATERING PUMPS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope of Work: The CONTRACTOR shall provide all materials, equipment, and labor needed to install the landfill gas dewatering pumps and appurtenances in accordance with the Contract Drawings.
- B. Related Work Described Elsewhere:
 - 1. Section 33 51 10: Pipe, Pipe Fittings, and Valves

1.2 SUBMITTALS

- A. The CONTRACTOR shall prepare and submit to the ENGINEER for review and approval manufacturer's literature, shop drawings, or other information pertaining to the assembly, operation, lubrication, adjustments, and other maintenance and repairs of equipment installed under this Section, together with detailed parts lists, plans, and/or photographs.

PART 2 – PRODUCTS

2.1 PNEUMATIC WELL DEWATERING PUMPS

- A. The unit shall be a stand alone device with all components rated for service in harsh and explosive environments.
- B. The well pumps shall be capable of handling a minimum liquid discharge rate at a depth within the well when supplied with air pressure to the pump according to the values specified in Table 1.
- C. The pumps shall be of controllerless pneumatic displacement design, unless a controller is designated in Table 1. The pumps shall function properly over an operating pressure range of 5 psig to 150 psig.
- D. The internal components, pump ends, hose fittings, and other components that come into contact with the leachate being transferred shall have stainless steel materials of construction.
- E. Pneumatic pump hoses shall be standard or high temperature rating as presented in Table 1 and shall be manufactured by the respective manufacturer, or approved equal. Hoses shall be bundled together within an outer wrap. Materials of construction shall be as follows:

1. Liquid Discharge Hose Size: 1-inch inner diameter
 2. Air Supply Hose Size: 3/8-inch inner diameter; Jeneer shall be 1/2-inch
 3. Air Exhaust Hose Size: 1/2-inch inner diameter
- F. Submersible pneumatic pumps shall be suspended in well using a stainless steel cable, and shall not be suspended using pump hoses.
- G. Above-well drive motor shall be mounted according to manufacturer’s recommendations.
- H. A pump cycle counter (or in-line flowmeter) and air inlet supply gauge shall be provided with each pump.

2.2 SOLAR-POWERED ELECTRIC WELL DEWATERING PUMPS

- A. The unit shall be a stand alone device with all components rated for service in harsh and explosive environments.
- B. The well pumps shall be capable of handling a minimum liquid discharge rate at a depth within the well when supplied with suitable electric power according to the values specified in Table 1.
- C. The pumps shall be equipped with controller and photovoltaic panel of appropriate design with appurtenances necessary to provide a functional system.
- D. The internal components, pump ends, hose fittings, and other components that come into contact with the leachate being transferred shall have stainless steel materials of construction.
- E. Liquid discharge hoses shall be standard or high temperature rating as presented in Table 1 and shall be manufactured by the respective manufacturer, or approved equal. Hoses shall be bundled together within an outer wrap.
- F. Submersible electric pumps shall be suspended in well using a stainless steel cable, and shall not be suspended using pump hoses.
- G. An in-line flowmeter shall be provided with each pump.

Table 1. LFG Well Dewatering Pump Properties

Drawing/ Bid Form ID	Make	Model	Min. Flow at Depth	Depth	Air Pressure	Pump Hose Rating/ Size
One Pump Pneumatic	PumpOne	One Pump Bottom Loading, #2000454	4 gpm	80 ft	70 psi	Standard 1-inch ID
QED Pneumatic	QED	AP 4.5 Ultra Auto Pump® Bottom Loading, Short	4 gpm	100 ft	70 psi	Standard 1-inch ID
Blackhawk Pneumatic	Blackhawk	V-2 Elevated Temperature Piston Pump™, Model 102	5 gpm	243 ft	100 psi	High-Temp 1-inch ID

Drawing/ Bid Form ID	Make	Model	Min. Flow at Depth	Depth	Air Pressure	Pump Hose Rating/ Size
Jeneer Pneumatic	Jeneer	Float LES HD with Auto Bump				High-Temp
Lorentz Solar-Powered Electric	Lorentz	PS2-600 HRE-07 Energy-1	6 gpm	300 ft	NA	High-Temp
Blackhawk Solar-Powered Electric	Blackhawk	Apollo Solar Piston Pump™, Model 101	1.1 gpm	400 ft	NA	High-Temp 1-inch ID

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Submersible pneumatic, top-mounted pneumatic, and solar-powered electric pump, hoses, photovoltaic panels, controllers, and accessories shall be installed in accordance with the manufacturer’s instructions and recommendations.

