

ADDENDUM NO. 1**LANDFILL GAS COLLECTION SYSTEM EXPANSION: STAGE 1****IFB# SW-23-012****BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY
BRISTOL, VIRGINIA****January 10, 2023**

Prospective Bidders are hereby advised of the following revisions to the Bid Documents for the subject Project:

1. Item 3.1 of Section 00 41 13 Bid Form has been modified to revise dimensions for certain Bid Items (Nos. 3, 4, 33, and 34) and to introduce additional Base Bid Items (Nos. 28 and 29) and Alternate Bid Items (Nos. 35, 36, and 37).
2. Item 3.1 of Section 01 22 00 Measurement and Payment has been modified to reflect the changes to Item 3.1 of the Bid Form noted above.
3. Article M has been added to Item 6.1 of Section 00 41 13 Bid Form requiring the Bidder to disclose the maximum depth capabilities of drill rig equipment.

This Addendum must be identified in Item No. 5.3 of Section 00 41 13 Bid Form.

The deadline for receiving sealed Bids, as stated in Section 00 11 10 Invitation for Bids and Item No. 5 in Section 00 21 10 Instructions to Bidders, has been changed to 2:00 pm on Friday, January 20, 2023.

Please note that a Response to Bidders Questions No. 2 is available from the City and/or SCS Engineers upon request and is being distributed to participants in the Pre-Bid Meeting and other Potential Bidders.



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 140 feet deep)	2,100	VF	\$	\$
4	12-inch CPVC LFG Extraction Well w/ 36-inch Borehole (greater than 140 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	\$	\$
28	Drilling Subcontractor Mobilization/Demobilization	1	LS	\$	\$
29	Health and Safety Planning and Accommodations	1	LS	\$	\$

B. Total Bid Price

Total Base Bid Price (Items #1 through #29)	\$
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C. Alternate Bid Items – Unit Price

#	Description	Estimated Quantity	Unit	Unit Price	Subtotal
Alternate Bid Items					
30	Introduction of Drilling Polymer into Borehole	1	Gallon	\$	\$
31	Hourly Drilling Rate for Drill Rig w/ Crew using Muck Bucket	1	Hour	\$	\$
32	Sonic Drill Rig Mobilization/Demobilization	1	Lump Sum	\$	\$
33	4-inch CPVC LFG Extraction Well w/ 12-inch Borehole (less than or equal to 100 feet deep)	1,200	VF	\$	\$
34	4-inch CPVC LFG Extraction Well w/ 10-inch Borehole (greater than 100 feet deep)	400	VF	\$	\$
35	Hourly Standby/"Slow Drilling" Rate for Conventional Drill Rig	1	Hour	\$	\$
36	Hourly Standby/"Slow Drilling" Rate for Sonic Drill Rig	1	Hour	\$	\$
37	Incremental Cost to Substitute Type 304 SCH 10 Stainless Steel Perforated/Solid Well Riser Pipe In-Lieu of CPVC				
	37a. 4-inch	1	VF	\$	\$
	37b. 8-inch	1	VF	\$	\$
	37c. 12-inch	1	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.
- M. Independent of site-specific subsurface conditions (such as liquids, pressure, heat, saturated waste, etc.), the Conventional Drill Rig (36-inch bucket auger) equipment mobilized to the site will have capabilities to achieve a maximum depth of [REDACTED] feet belowgrade and the Sonic Drill Rig (10-inch/12-inch tool head) equipment mobilized to the site will have capabilities to achieve a maximum depth of [REDACTED] feet belowgrade.

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 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 140 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. Item No. 28: Drilling Subcontractor 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 related to Drilling Subcontractor Mobilization/demobilization 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 Drilling Subcontractor mobilization is completed. However, the remainder of the contract lump sum price shall not be paid until Drilling Subcontractor demobilization is completed.

- Q. Item No. 29: Health & Safety Planning and Accommodation
1. Measurement. The Work required for this item will not be measured for payment.
 2. Payment. Payment for Health and Safety Planning and Accommodations shall be made at the Lump Sum Price, which price and payment shall be full compensation for furnishing all labor, equipment, and incidentals required to provide a Health and Safety Plan; safe work procedures; personal protective equipment; laboratory testing; field testing equipment; safety meetings; safety training; and all other construction items complete and in-place. The cost of maintaining these controls for the duration of the project should be included in the Lump Sum Price.
- R. Alternate Bid Item No. 30: 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.
- S. Alternate Bid Item No. 31: 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.

- T. Alternate Bid Item No. 32: 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.
- U. Alternate Bid Item Nos. 33 and 34: Landfill Gas Extraction Wells – 4” 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 100 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.
- V. Alternate Bid Item No. 35: Hourly Standby/”Slow Drilling” Rate - Conventional Drill Rig
1. Measurement. The time during which the CONTRACTOR is required to standby due to circumstances directly related to the OWNER or ENGINEER or is instructed to continue with drilling despite the lack of borehole advancement and “slow drilling pace”, as defined in the Specifications Section 33 23 10, shall be verified and recorded by the ENGINEER.

2. Payment. Payment for this item will be at the contract unit price for time that circumstances necessitate standby attributed to OWNER or ENGINEER or continuation of drilling despite “slow drilling” conditions.
- W. Alternate Bid Item No. 36: Hourly Standby/”Slow Drilling” Rate - Sonic Drill Rig
1. Measurement. The time during which the CONTRACTOR is required to standby due to circumstances directly related to the OWNER or ENGINEER or is instructed to continue with drilling despite the lack of borehole advancement and “slow drilling pace”, as defined in the Specifications Section 33 23 10, shall be verified and recorded by the ENGINEER.
 2. Payment. Payment for this item will be at the contract unit price for time that circumstances necessitate standby attributed to OWNER or ENGINEER or continuation of drilling despite “slow drilling” conditions.
- X. Alternate Bid Item No. 37: Incremental cost to substitute Type 304 SCH10 Stainless Steel Perforated/Solid Well Riser Pipe In-lieu of CPVC
1. Measurement. Stainless steel pipe installed in landfill gas wells in-lieu of CPVC 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 representing an incremental additional cost per foot installed instead of the specified CPVC pipe, depending on pipe diameter. Payment will include all piping (slotted and solid-walled), 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

RESPONSE TO BIDDERS QUESTIONS NO. 2**LANDFILL GAS COLLECTION SYSTEM EXPANSION: STAGE 1****IFB# SW-23-012****BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY
BRISTOL, VIRGINIA****January 10, 2023**

Following is a list of questions pertaining to the subject project that were prepared and submitted by prospective Bidders by the January 5, 2023 submission deadline. Questions are in bold type with the Engineer's response following each question in italics.

- 1. What are the anticipated temperatures for the wells that are scheduled to receive the Lorentz pumps so that we can determine the appropriate Class of pump?**

The exact in-situ "downhole" temperatures within the waste matrix throughout the Quarry Landfill have not been measured and recorded at this time. Bidders are instructed to assume a temperature of 200 degrees F for purposes of selecting an appropriate Class of pump.

- 2. What is the elevation that the balefill operations ceased at the landfill?**

Neither the city nor SCS have definitive records specifying an exact elevation that balefill operations ceased. According to discussions with long-serving site personnel, it is believed that the Quarry Landfill placed baled waste to a depth of approximately 80 to 100 feet above the bottom liner system.

- 3. Please provide the drilling logs for the previous gas wells that were installed.**

See attached.

- 4. Confirm that pipe bedding and backfill is to come from onsite sources.**

The pipe bedding and soil material that is suitable for backfill on this Project is available from the City's on-site stockpiles.

- 5. We have reached out to several sonic drillers and have been informed by all of them that they do not typically drill past 100' deep for 12" diameter and that it will be impossible to reach the required depths at this site via sonic drilling. Can this portion of the work be removed from the scope of work?**

The Bid Form has been revised to acknowledge that a 12-inch borehole can be advanced only to a depth of 100 feet belowgrade, at which point reducing to a 10-inch borehole will be required to achieve borehole depths greater than 100 feet.

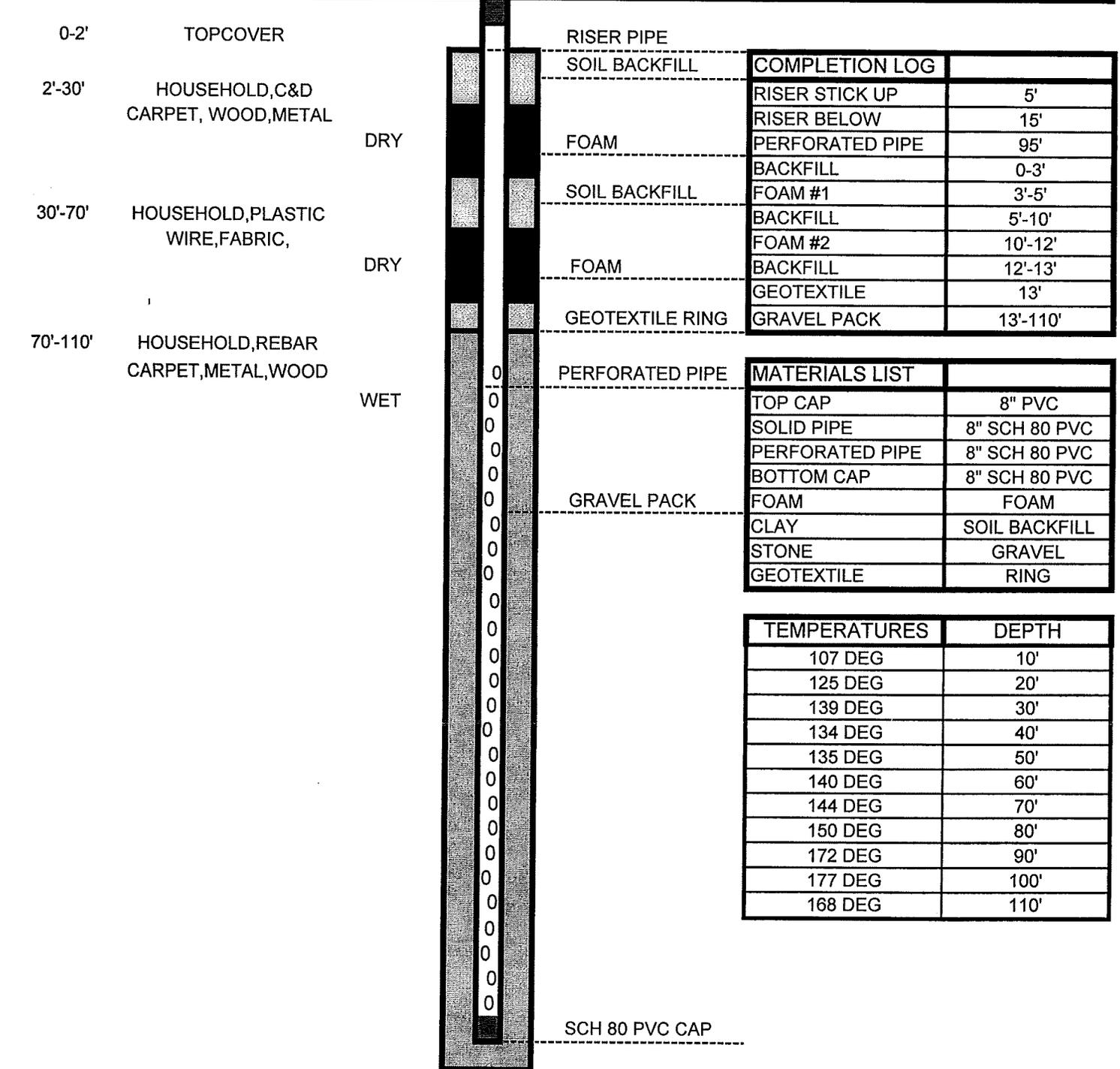


Recovery Drilling Services

P.O. BOX 53 DUDLEY MA. 01571

508-943-1182

Site Name: BRISTOL VA LANDFILL	Well Number: GW-46
Location: BRISTOL VIRGINIA	Coordinates Northing: 3398004.18
Start Date: 10/4/2016	Easting: 10412351.82
Completed: 10/4/2016	Surface Elevation: 1762
Contractor:	Boring Diameter: 36"
Rig: SOILMEC SR30	Pipe Material Diameter: 8" SCH. 80 PVC
Inspector: FRANK TERRY / BEL	Total Depth Drilled: 110'
Driller: COREY	Completion: RECOVERY DRILLING

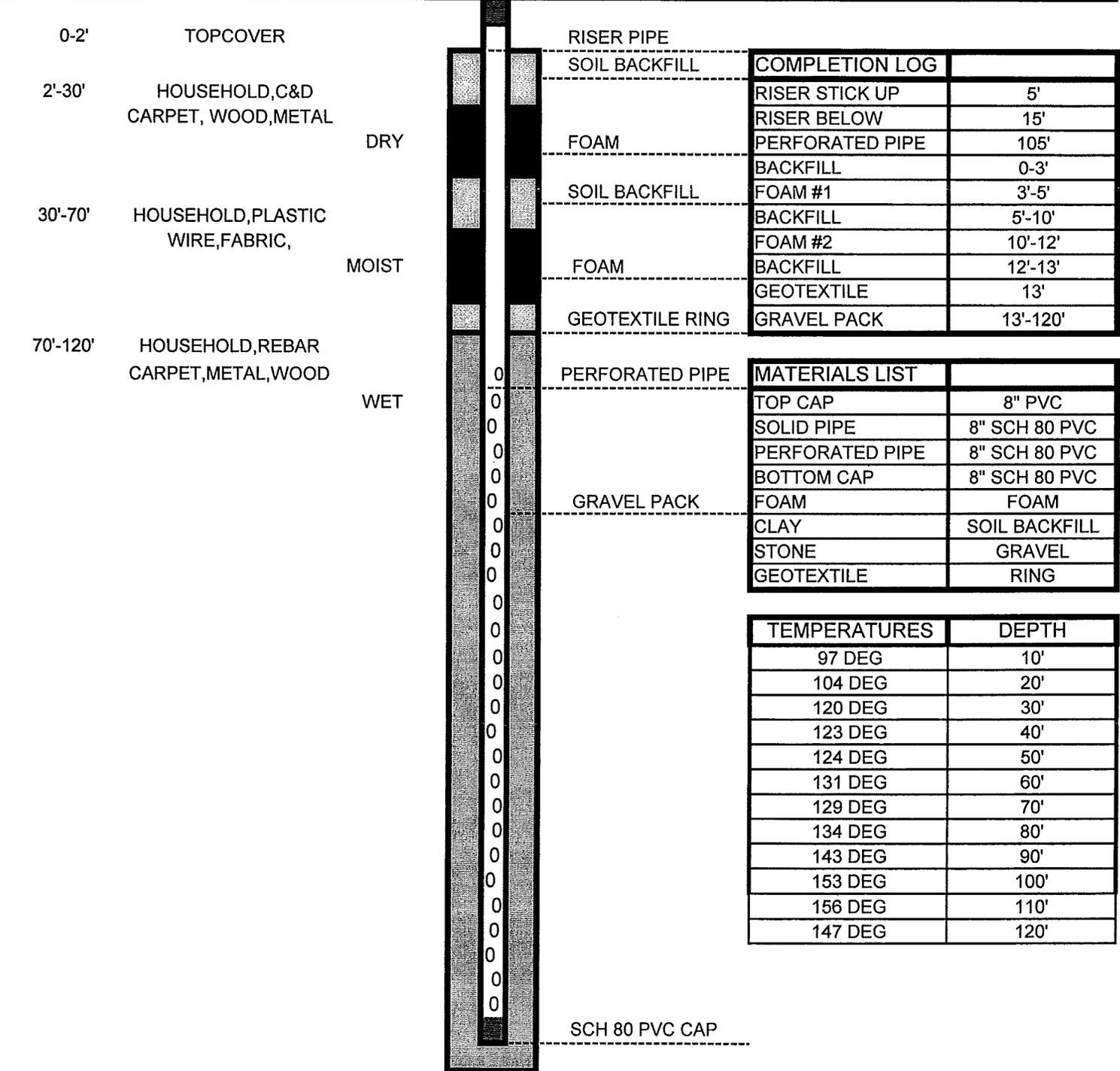


Recovery Drilling Services

P.O. BOX 53 DUDLEY MA. 01571

508-943-1182

Site Name: BRISTOL VA LANDFILL	Well Number: GW-47
Location : BRISTOL VIRGINIA	Coordinates Northing: 3398154.72
Start Date: 10/5/2016	Easting: 10412342.87
Completed: 10/5/2016	Surface Elevation: 1782.10'
Contractor:	Boring Diameter: 36"
Rig: SOILMEC SR30	Pipe Material Diameter: 8" SCH. 80 PVC
Inspector: FRANK TERRY / BEL	Total Depth Drilled: 120'
Driller: COREY	Completion: RECOVERY DRILLING

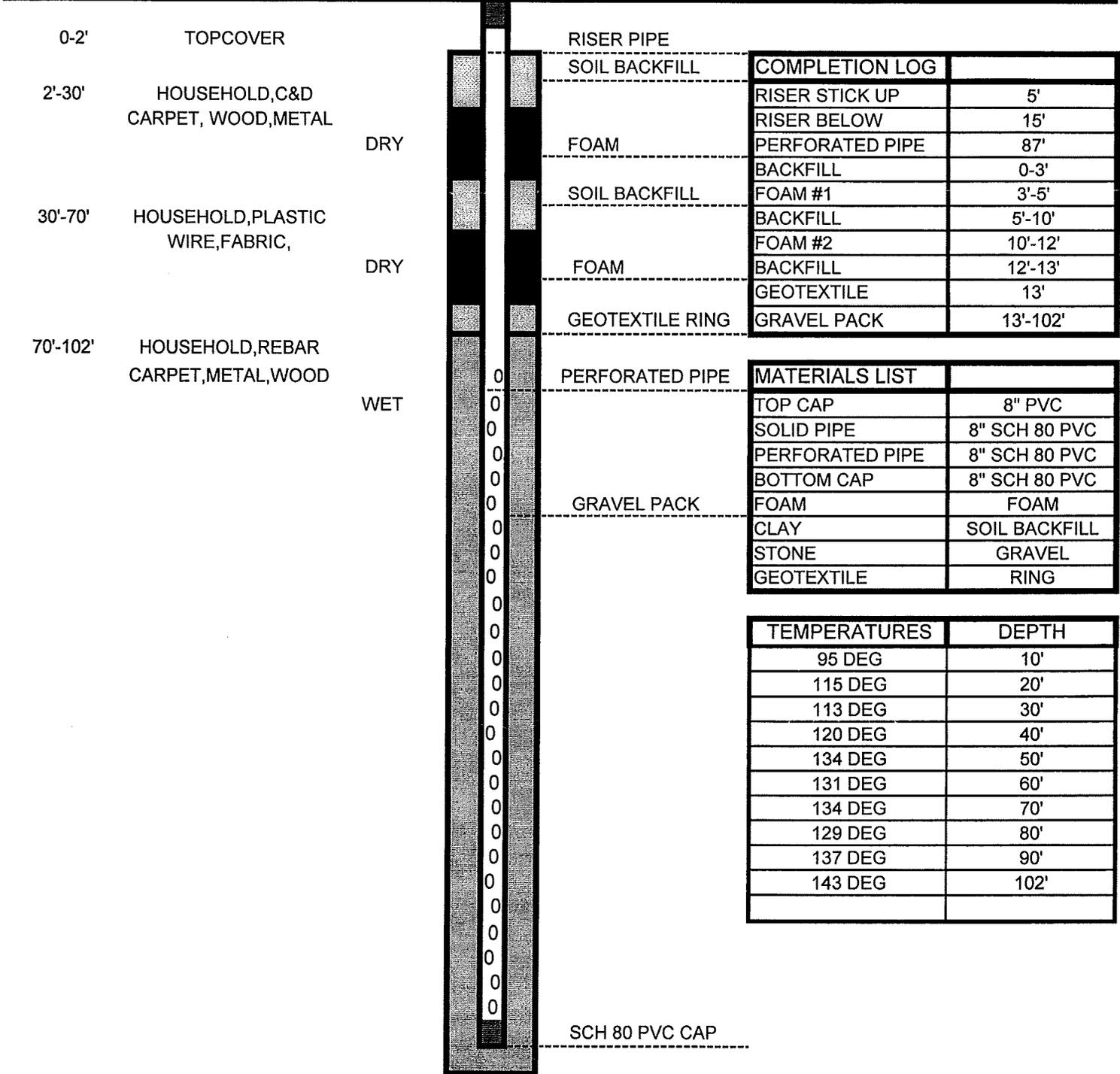


Recovery Drilling Services

P.O. BOX 53 DUDLEY MA. 01571

508-943-1182

Site Name: BRISTOL VA LANDFILL	Well Number: GW-35
Location : BRISTOL VIRGINIA	Coordinates Northing: 33987291.36
Start Date: 10/7/2016	Easting: 10412331.6
Completed: 10/7/2016	Surface Elevation: 1787.20'
Contractor:	Boring Diameter: 36"
Rig: SOILMEC SR30	Pipe Material Diameter: 8" SCH. 80 PVC
Inspector: FRANK TERRY / BEL	Total Depth Drilled: 102'
Driller: COREY	Completion: RECOVERY DRILLING

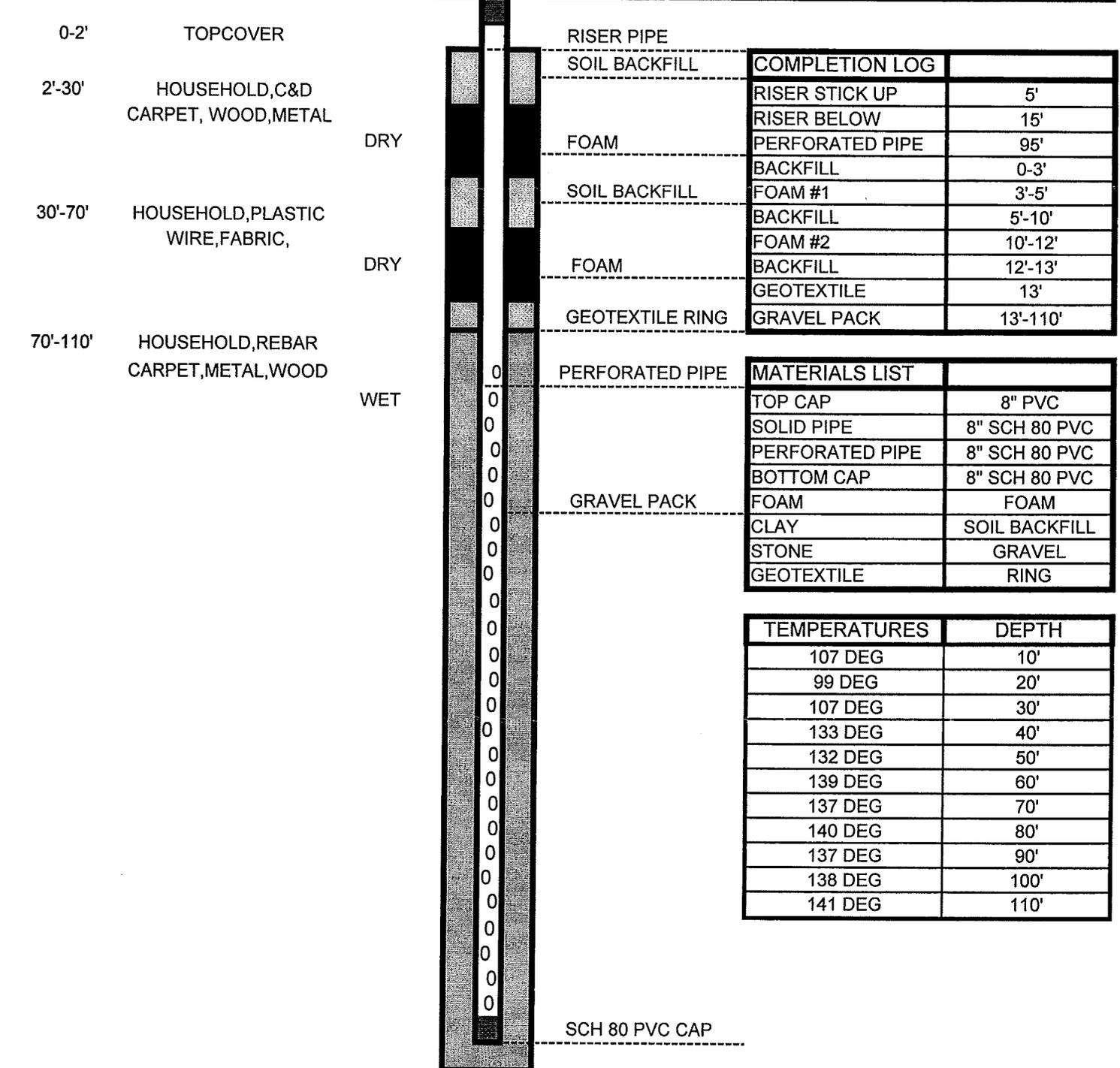


Recovery Drilling Services

P.O. BOX 53 DUDLEY MA. 01571

508-943-1182

Site Name: BRISTOL VA LANDFILL	Well Number: GW-48
Location : BRISTOL VIRGINIA	Coordinates Northing: 3398425.63
Start Date: 10/7/2016	Easting: 10412388.81
Completed: 10/7/2016	Surface Elevation: 1790'
Contractor:	Boring Diameter: 36"
Rig: SOILMEC SR30	Pipe Material Diameter: 8" SCH. 80 PVC
Inspector: FRANK TERRY / BEL	Total Depth Drilled: 110'
Driller: COREY	Completion: RECOVERY DRILLING