3.2 TESTING

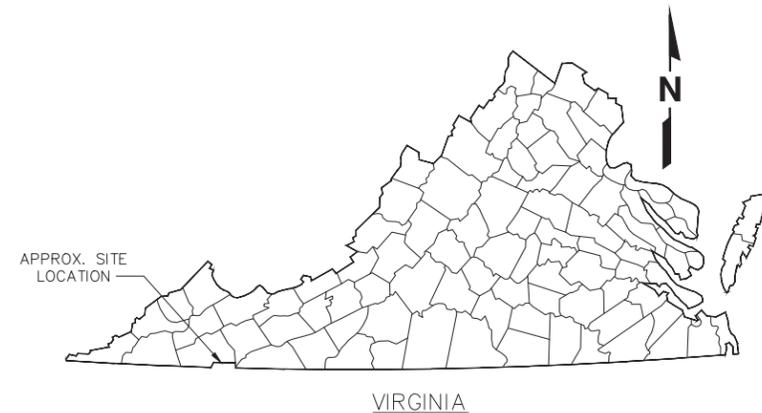
- A. Upon completion of the installation, tests shall be performed by the CONTRACTOR with the assistance of the manufacturer’s representative, in the presence of the ENGINEER. These tests shall demonstrate startup, shutdown, operation, and maintenance of the LFG well pumps. Equipment and other requirements necessary to perform the tests shall be furnished by the CONTRACTOR.

END OF SECTION 43 21 50

CITY OF BRISTOL, VIRGINIA VIRGINIA INTEGRATED SOLID WASTE MANAGEMENT FACILITY SOLID WASTE PERMIT #588 LANDFILL GAS COLLECTION SYSTEM EXPANSION - STAGE 1

BRISTOL, VIRGINIA

INDEX OF DRAWINGS		
SHEET	DRAWING NO.	SHEET TITLE
1	0	COVER SHEET
2	1	LFG SYSTEM EXISTING CONDITIONS
3	2	PROPOSED STAGE 1 LFG SYSTEM EXPANSION LAYOUT
4	3	LFG WELL DETAILS
5	4	DEWATERING DETAILS
6	5	LFG SYSTEM DETAILS - 1
7	6	LFG SYSTEM DETAILS - 2

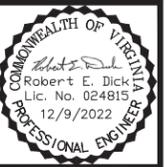


PREPARED FOR:
CITY OF BRISTOL, VIRGINIA
300 LEE STREET
BRISTOL, VIRGINIA 24201

INTEGRATED SOLID WASTE MANAGEMENT
FACILITY
2655 VALLEY DRIVE
BRISTOL, VIRGINIA 24201

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS, INC.
15521 MIDLOTHIAN TURNPIKE, SUITE 305
MIDLOTHIAN, VIRGINIA 23113-7313
PH. (804) 378-7440 FAX. (703) 471-6676
WWW.SCSENGINEERS.COM
SCS PROJECT NO. 02218208.14

DECEMBER 9, 2022



NO.	REVISION	DATE
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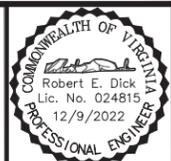
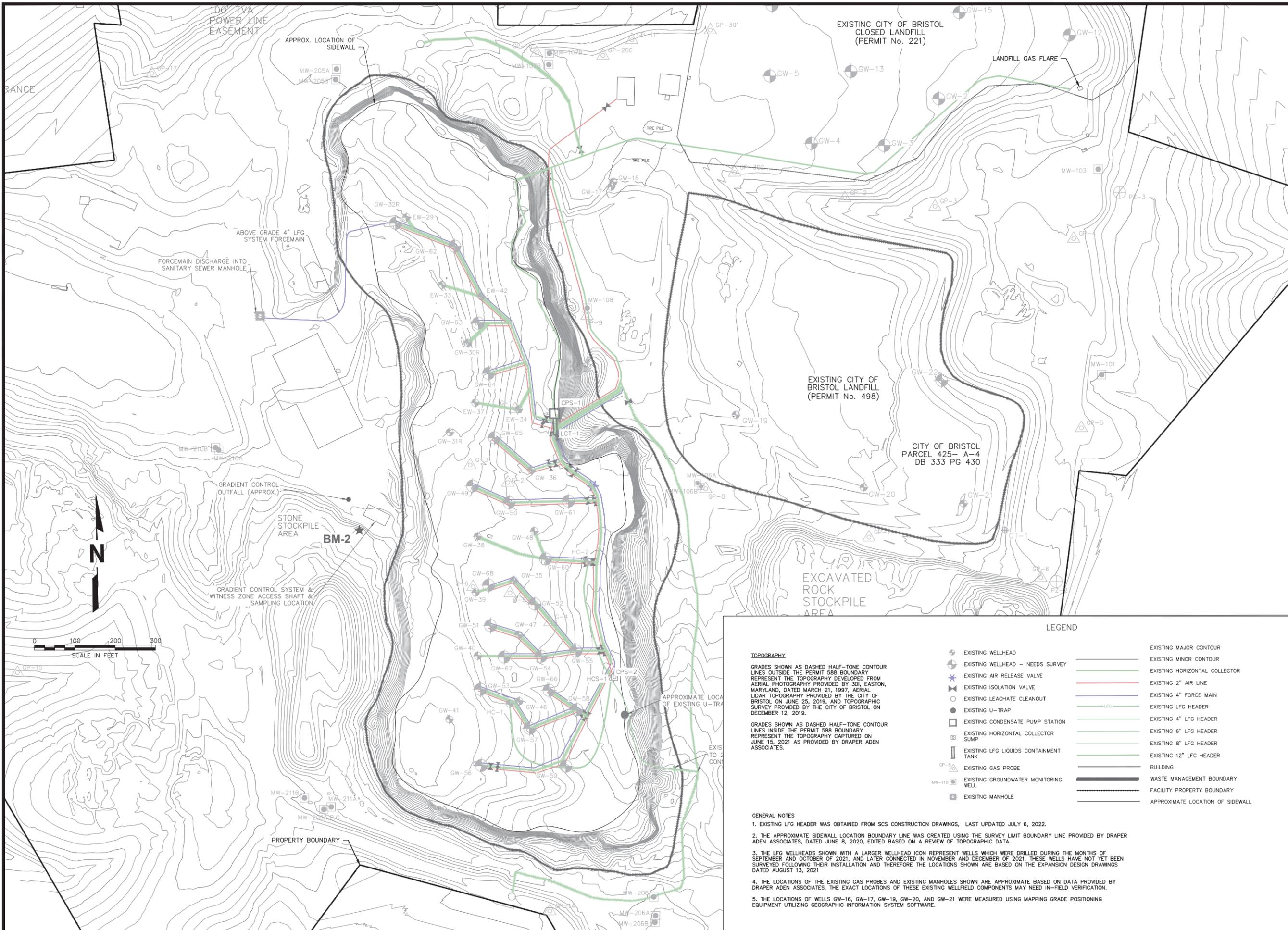
COVER SHEET
LFG COLLECTION SYSTEM EXPANSION - STAGE 1