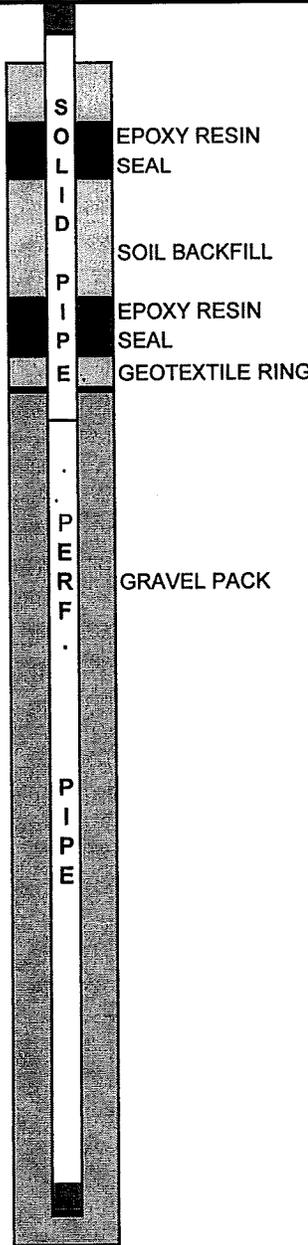
Recovery Drilling Services

P.O. BOX 53 DUDLEY MA. 01571

508-943-1182

Site Name:	BRISTOL CITY LANDFILL	Well Number:	EW-32
Location :	BRISTOL,VA.	Cordinates	N3399328.57
Start Date:	7/29/2016		E1042111.50
Completed:	7/29/2016	Surace Elavation:	
Contractor:	RECOVERY DRILLING	Boring Diameter:	36"
Rig:	SOILMEC SR30	Pipe Material Diameter	8" SCH80 PVC
Inspector:	SPENCER-SMITH & GARDNER ENG..	Total Depth Drilled:	70'
Driller:	JEFF STONE	Completion:	B&M

depth	descriptions	moisture content
0-1'		MOIST
1'-28'	TOP COVER SOIL HH,WOOD,PLASTIC CARPET	MOIST
28'-70'	HH,WOOD,PLASTIC	WET
70'	REFUSAL POSSIBLE BLASTING MATS	



RISER STICK UP	4'
RISER BELOW	16'
PERF PIPE	53'
BACKFILL	0-3'
SEAL#1	3'-5'
BACKFILL	5'-8'
SEAL#2	8'-10'
BACKFILL	10'-13'
GEOTEXTILE	X
GRAVEL PACK	13'-70'

TOP CAP	8" SCH40 PVC
SOLID PIPE	8" SCH 80 PVC
PERF PIPE	8" SCH 80 PVC
BOTTOM CAP	8" SCH 80 PVC
SEALS	EPOXY RESIN
BACKFILL	SITE MATERIAL
STONE	VDOT#3
GEOTEXTILE	X

DEPTH-TEMP	DEPTH-TEMP
5'-94	
10'-102	
20'-111	
30'-111	
40'-115	
50'-124	
60'-124	
70'-125	

70'

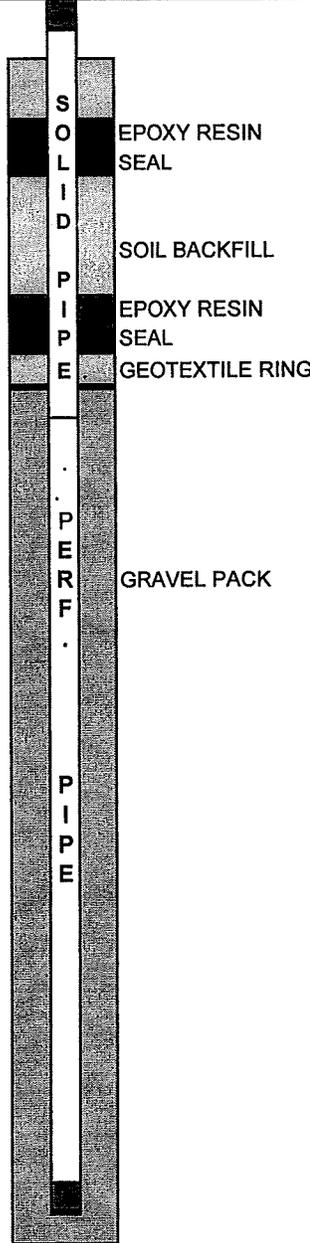
Recovery Drilling Services

P.O. BOX 53 DUDLEY MA. 01571

508-943-1182

Site Name:	BRISTOL CITY LANDFILL	Well Number:	EW-33
Location :	BRISTOL,VA.	Cordinates	N3399035.09
Start Date:	7/28/2016		E10412160.44
Completed:	7/28/2016	Surace Elavation:	1799.25
Contractor:	RECOVERY DRILLING	Boring Diameter:	36"
Rig:	SOILMEC SR30	Pipe Material Diameter	8"SCH80 PVC
Inspector:	SPENCER-SMITH & GARDNER ENG..	Total Depth Drilled:	100'
Driller:	JEFF STONE	Completion:	B&M

depth	descriptions	moisture content
0-14'	HH,WOOD,PLASTIC RUBBER STRIPS	MOIST
14'-100'	HH,WOOD,PLASTIC CARPET	MOIST



RISER STICK UP	4'
RISER BELOW	16'
PERF PIPE	84'
BACKFILL	0-3'
SEAL#1	3'-5'
BACKFILL	5'-8'
SEAL#2	8'-10'
BACKFILL	10'-13'
GEOTEXTILE	X
GRAVEL PACK	13'-100'

TOP CAP	8"SCH40 PVC
SOLID PIPE	8"SCH 80 PVC
PERF PIPE	8"SCH 80 PVC
BOTTOM CAP	8"SCH 80 PVC
SEALS	EPOXY RESIN
BACKFILL	SITE MATERIAL
STONE	VDOT#3
GEOTEXTILE	X

DEPTH-TEMP	DEPTH-TEMP
5'-94	80'-135
10'-112	90'-141
20'-125	100'-138
30'-130	
40'-133	
50'-135	
60'-133	
70'-148	

100'

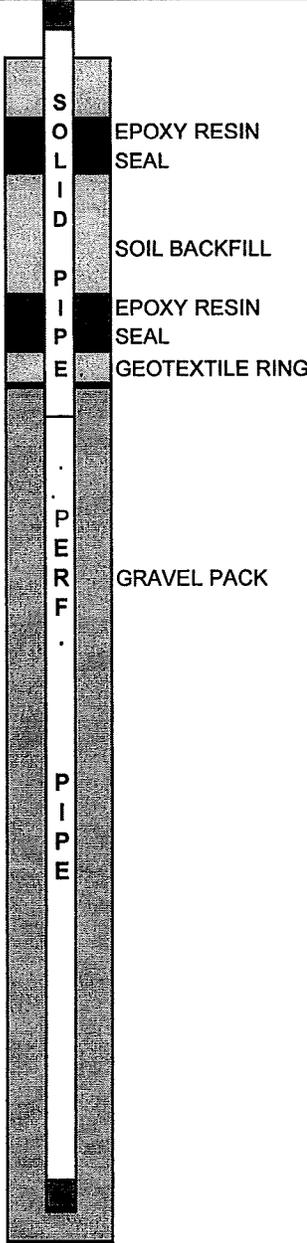
Recovery Drilling Services

P.O. BOX 53 DUDLEY MA. 01571

508-943-1182

Site Name:	BRISTOL CITY LANDFILL	Well Number:	EW-34
Location :	BRISTOL,VA.	Cordinates	N3398727.17
Start Date:	7/30/2016		E10412350.21
Completed:	7/30/2016	Surace Elavation:	1784.55
Contractor:	RECOVERY DRILLING	Boring Diameter:	36"
Rig:	SOILMEC SR30	Pipe Material Diameter	8"SCH80 PVC
Inspector:	SPENCER-SMITH & GARDNER ENG..	Total Depth Drilled:	100'
Driller:	JEFF STONE	Completion:	B&M

depth	descriptions	moisture content
0-25'	HH.WOOD,PLASTIC CARPET	MOIST
25'-100'	HH,WOOD,PLASTIC	WET



RISER STICK UP	4'
RISER BELOW	16'
PERF PIPE	84
BACKFILL	0-3'
SEAL#1	3'-5'
BACKFILL	5'-8'
SEAL#2	8'-10'
BACKFILL	10'-13'
GEOTEXTILE	X
GRAVEL PACK	13'-100'

TOP CAP	8"SCH40 PVC
SOLID PIPE	8"SCH 80 PVC
PERF PIPE	8"SCH 80 PVC
BOTTOM CAP	8"SCH 80 PVC
SEALS	EPOXY RESIN
BACKFILL	SITE MATERIAL
STONE	VDOT#3
GEOTEXTILE	X

DEPTH-TEMP	DEPTH-TEMP
5'-96	80'-125
10'-94	90'131
20'-101	100'-125
30'-109	
40'-111	
50'-111	
60'-117	
70'-125	

100'

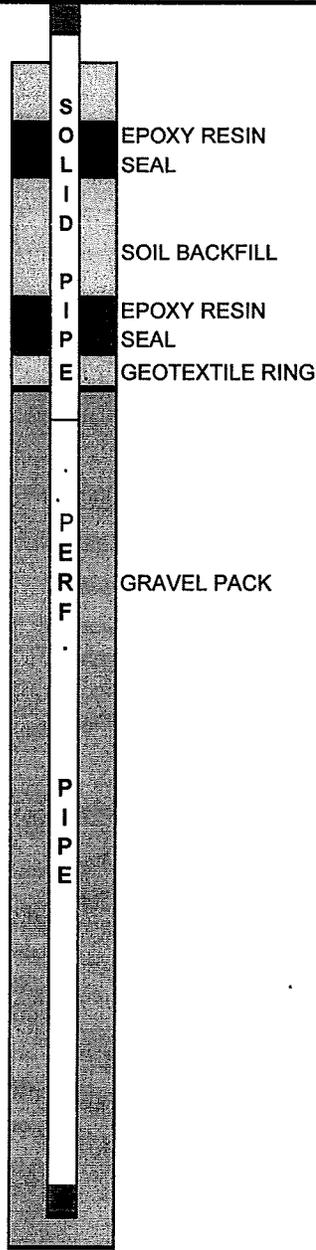
Recovery Drilling Services

P.O. BOX 53 DUDLEY MA. 01571

508-943-1182

Site Name:	BRISTOL CITY LANDFILL	Well Number:	EW-36
Location :	BRISTOL,VA.	Cordinates	N3398571.49
Start Date:	8/1/2016		E10412370.22
Completed:	8/1/2016	Surace Elavation:	1789.6
Contractor:	RECOVERY DRILLING	Boring Diameter:	36"
Rig:	SOILMEC SR30	Pipe Material Diameter	8"SCH80 PVC
Inspector:	SPENCER-SMITH & GARDNER ENG..	Total Depth Drilled:	100'
Driller:	JEFF STONE	Completion:	B&M

depth	descriptions	moisture content
0-41'	HH.WOOD,PLASTIC CARPET BED SPRINGS	MOIST
41'-100'	HH,WOOD,PLASTIC	WET



RISER STICK UP	4'
RISER BELOW	16'
PERF PIPE	84'
BACKFILL	0-3'
SEAL#1	3'-5'
BACKFILL	5'-8'
SEAL#2	8'-10'
BACKFILL	10'-13'
GEOTEXTILE	X
GRAVEL PACK	13'-100'

TOP CAP	8"SCH40 PVC
SOLID PIPE	8"SCH 80 PVC
PERF PIPE	8"SCH 80 PVC
BOTTOM CAP	8"SCH 80 PVC
SEALS	EPOXY RESIN
BACKFILL	SITE MATERIAL
STONE	VDOT#3
GEOTEXTILE	X

DEPTH-TEMP	DEPTH-TEMP
5'-105	80'-132
10'-104	90'-138
20'-102	100'-136
30'-109	
40'-119	
50'-122	
60'-129	
70'-128	

100'



DRILL LOG

Well No.: EW-37

Site: Bristol

Date Drilled: 08/24/17

Log Prepared By: Vince Coleman

Drilling Co.: CEC

Driller Name: Vince Coleman

Bench (Y/N): N

Weather: Fair

Northing: 3,398,743.18

Easting: 10,412,242.34

Surface Elevation: 1,560.7

Time Start Drilling: 8:30am

Time End Drilling: 4:30pm

Well Pipe Size: 8"