CLIENT
**CITY OF BRISTOL INTEGRATED SOLID
WASTE MANAGEMENT FACILITY**
2655 VALLEY DRIVE
BRISTOL, VA 24201

SCS ENGINEERS STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS, INC. 15521 MIDLOTHIAN TURNPIKE - MIDLOTHIAN, VA 23113 PH. (804) 378-7440 FAX. (804) 378-7453 WWW.SCSENGINEERS.COM	DRN. BY: SRB	C/A RW BY:
	CHK. BY: RED	APP. BY: RED
PROJ. NO. 02218208.14	DRN. BY: SRB	C/A RW BY:
CHK. BY: RED	CHK. BY: RED	APP. BY: RED

CADD FILE:
DATE: 12/9/2022
SCALE:

DRAWING NO.
0 of **6**



NO.	REVISION	DATE

SHEET TITLE: **LFG SYSTEM EXISTING CONDITIONS**
 PROJECT TITLE: **LFG COLLECTION SYSTEM EXPANSION - STAGE 1**

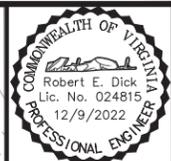
CLIENT: **CITY OF BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY**
 2655 VOLLEY DRIVE
 BRISTOL, VA 24201

SCS ENGINEERS
 STEARNS, CONRAD AND SCHMIDT
 CONSULTING ENGINEERS, INC.
 18521 MIDLOTHIAN TRPK - MIDLOTHIAN, VA 23113
 PH. (804) 378-7400 FAX. (804) 378-7433

CADD FILE:
 DATE: 12/9/22
 SCALE: AS SHOWN
 DRAWING NO. **1** of 6

TOPOGRAPHY		LEGEND	
GRADES SHOWN AS DASHED HALF-TONE CONTOUR LINES OUTSIDE THE PERMIT 588 BOUNDARY REPRESENT THE TOPOGRAPHY PROVIDED FROM AERIAL PHOTOGRAPHY PROVIDED BY 3DI, EASTON, MARYLAND, DATED MARCH 21, 1997, AERIAL LIDAR TOPOGRAPHY PROVIDED BY THE CITY OF BRISTOL ON JUNE 25, 2019, AND TOPOGRAPHIC SURVEY PROVIDED BY THE CITY OF BRISTOL ON DECEMBER 12, 2019.	EXISTING WELLHEAD	EXISTING MAJOR CONTOUR	EXISTING HORIZONTAL COLLECTOR
GRADES SHOWN AS DASHED HALF-TONE CONTOUR LINES INSIDE THE PERMIT 588 BOUNDARY REPRESENT THE TOPOGRAPHY CAPTURED ON JUNE 15, 2021 AS PROVIDED BY DRAPER ADEN ASSOCIATES.	EXISTING WELLHEAD - NEEDS SURVEY	EXISTING MINOR CONTOUR	EXISTING 2" AIR LINE
	EXISTING AIR RELEASE VALVE	EXISTING HORIZONTAL COLLECTOR	EXISTING 4" FORCE MAIN
	EXISTING ISOLATION VALVE	EXISTING 2" AIR LINE	EXISTING LFG HEADER
	EXISTING LEACHATE CLEANOUT	EXISTING 4" FORCE MAIN	EXISTING 4" LFG HEADER
	EXISTING U-TRAP	EXISTING LFG HEADER	EXISTING 6" LFG HEADER
	EXISTING CONDENSATE PUMP STATION	EXISTING 4" LFG HEADER	EXISTING 8" LFG HEADER
	EXISTING HORIZONTAL COLLECTOR SUMP	EXISTING 6" LFG HEADER	EXISTING 12" LFG HEADER
	EXISTING LFG LIQUIDS CONTAINMENT TANK	EXISTING 8" LFG HEADER	BUILDING
	EXISTING GAS PROBE	EXISTING 12" LFG HEADER	WASTE MANAGEMENT BOUNDARY
	EXISTING GROUNDWATER MONITORING WELL	BUILDING	FACILITY PROPERTY BOUNDARY
	EXISTING MANHOLE	WASTE MANAGEMENT BOUNDARY	APPROXIMATE LOCATION OF SIDEWALL

- GENERAL NOTES**
- EXISTING LFG HEADER WAS OBTAINED FROM SCS CONSTRUCTION DRAWINGS, LAST UPDATED JULY 6, 2022.
 - THE APPROXIMATE SIDEWALL LOCATION BOUNDARY LINE WAS CREATED USING THE SURVEY LIMIT BOUNDARY LINE PROVIDED BY DRAPER ADEN ASSOCIATES, DATED JUNE 8, 2020, EDITED BASED ON A REVIEW OF TOPOGRAPHIC DATA.
 - THE LFG WELLHEADS SHOWN WITH A LARGER WELLHEAD ICON REPRESENT WELLS WHICH WERE DRILLED DURING THE MONTHS OF SEPTEMBER AND OCTOBER OF 2021, AND LATER CONNECTED IN NOVEMBER AND DECEMBER OF 2021. THESE WELLS HAVE NOT YET BEEN SURVEYED FOLLOWING THEIR INSTALLATION AND THEREFORE THE LOCATIONS SHOWN ARE BASED ON THE EXPANSION DESIGN DRAWINGS DATED AUGUST 13, 2021.
 - THE LOCATIONS OF THE EXISTING GAS PROBES AND EXISTING MANHOLES SHOWN ARE APPROXIMATE BASED ON DATA PROVIDED BY DRAPER ADEN ASSOCIATES. THE EXACT LOCATIONS OF THESE EXISTING WELLFIELD COMPONENTS MAY NEED IN-FIELD VERIFICATION.
 - THE LOCATIONS OF WELLS GW-16, GW-17, GW-19, GW-20, AND GW-21 WERE MEASURED USING MAPPING GRADE POSITIONING EQUIPMENT UTILIZING GEOGRAPHIC INFORMATION SYSTEM SOFTWARE.