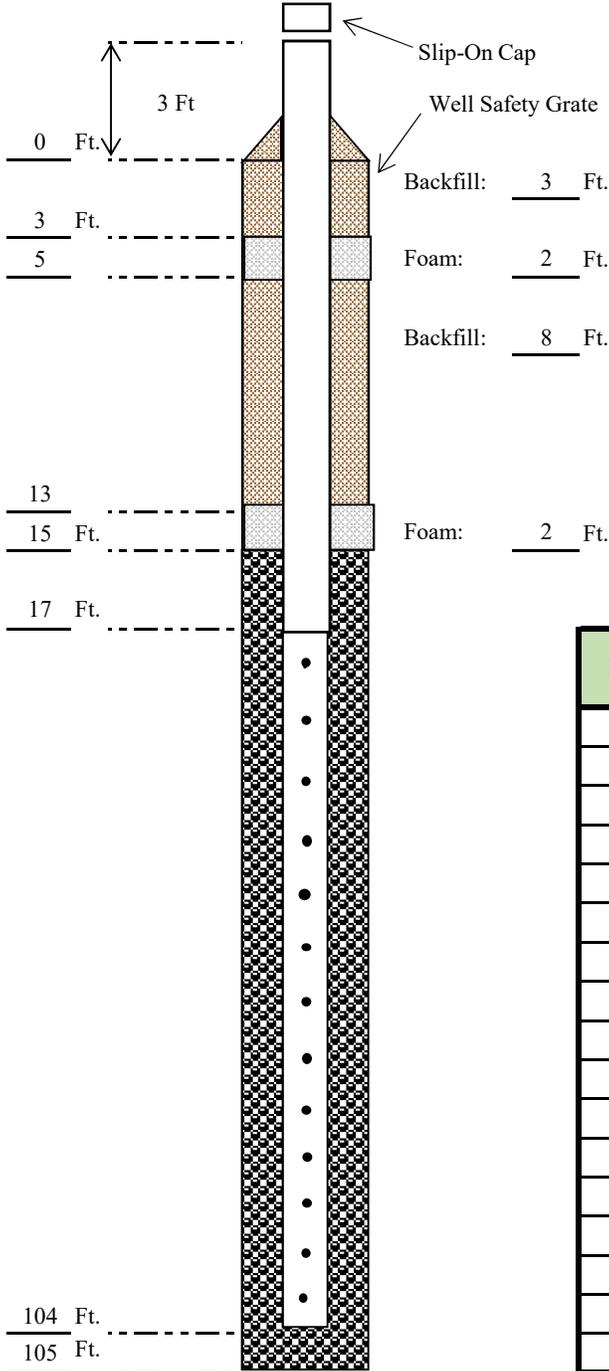
Well Material: PVC

Solid Pipe: 17' BG 3' AG

Perforated Pipe: 87'

Stone: 90'

Total Depth: 105'



Depth	Composition	Temp (F)	Degree of Decomposition	Amount of Moisture
10	MSW	85	LOW	DRY
20	MSW	119	MODERATE	MOIST
30	MSW	127	MODERATE	MOIST
40	MSW	107	MODERATE	MOIST
50	MSW	107	MODERATE	MOIST
60	MSW	135	MODERATE	MOIST
70	MSW	140	WELL	WET
80	MSW	140	WELL	WET
90	MSW	146	WELL	WET
100	MSW	146	WELL	WET

Comments:



DRILL LOG

Well No.: GW-30R

Site: Bristol

Date Drilled: 08/23/17

Log Prepared By: Vince Coleman

Drilling Co.: CEC

Driller Name: Vince Coleman

Bench (Y/N): N

Weather: Fair

Northing: 3,398,891.68

Easting: 10,412,224.44

Surface Elevation: 1,813.1

Time Start Drilling: 12:50pm

Time End Drilling: 7:00pm

Well Pipe Size: 8"

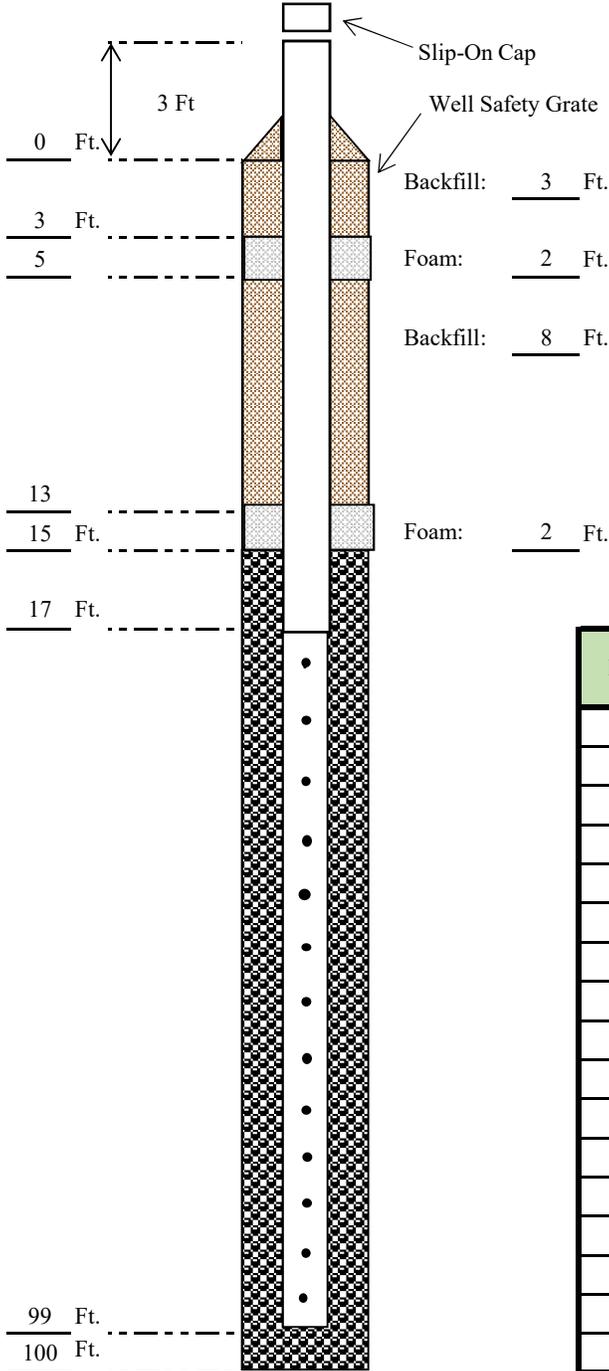
Well Material: PVC

Solid Pipe: 17' BG 3' AG

Perforated Pipe: 82'

Stone: 85'

Total Depth: 100'



Depth	Composition	Temp (F)	Degree of Decomposition	Amount of Moisture
10	MSW	103	LOW	DRY
20	MSW	101	MODERATE	WET
30	MSW	113	HIGH	WET
40	MSW	111	HIGH	WET
50	MSW	122	HIGH	WET
60	MSW	122	HIGH	WET
70	MSW	128	HIGH	WET
80	MSW	125	HIGH	WET
90	MSW	127	HIGH	WET
100	MSW	121	HIGH	WET

Comments:



DRILL LOG

Well No.: GW-31R

Site: Bristol

Date Drilled: 08/30/17

Log Prepared By: Vince Coleman

Drilling Co.: CEC

Driller Name: Vince Coleman

Bench (Y/N): N

Weather: Fair

Northing: 3,398,567.11

Easting: 10,412,235.06

Surface Elevation: 1,799.3

Time Start Drilling: 7:50am

Time End Drilling: 4:30pm

Well Pipe Size: 8"

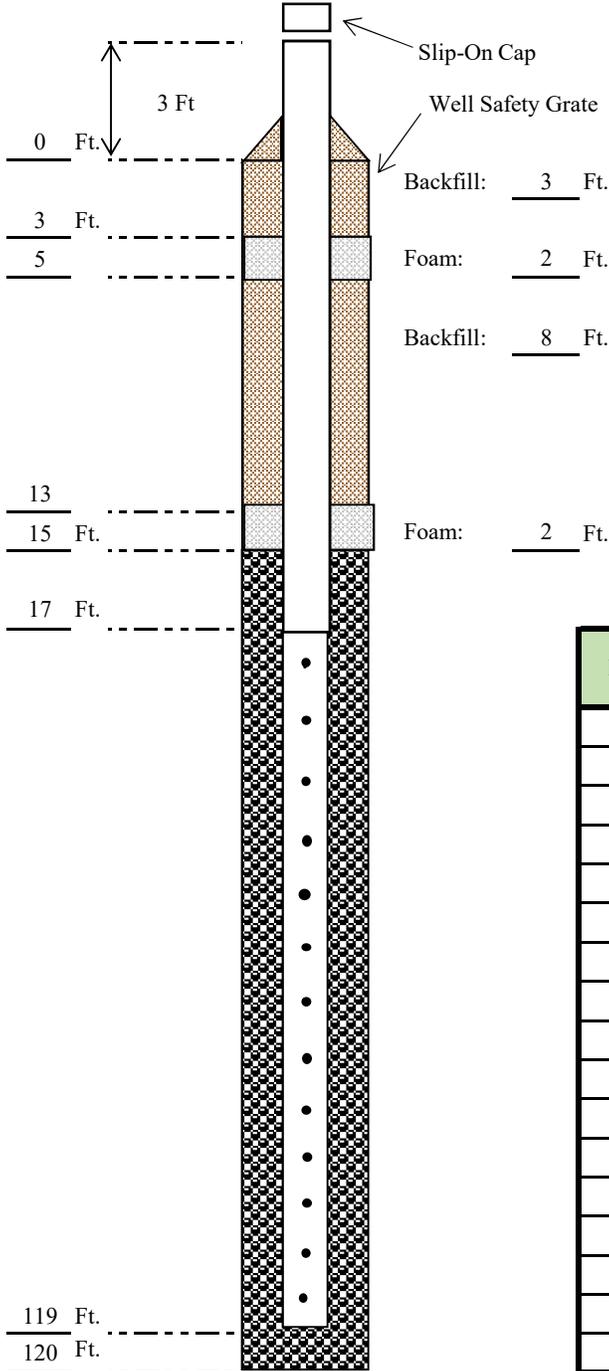
Well Material: PVC

Solid Pipe: 17' BG 3' AG

Perforated Pipe: 102'

Stone: 105'

Total Depth: 120'



Depth	Composition	Temp (F)	Degree of Decomposition	Amount of Moisture
10	MSW	108	LOW	DRY
20	MSW	114	MODERATE	DRY
30	MSW	121	HIGH	WET
40	MSW	119	HIGH	WET
50	MSW	125	HIGH	WET
60	MSW	125	HIGH	WET
70	MSW	129	HIGH	WET
80	MSW	129	MODERATE	WET/DRY
90	MSW	144	MODERATE	WET/DRY
100	MSW	133	HIGH	WET
110	MSW	130	HIGH	WET
120	MSW	134	HIGH	WET

Comments:



DRILL LOG

Well No.: GW-41

Site: Bristol

Date Drilled: 09/08/17

Log Prepared By: Vince Coleman

Drilling Co.: CEC

Driller Name: Vince Coleman

Bench (Y/N): N

Weather: Fair

Northing: 3,398,105.25

Easting: 10,412,241.76

Surface Elevation: 1,561.7

Time Start Drilling: 8:00am

Time End Drilling: 12:30pm

Well Pipe Size: 8"

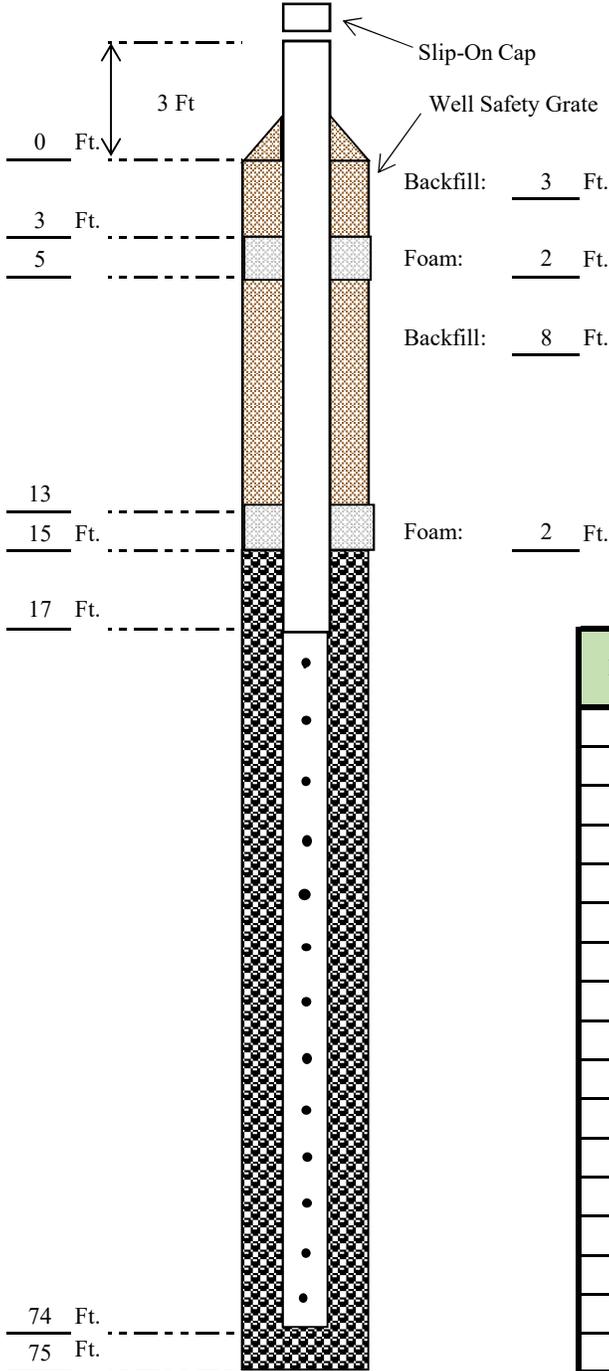
Well Material: PVC

Solid Pipe: 17' BG 3' AG

Perforated Pipe: 57'