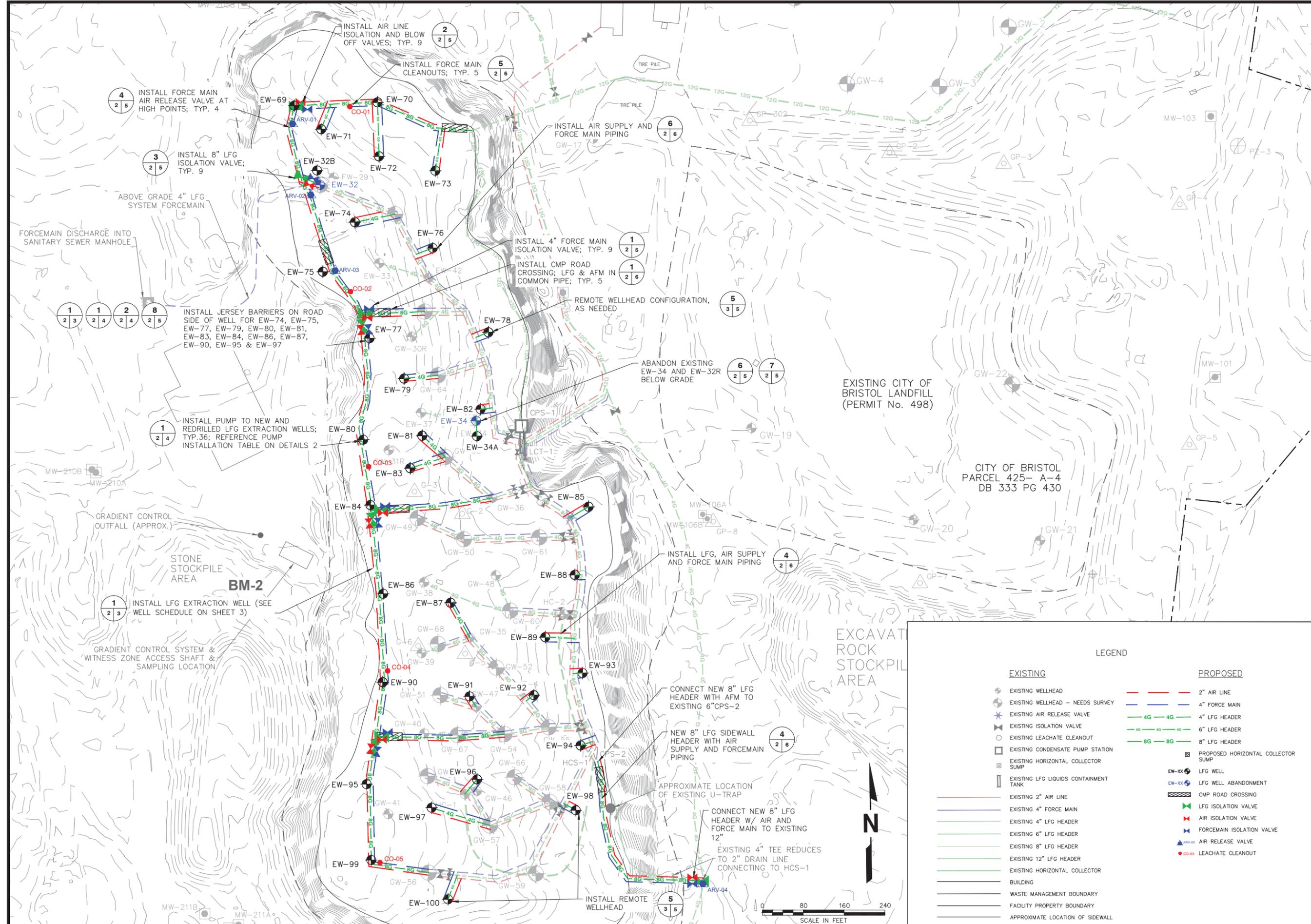
NO.	DATE	REVISION

SHEET TITLE: PROPOSED STAGE 1 LFG SYSTEM EXPANSION LAYOUT
 PROJECT TITLE: LFG COLLECTION SYSTEM - STAGE 1

CLIENT: CITY OF BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY
 2655 VOLLEY DRIVE
 BRISTOL, VA 24201

SCS ENGINEERS
 STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS, INC.
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CADD FILE: 12/9/2022
 DATE: 12/9/2022
 SCALE: AS SHOWN
 DRAWING NO. 2 of 6



LEGEND

EXISTING	PROPOSED

INSTALL AIR LINE ISOLATION AND BLOW OFF VALVES; TYP. 9

INSTALL FORCE MAIN CLEANOUTS; TYP. 5

INSTALL FORCE MAIN AIR RELEASE VALVE AT HIGH POINTS; TYP. 4

INSTALL 8" LFG ISOLATION VALVE; TYP. 9

ABOVE GRADE 4" LFG SYSTEM FORCEMAIN

FORCEMAIN DISCHARGE INTO SANITARY SEWER MANHOLE

INSTALL AIR SUPPLY AND FORCE MAIN PIPING

INSTALL 4" FORCE MAIN ISOLATION VALVE; TYP. 9

INSTALL CMP ROAD CROSSING; LFG & AFM IN COMMON PIPE; TYP. 5

REMOTE WELLHEAD CONFIGURATION, AS NEEDED

ABANDON EXISTING EW-34 AND EW-32R BELOW GRADE

INSTALL JERSEY BARRIERS ON ROAD SIDE OF WELL FOR EW-74, EW-75, EW-77, EW-79, EW-80, EW-81, EW-83, EW-84, EW-86, EW-87, EW-90, EW-95 & EW-97

INSTALL PUMP TO NEW AND REDRILLED LFG EXTRACTION WELLS; TYP. 36; REFERENCE PUMP INSTALLATION TABLE ON DETAILS 2

GRADIENT CONTROL OUTFALL (APPROX.)

STONE STOCKPILE AREA

BM-2

INSTALL LFG EXTRACTION WELL (SEE WELL SCHEDULE ON SHEET 3)

GRADIENT CONTROL SYSTEM & WITNESS ZONE ACCESS SHAFT & SAMPLING LOCATION

INSTALL LFG, AIR SUPPLY AND FORCE MAIN PIPING

EXISTING CITY OF BRISTOL LANDFILL (PERMIT No. 498)

CITY OF BRISTOL PARCEL 425-A-4 DB 333 PG 430

EXCAVATOR ROCK STOCKPILE AREA

CONNECT NEW 8" LFG HEADER WITH AFM TO EXISTING 6" CPS-2

NEW 8" LFG SIDEWALL HEADER WITH AIR SUPPLY AND FORCEMAIN PIPING

CONNECT NEW 8" LFG HEADER W/ AIR AND FORCE MAIN TO EXISTING 12"

EXISTING 4" TEE REDUCES TO 2" DRAIN LINE CONNECTING TO HCS-1

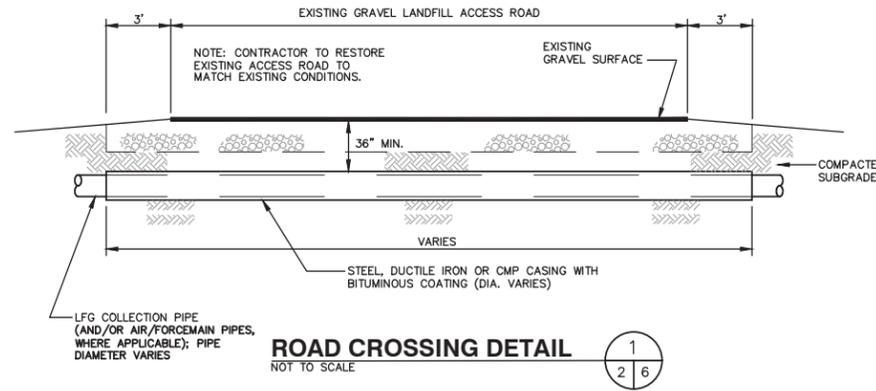
INSTALL REMOTE WELLHEAD

GENERAL NOTES:

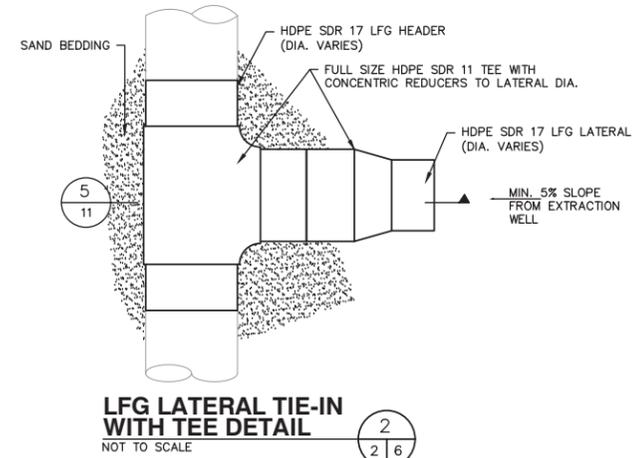
1. THE WORK TO BE PERFORMED INVOLVES, BUT IS NOT LIMITED TO, THE CONSTRUCTION AND INSTALLATION OF THE LANDFILL GAS COLLECTION SYSTEM DEPICTED ON THESE CONSTRUCTION DRAWINGS. WORK SHALL INCLUDE THE INSTALLATION OF LANDFILL GAS EXTRACTION WELLS, WELLHEADS, HEADER AND LATERAL PIPING, VALVES, PUMPS, AND ANY OTHER ITEMS NEEDED TO MAKE THE SYSTEM EXPANSION CONNECT TO THE EXISTING LFG SYSTEM AND OPERATE PROPERLY.
2. CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, TESTING, TOOLS, EQUIPMENT, SUPERVISION AND INSTALLATION SERVICES REQUIRED TO CONSTRUCT THE LANDFILL GAS COLLECTION SYSTEM DEPICTED ON THESE CONSTRUCTION DRAWINGS.
3. CONTRACTOR SHALL RECOGNIZE THAT THE LANDFILL IS UNDERGOING REMEDIAL ACTIVITIES, AND SHALL COORDINATE HIS ACTIVITIES WITH OWNER AND OTHER CONTRACTORS SO AS TO NOT HINDER OR OBSTRUCT THE NORMAL WORKING ACTIVITIES ASSOCIATED WITH CORRECTIVE ACTIONS.
4. CONTRACTOR SHALL MINIMIZE LAND DISTURBANCE RELATED TO CONSTRUCTION ACTIVITIES TO THE GREATEST EXTENT POSSIBLE. CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS INSIDE AND OUTSIDE THE LANDFILL FOOTPRINT TO ITS ORIGINAL CONDITION.
5. CONTRACTOR SHALL PROPERLY STORE ALL MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS IN AREAS DESIGNATED BY OWNER.
6. ALL LANDFILL WASTE ENCOUNTERED DURING EXCAVATION ACTIVITIES SHALL BE REMOVED AND HAULED BY THE CONTRACTOR TO THE DESIGNATED AREA FOR WASTE RELOCATION. ALL EXCAVATED TRENCHES MUST BE COVERED AT THE END OF EACH WORKING DAY. NO EXPOSED REFUSE WILL REMAIN OVERNIGHT.
7. THE CONTRACTOR SHALL PREPARE A WRITTEN SITE-SPECIFIC HEALTH AND SAFETY PLAN THAT ADDRESSES THE POTENTIAL HAZARDS ASSOCIATED WITH LANDFILL GAS CONSTRUCTION ACTIVITIES AT SOLID WASTE MANAGEMENT FACILITIES AND IMPLEMENT THE PROCEDURES AND PROTOCOLS NECESSARY TO MAINTAIN A SAFE WORK ENVIRONMENT.
8. THE CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION AND SEDIMENT CONTROLS DOWNSTREAM OF THE DISTURBED AREAS AS REQUIRED BY THE FACILITY'S EROSION AND SEDIMENT CONTROL PLAN.

PIPE REQUIREMENTS:

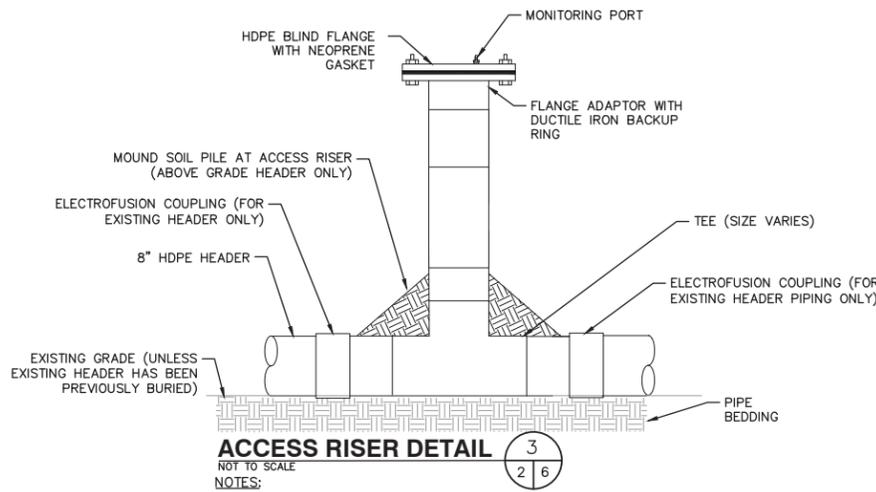
1. ALL LFG SYSTEM HEADER AND LATERAL PIPING SHALL BE HIGH DENSITY POLYETHYLENE (HDPE), SDR-17, PE 4710, UNLESS OTHERWISE NOTED.
2. ALL PNEUMATIC SUPPLY PIPING SHALL BE HDPE SDR-9, PE4710.
3. ALL LIQUID FORCEMAIN PIPING SHALL BE HDPE SDR-11, PE4710.
4. FLANGES FOR THE HDPE SHALL BE CONVOLUTED DUCTILE IRON BACK-UP RINGS FINISHED WITH AN IRON OXIDE PRIMER. FLANGE NUTS AND BOLTS SHALL BE GALVANIZED STEEL AND COATED WITH ANTI-SIEZE COMPOUND. BURIED FLANGES SHALL BE WRAPPED IN 5-MIL POLYETHYLENE SHEETING PRIOR TO BACKFILLING TO HELP PREVENT CORROSION.
5. PIPE INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF ASTM D-2321, PPI TR-31/9-79, AND THE MANUFACTURER'S RECOMMENDATIONS.
6. ALL HEADER AND LATERAL PIPING SHALL BE SUBJECTED TO AN AIR TEST TO DETECT ANY LEAKS. TESTING SHALL BE CONDUCTED WITH THE PIPE IN THE TRENCHES. CONTRACTOR SHALL TEST THE PIPE AT 5 PSIG FOR A PERIOD OF NOT LESS THAN 1 HOUR. PRESSURE DROP DURING THE TEST SHALL NOT EXCEED ONE-PERCENT OF THE TESTING PRESSURE.
7. ALL PNEUMATIC SUPPLY AND LIQUID FORCEMAIN PIPING SHALL BE SUBJECTED TO AN AIR TEST TO DETECT ANY LEAKS. TESTING SHALL BE CONDUCTED WITH THE PIPE IN THE TRENCHES. CONTRACTOR SHALL TEST THE PIPE AT 10 PSIG FOR A PERIOD OF NOT LESS THAN 1 HOUR. PRESSURE DROP DURING THE TEST SHALL NOT EXCEED TEN-PERCENT OF THE TESTING PRESSURE.
8. ALL HEADER AND LATERAL PIPING SHALL BE INSTALLED AT A 5 PERCENT MINIMUM GRADE, UNLESS APPROVED BY ENGINEER.
9. LFG WELLHEADS FOR NEW VERTICAL WELLS SHALL BE 2" OR 3" QED QUICK CHANGE ORIFICE WELLHEAD.