Stone: 60'

Total Depth: 75'



Depth	Composition	Temp (F)	Degree of Decomposition	Amount of Moisture
10	MSW	110	LOW	DRY
20	MSW	122	LOW	DRY
30	MSW	118	LOW	DRY
40	MSW	122	MODERATE	WET
50	MSW	111	MODERATE	WET
60	MSW	125	MODERATE	WET/DRY
70	MSW	138	HIGH	WET
75	MSW	134	HIGH	WET

Comments:

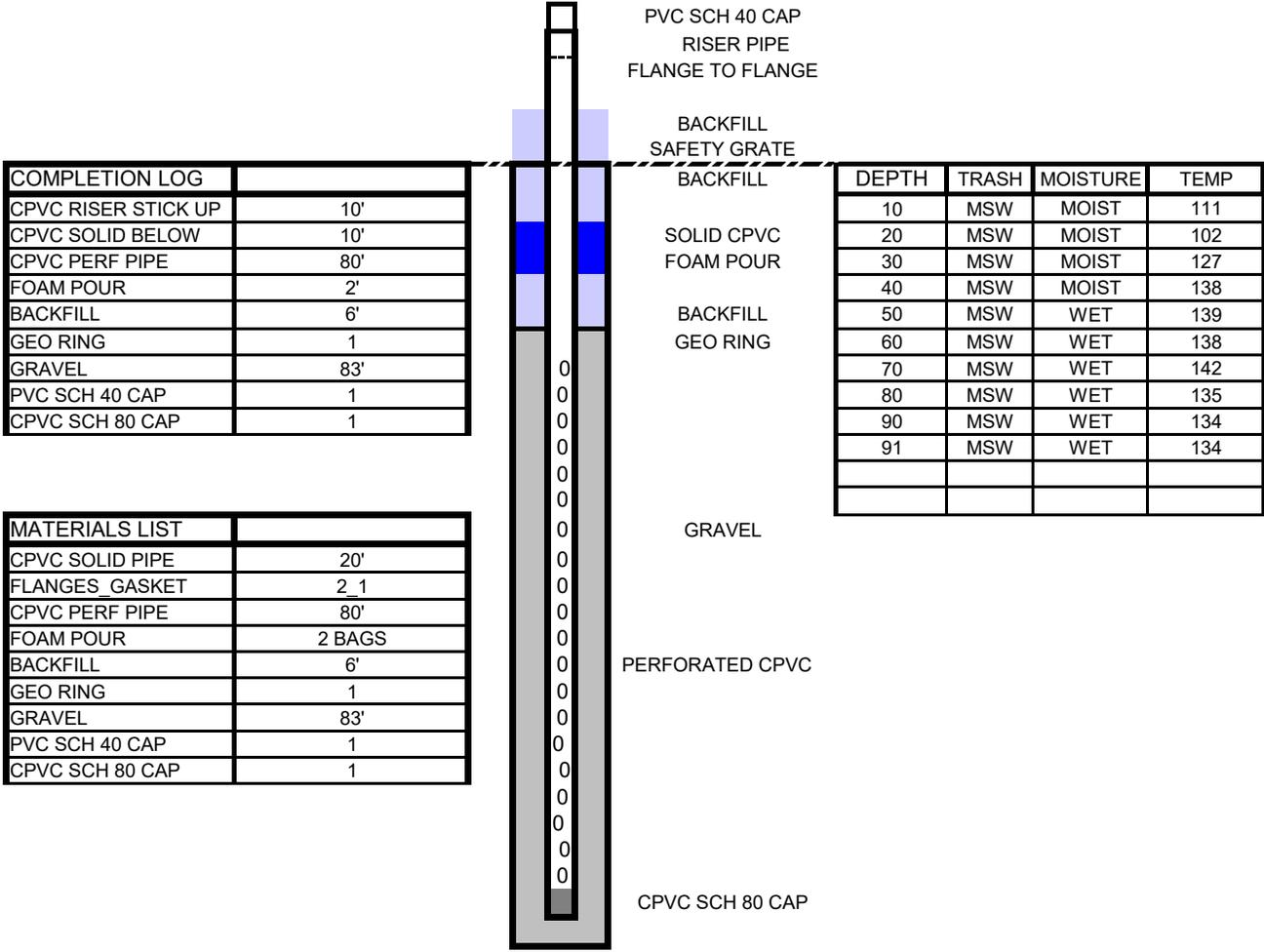
Bristol Landfill 723021943

Date	Well #	Depth	Bench	PVC	CPVC	STEEL	Abandonment
9/10/2021	GW-59 (1)		1				70
9/15/2021	GW-53	91			91		
9/16/2021	GW-54	91			91		
9/17/2021	GW-59 (2)		1				58
9/17/2021	GW-59 (3)	72	1	72			
9/20/2021	GW-57	103			103		
9/21/2021	GW-51	114			114		
9/22/2021	GW-52	109			109		
9/24/2021	GW-50	96		96			
9/25/2021	GW-56	109		109			
9/27/2021	GW-58	92		92			
9/29/2021	GW-55	104				104	
9/30/2021	GW-60	120	1		120		
10/1/2021	GW-61	105	1		105		
10/2/2021	GW-64	120	1	120			
10/4/2021	GW-49	110				110	
10/7/2021	GW-66	102				102	
10/8/2021	GW-67	100	1			100	
10/11/2021	GW-65	100	1	100			
10/12/2021	GW-63	117	1		117		
10/13/2021	GW-62	120	1		120		
10/14/2021	GW-32R	120	1		120		
10/15/2021	GW-68	75		75			
TOTAL	23	2170	11	664	1090	416	128

PVC
CPVC
STEEL

APTIM

Site Name:	Bristol Landfill	Well Number:	GW-53
Location :	Bristol, VA		
Start Date:	9/15/2021		
Completed:	9/15/2021	Boring Diameter:	36"
Contractor:	APTIM	Pipe Material & Diameter:	8" CPVC
Rig:	SR-30	Total Depth Drilled:	91'
Inspector:	Draper Aden Associates	Completion:	91
Driller:	Gene Thomas	Abandonment:	



COMPLETION LOG	
CPVC RISER STICK UP	10'
CPVC SOLID BELOW	10'
CPVC PERF PIPE	80'
FOAM POUR	2'
BACKFILL	6'
GEO RING	1
GRAVEL	83'
PVC SCH 40 CAP	1
CPVC SCH 80 CAP	1

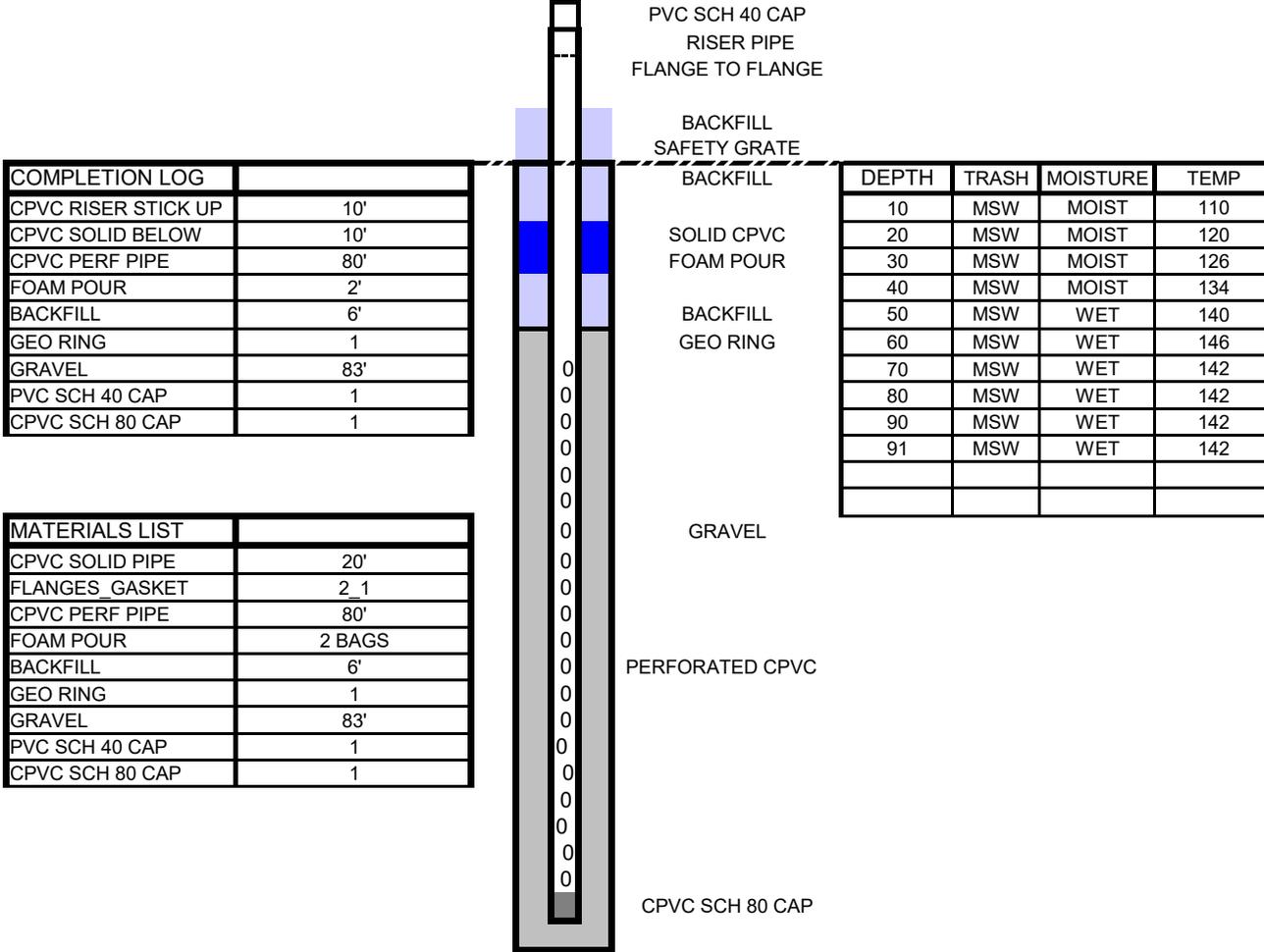
MATERIALS LIST	
CPVC SOLID PIPE	20'
FLANGES_GASKET	2_1
CPVC PERF PIPE	80'
FOAM POUR	2 BAGS
BACKFILL	6'
GEO RING	1
GRAVEL	83'
PVC SCH 40 CAP	1
CPVC SCH 80 CAP	1

COMMENTS Wet at 44'

QA/QC _____ DATE _____ APTIM REP. _____

APTIM

Site Name:	Bristol Landfill	Well Number:	GW-54
Location :	Bristol, VA		
Start Date:	9/16/2021		
Completed:	9/16/2021	Boring Diameter:	36"
Contractor:	APTIM	Pipe Material & Diameter:	8" CPVC
Rig:	SR-30	Total Depth Drilled:	91'
Inspector:	Draper Aden Associates	Completion:	91
Driller:	Gene Thomas	Abandonment:	



COMPLETION LOG	
CPVC RISER STICK UP	10'
CPVC SOLID BELOW	10'
CPVC PERF PIPE	80'
FOAM POUR	2'
BACKFILL	6'
GEO RING	1
GRAVEL	83'
PVC SCH 40 CAP	1
CPVC SCH 80 CAP	1

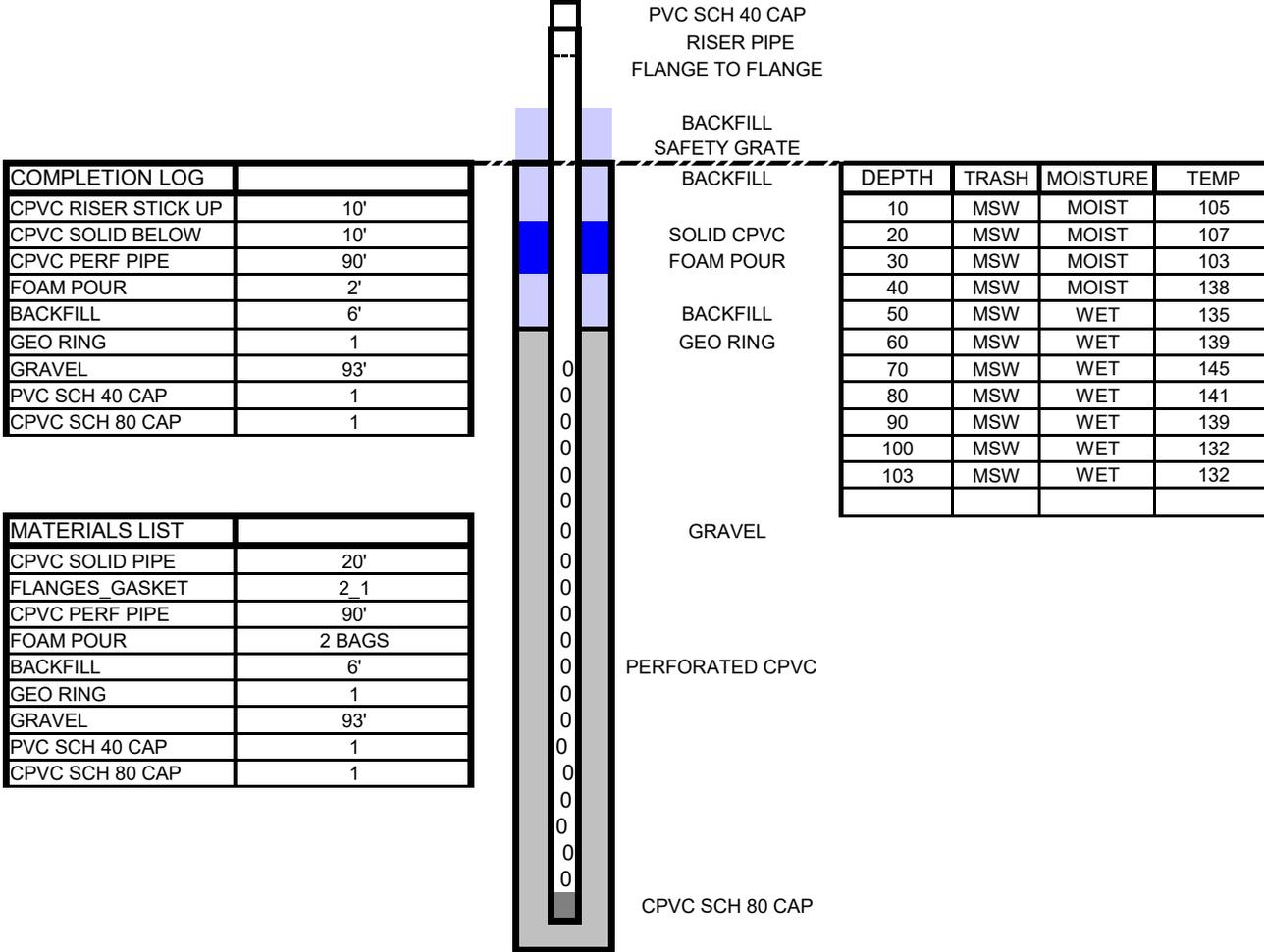
MATERIALS LIST	
CPVC SOLID PIPE	20'
FLANGES_GASKET	2_1
CPVC PERF PIPE	80'
FOAM POUR	2 BAGS
BACKFILL	6'
GEO RING	1
GRAVEL	83'
PVC SCH 40 CAP	1
CPVC SCH 80 CAP	1

COMMENTS Wet at 42'

QA/QC _____ DATE _____ APTIM REP. _____

APTIM

Site Name:	Bristol Landfill	Well Number:	GW-57
Location :	Bristol, VA		
Start Date:	9/20/2021		
Completed:	9/20/2021	Boring Diameter:	36"
Contractor:	APTIM	Pipe Material & Diameter:	8" CPVC
Rig:	SR-30	Total Depth Drilled:	103'
Inspector:	Draper Aden Associates	Completion:	100'
Driller:	Gene Thomas	Abandonment:	



COMPLETION LOG	
CPVC RISER STICK UP	10'
CPVC SOLID BELOW	10'
CPVC PERF PIPE	90'
FOAM POUR	2'
BACKFILL	6'
GEO RING	1
GRAVEL	93'
PVC SCH 40 CAP	1
CPVC SCH 80 CAP	1

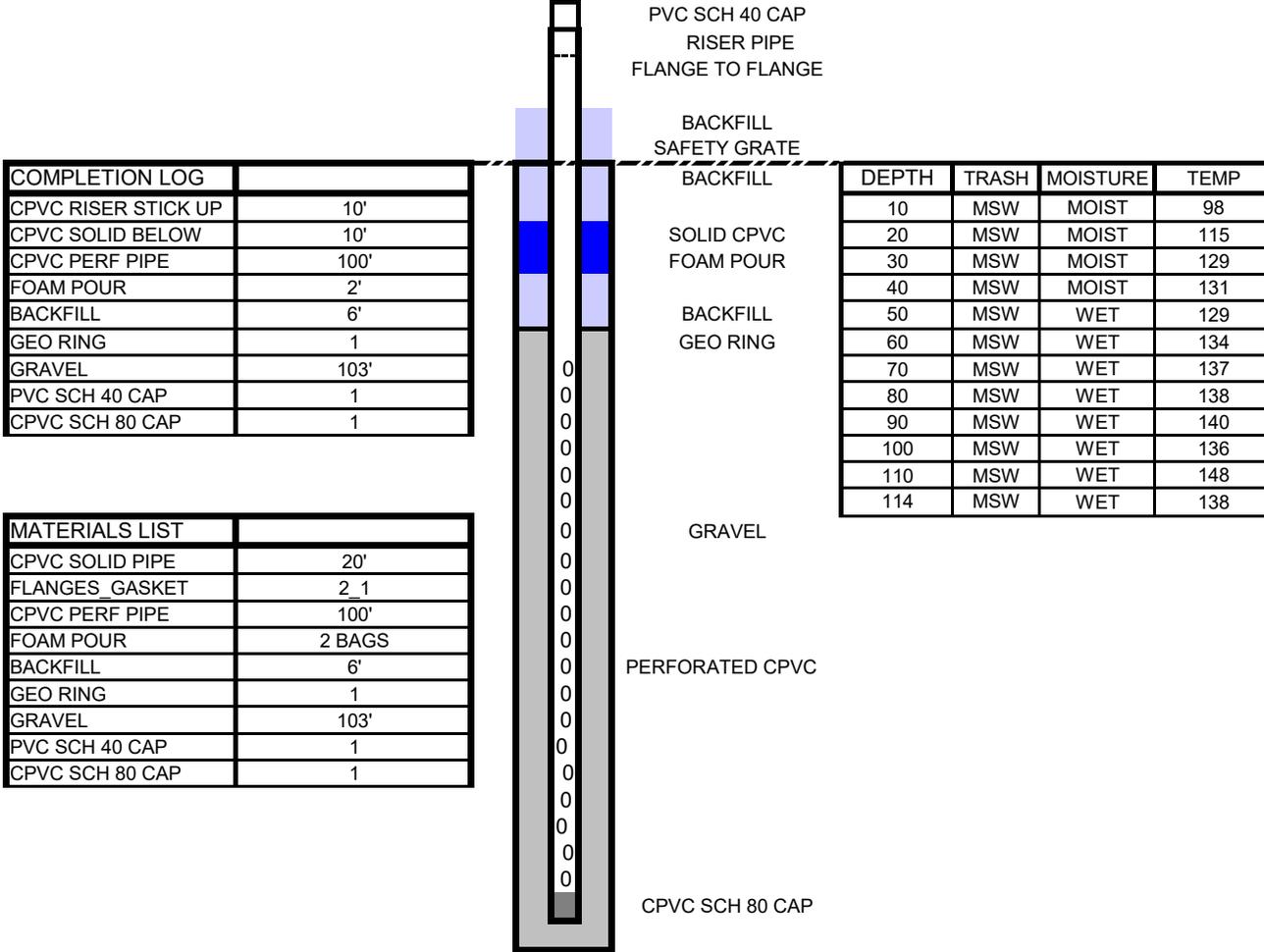
MATERIALS LIST	
CPVC SOLID PIPE	20'
FLANGES_GASKET	2_1
CPVC PERF PIPE	90'
FOAM POUR	2 BAGS
BACKFILL	6'
GEO RING	1
GRAVEL	93'
PVC SCH 40 CAP	1
CPVC SCH 80 CAP	1

COMMENTS Wet at 46'

QA/QC _____ DATE _____ APTIM REP. _____

APTIM

Site Name:	Bristol Landfill	Well Number:	GW-51
Location :	Bristol, VA		
Start Date:	9/21/2021		
Completed:	9/21/2021	Boring Diameter:	36"
Contractor:	APTIM	Pipe Material & Diameter:	8" CPVC
Rig:	SR-30	Total Depth Drilled:	114'
Inspector:	Draper Aden Associates	Completion:	110'
Driller:	Gene Thomas	Abandonment:	



COMPLETION LOG	
CPVC RISER STICK UP	10'
CPVC SOLID BELOW	10'
CPVC PERF PIPE	100'
FOAM POUR	2'
BACKFILL	6'
GEO RING	1
GRAVEL	103'
PVC SCH 40 CAP	1
CPVC SCH 80 CAP	1

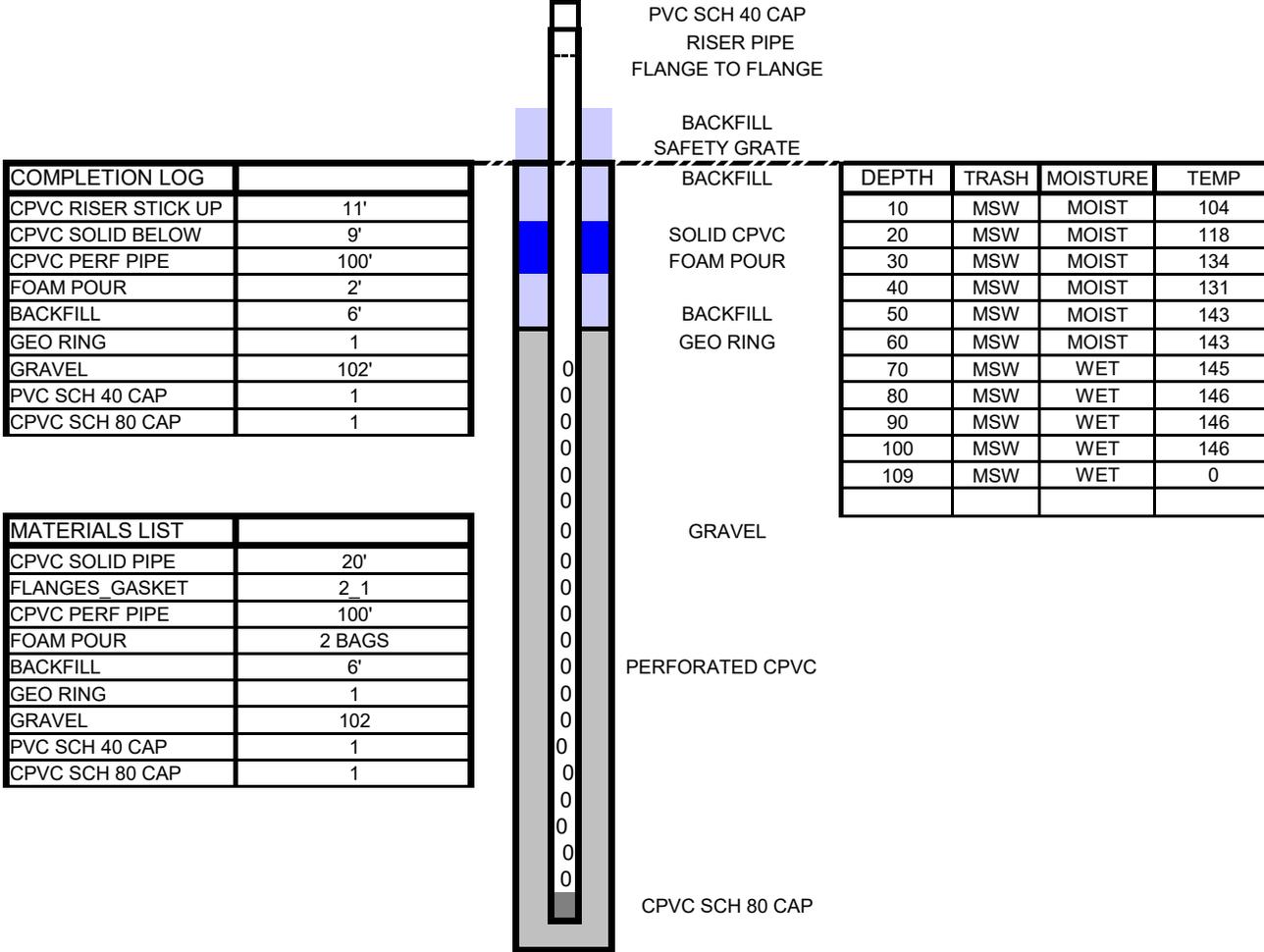
MATERIALS LIST	
CPVC SOLID PIPE	20'
FLANGES_GASKET	2_1
CPVC PERF PIPE	100'
FOAM POUR	2 BAGS
BACKFILL	6'
GEO RING	1
GRAVEL	103'
PVC SCH 40 CAP	1
CPVC SCH 80 CAP	1