ROAD CROSSING DETAIL
NOT TO SCALE

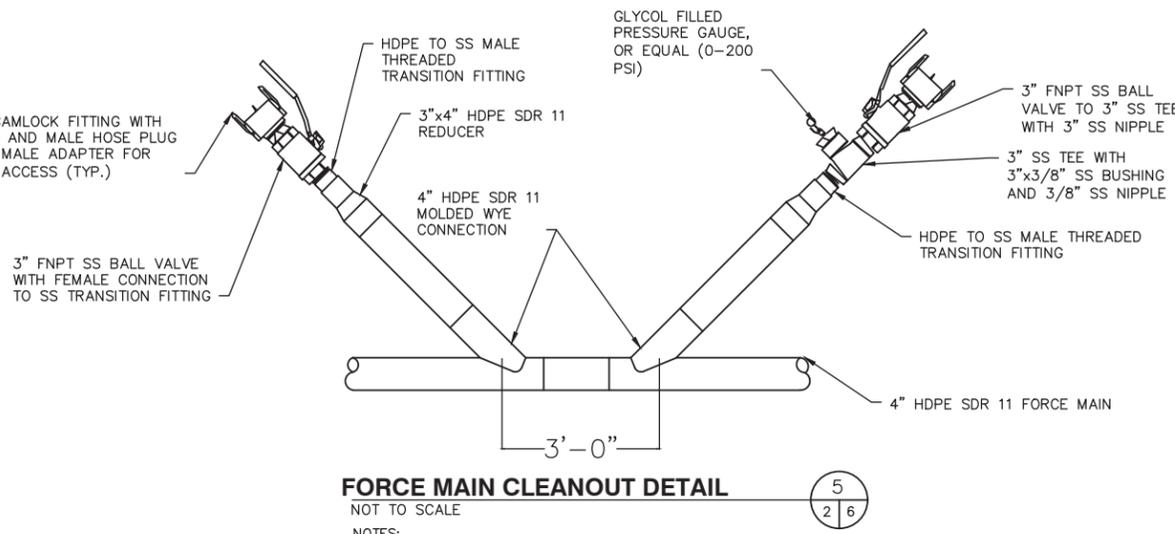


LFG LATERAL TIE-IN WITH TEE DETAIL
NOT TO SCALE



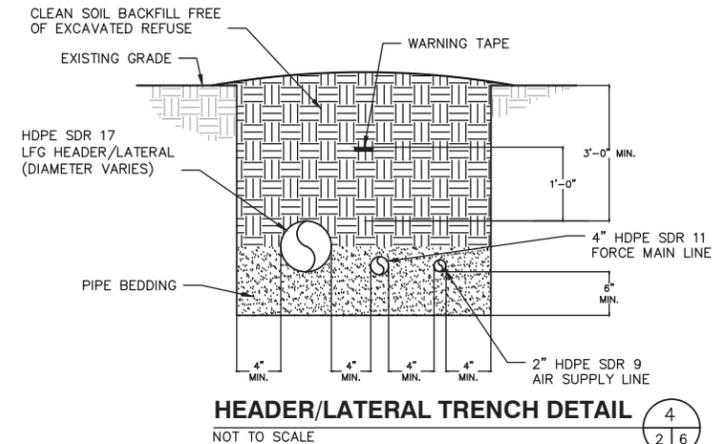
ACCESS RISER DETAIL
NOT TO SCALE

- NOTES:**
1. CONTRACTOR SHALL INSTALL 10 ACCESS RISERS ON 8 HEADER PIPE AT INTERSECTIONS AND OTHER CRITICAL JUNCTIONS, AS DIRECTED BY ENGINEER. APPROXIMATELY 7 OF THESE WILL BE AFFILIATED WITH NEW HEADER BEING INSTALLED BY CONTRACTOR AND THE REMAINING 3 WILL BE AFFILIATED WITH EXISTING HEADER PIPING



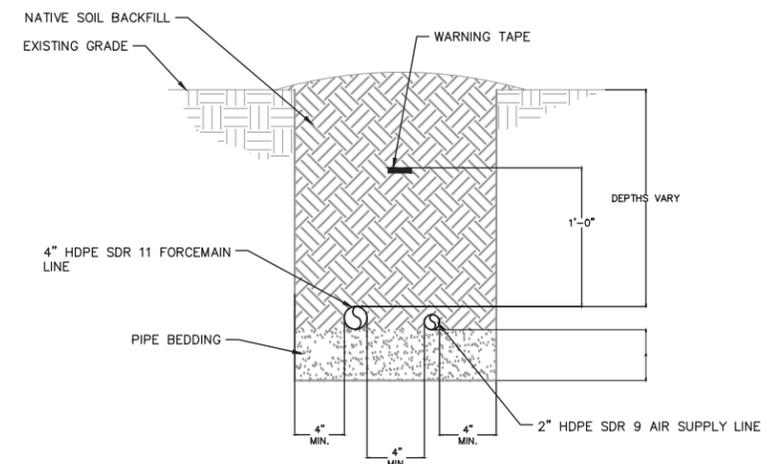
FORCE MAIN CLEANOUT DETAIL
NOT TO SCALE

- NOTES:**
1. IF CLEANOUT IS INSTALLED GREATER THAN 2 FEET ABOVE GRADE, INSTALL 4"x4" TREATED TIMBER POSTS AND SECURE PIPING AND FITTINGS TO POSTS WITH WORM GEAR CLAMPS.



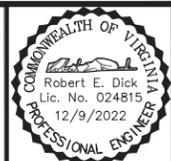
HEADER/LATERAL TRENCH DETAIL
NOT TO SCALE

- NOTES:**
1. WARNING TAPE SHALL BE MIN. 3" WIDE AND IMPRINTED WITH "GAS LINE BURIED BELOW".
 2. ALL HEADER AND LATERAL SHALL BE INSTALLED AT MIN. 3- FEET BURIAL DEPTH AND 5% SLOPE UNLESS APPROVED IN ADVANCE BY ENGINEER.
 3. THE NUMBER AND TYPES OF PIPES INSTALLED IN THE TRENCH MAY VARY. SEE SITE PLAN.



DRAIN PIPING TRENCH DETAIL
NOT TO SCALE

- NOTES:**
1. WARNING TAPE SHALL BE MIN. 3" WIDE AND IMPRINTED WITH "GAS LINE BURIED BELOW".
 2. ALL AIR/FM PIPING SHALL BE INSTALLED AT MINIMUM 3- FEET BURIAL DEPTH.



DATE	
REVISION	
NO.	

SHEET TITLE	DETAIL 2
PROJECT TITLE	LFG COLLECTION SYSTEM EXPANSION - STAGE 1

CLIENT
CITY OF BRISTOL INTEGRATED WASTE MANAGEMENT FACILITY
 BRISTOL, VA 24201
 2125 SHAKESVILLE RD

SCS ENGINEERS	0/A REV BY: RED
STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS, INC.	APP. BY: DBK
18521 MIDLOTHIAN TRPK - MIDLOTHIAN, VA 23113	CHK. BY: SDR
PH. (804) 378-1400 FAX. (804) 378-7433	DES. BY: SDR
PROJ. NO. 02218208.14	

CADD FILE:	
DATE:	12/9/22
SCALE:	
DRAWING NO.	