COMMENTS Wet at 42'

QA/QC _____ DATE _____ APTIM REP. _____

APTIM

Site Name:	Bristol Landfill	Well Number:	GW-52
Location :	Bristol, VA		
Start Date:	9/22/2021		
Completed:	9/22/2021	Boring Diameter:	36"
Contractor:	APTIM	Pipe Material & Diameter:	8" CPVC
Rig:	SR-30	Total Depth Drilled:	109'
Inspector:	Draper Aden Associates	Completion:	109'
Driller:	Gene Thomas	Abandonment:	



COMPLETION LOG	
CPVC RISER STICK UP	11'
CPVC SOLID BELOW	9'
CPVC PERF PIPE	100'
FOAM POUR	2'
BACKFILL	6'
GEO RING	1
GRAVEL	102'
PVC SCH 40 CAP	1
CPVC SCH 80 CAP	1

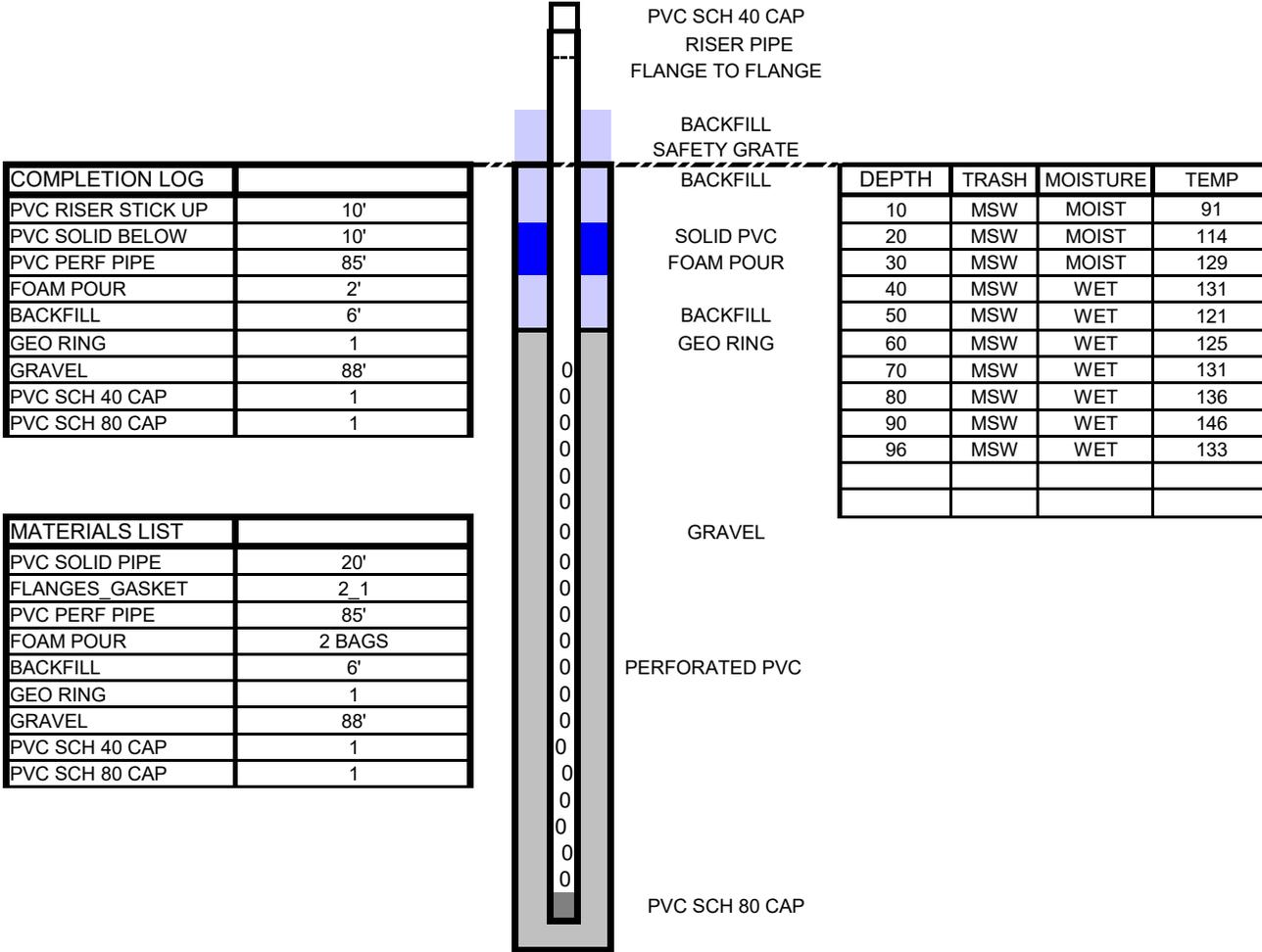
MATERIALS LIST	
CPVC SOLID PIPE	20'
FLANGES_GASKET	2_1
CPVC PERF PIPE	100'
FOAM POUR	2 BAGS
BACKFILL	6'
GEO RING	1
GRAVEL	102
PVC SCH 40 CAP	1
CPVC SCH 80 CAP	1

COMMENTS Wet at 63'

QA/QC _____ DATE _____ APTIM REP. _____

APTIM

Site Name:	Bristol Landfill	Well Number:	GW-50
Location :	Bristol, VA		
Start Date:	9/24/2021		
Completed:	9/24/2021	Boring Diameter:	36"
Contractor:	APTIM	Pipe Material & Diameter:	8" PVC
Rig:	SR-30	Total Depth Drilled:	96'
Inspector:	Draper Aden Associates	Completion:	96'
Driller:	Gene Thomas	Abandonment:	



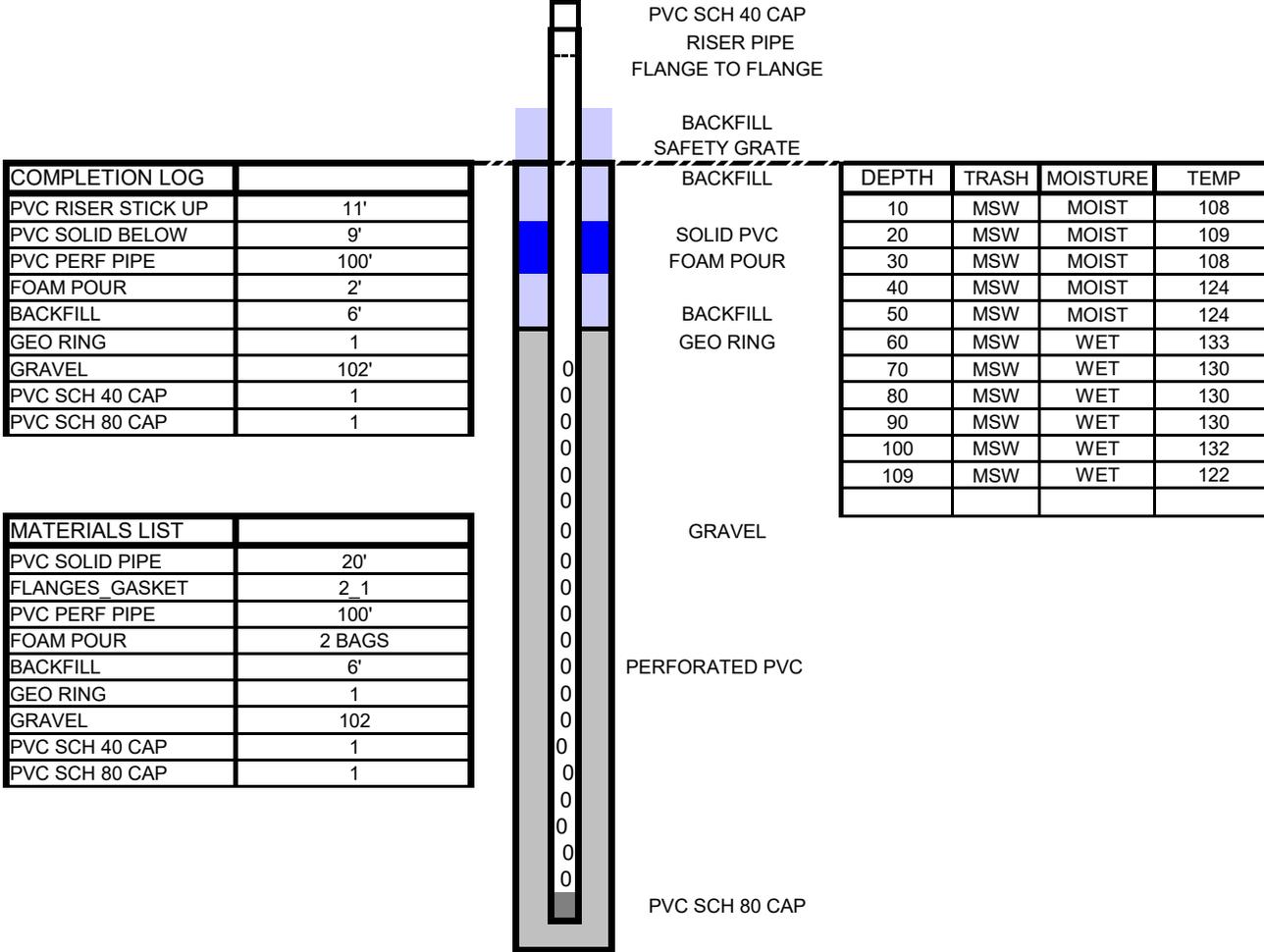
MATERIALS LIST	
PVC SOLID PIPE	20'
FLANGES_GASKET	2_1
PVC PERF PIPE	85'
FOAM POUR	2 BAGS
BACKFILL	6'
GEO RING	1
GRAVEL	88'
PVC SCH 40 CAP	1
PVC SCH 80 CAP	1

COMMENTS Wet at 32'

QA/QC _____ DATE _____ APTIM REP. _____

APTIM

Site Name:	Bristol Landfill	Well Number:	GW-56
Location :	Bristol, VA		
Start Date:	9/25/2021		
Completed:	9/25/2021	Boring Diameter:	36"
Contractor:	APTIM	Pipe Material & Diameter:	8" PVC
Rig:	SR-30	Total Depth Drilled:	109'
Inspector:	Draper Aden Associates	Completion:	109'
Driller:	Gene Thomas	Abandonment:	



COMPLETION LOG	
PVC RISER STICK UP	11'
PVC SOLID BELOW	9'
PVC PERF PIPE	100'
FOAM POUR	2'
BACKFILL	6'
GEO RING	1
GRAVEL	102'
PVC SCH 40 CAP	1
PVC SCH 80 CAP	1

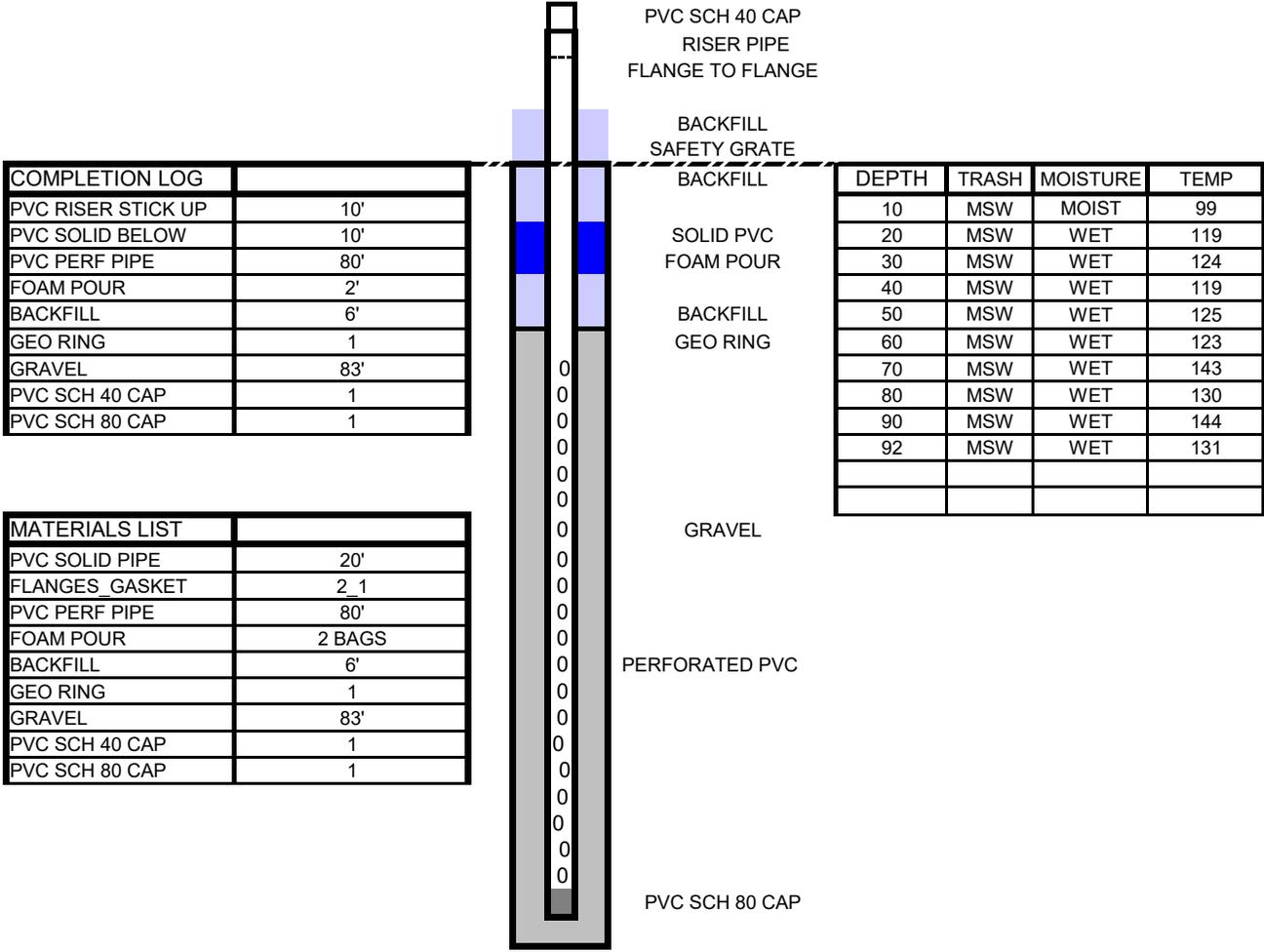
MATERIALS LIST	
PVC SOLID PIPE	20'
FLANGES_GASKET	2_1
PVC PERF PIPE	100'
FOAM POUR	2 BAGS
BACKFILL	6'
GEO RING	1
GRAVEL	102
PVC SCH 40 CAP	1
PVC SCH 80 CAP	1

COMMENTS Wet at 60'

QA/QC _____ DATE _____ APTIM REP. _____

APTIM

Site Name:	Bristol Landfill	Well Number:	GW-58
Location :	Bristol, VA		
Start Date:	9/27/2021		
Completed:	9/27/2021	Boring Diameter:	36"
Contractor:	APTIM	Pipe Material & Diameter:	8" PVC
Rig:	SR-30	Total Depth Drilled:	92'
Inspector:	Draper Aden Associates	Completion:	92'
Driller:	Gene Thomas	Abandonment:	



COMPLETION LOG	
PVC RISER STICK UP	10'
PVC SOLID BELOW	10'
PVC PERF PIPE	80'
FOAM POUR	2'
BACKFILL	6'
GEO RING	1
GRAVEL	83'
PVC SCH 40 CAP	1
PVC SCH 80 CAP	1

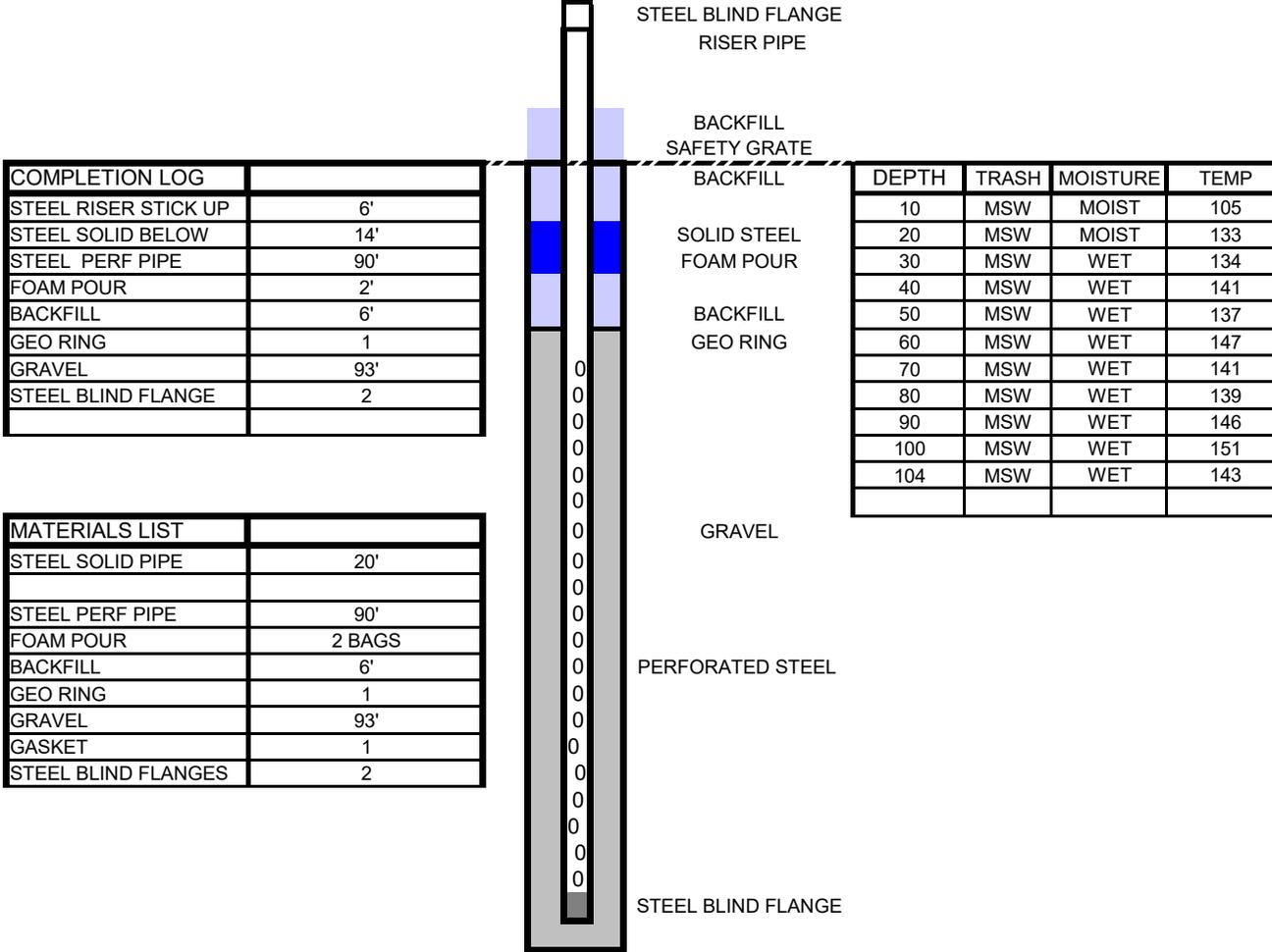
MATERIALS LIST	
PVC SOLID PIPE	20'
FLANGES_GASKET	2_1
PVC PERF PIPE	80'
FOAM POUR	2 BAGS
BACKFILL	6'
GEO RING	1
GRAVEL	83'
PVC SCH 40 CAP	1
PVC SCH 80 CAP	1

COMMENTS Wet at 20'

QA/QC _____ DATE _____ APTIM REP. _____

APTIM

Site Name:	Bristol Landfill	Well Number:	GW-55
Location :	Bristol, VA		
Start Date:	9/28/2021		
Completed:	9/29/2021	Boring Diameter:	36"
Contractor:	APTIM	Pipe Material & Diameter:	8" STEEL
Rig:	SR-30	Total Depth Drilled:	104'
Inspector:	Draper Aden Associates	Completion:	104'
Driller:	Gene Thomas	Abandonment:	



COMPLETION LOG	
STEEL RISER STICK UP	6'
STEEL SOLID BELOW	14'
STEEL PERF PIPE	90'
FOAM POUR	2'
BACKFILL	6'
GEO RING	1
GRAVEL	93'
STEEL BLIND FLANGE	2

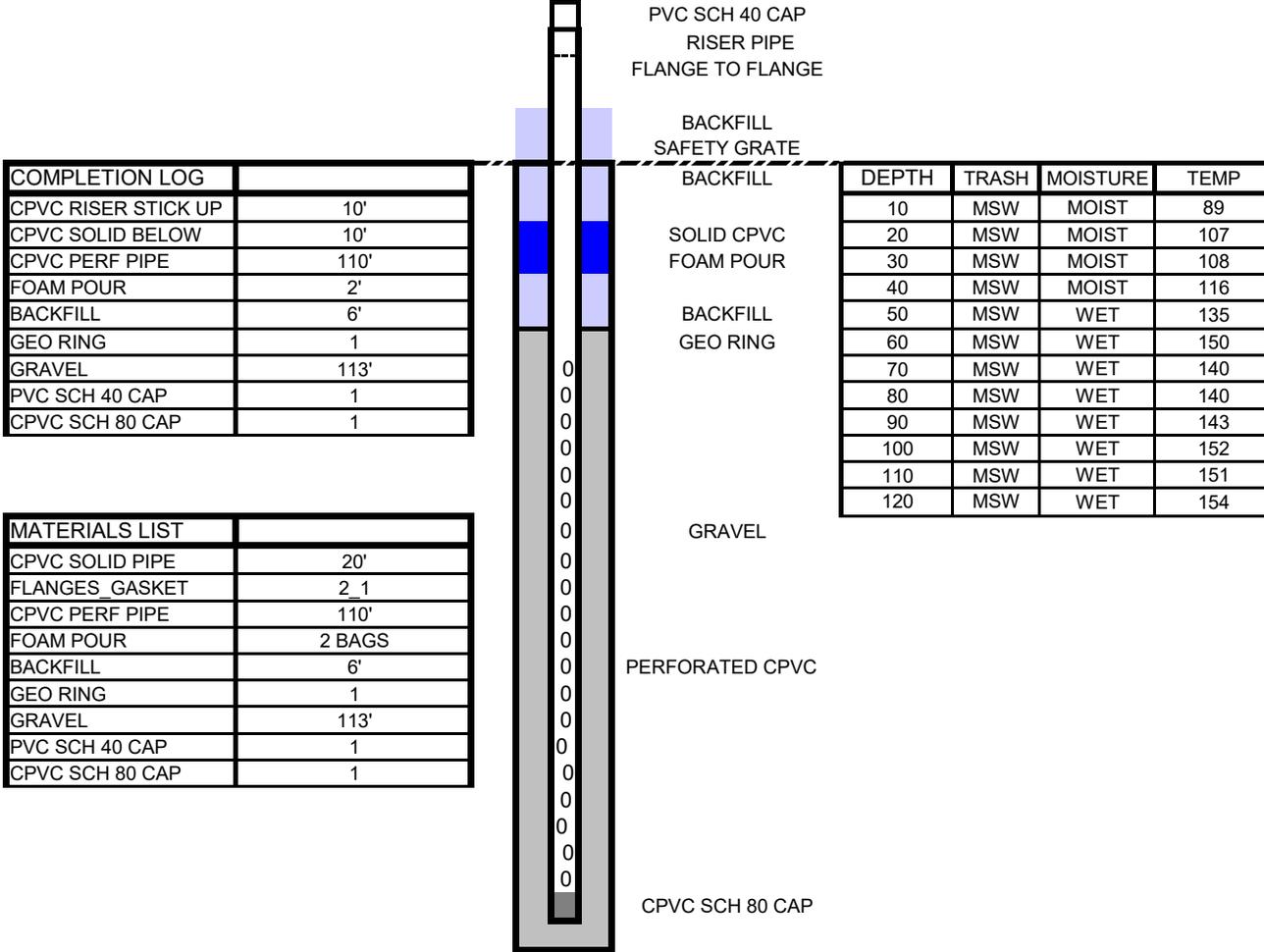
MATERIALS LIST	
STEEL SOLID PIPE	20'
STEEL PERF PIPE	90'
FOAM POUR	2 BAGS
BACKFILL	6'
GEO RING	1
GRAVEL	93'
GASKET	1
STEEL BLIND FLANGES	2

COMMENTS Wet at 26'

QA/QC _____ DATE _____ APTIM REP. _____

APTIM

Site Name:	Bristol Landfill	Well Number:	GW-60
Location :	Bristol, VA		
Start Date:	9/30/2021		
Completed:	9/30/2021	Boring Diameter:	36"
Contractor:	APTIM	Pipe Material & Diameter:	8" CPVC
Rig:	SR-30	Total Depth Drilled:	120'
Inspector:	Draper Aden Associates	Completion:	120'
Driller:	Gene Thomas	Abandonment:	



COMPLETION LOG	
CPVC RISER STICK UP	10'
CPVC SOLID BELOW	10'
CPVC PERF PIPE	110'
FOAM POUR	2'
BACKFILL	6'
GEO RING	1
GRAVEL	113'
PVC SCH 40 CAP	1
CPVC SCH 80 CAP	1

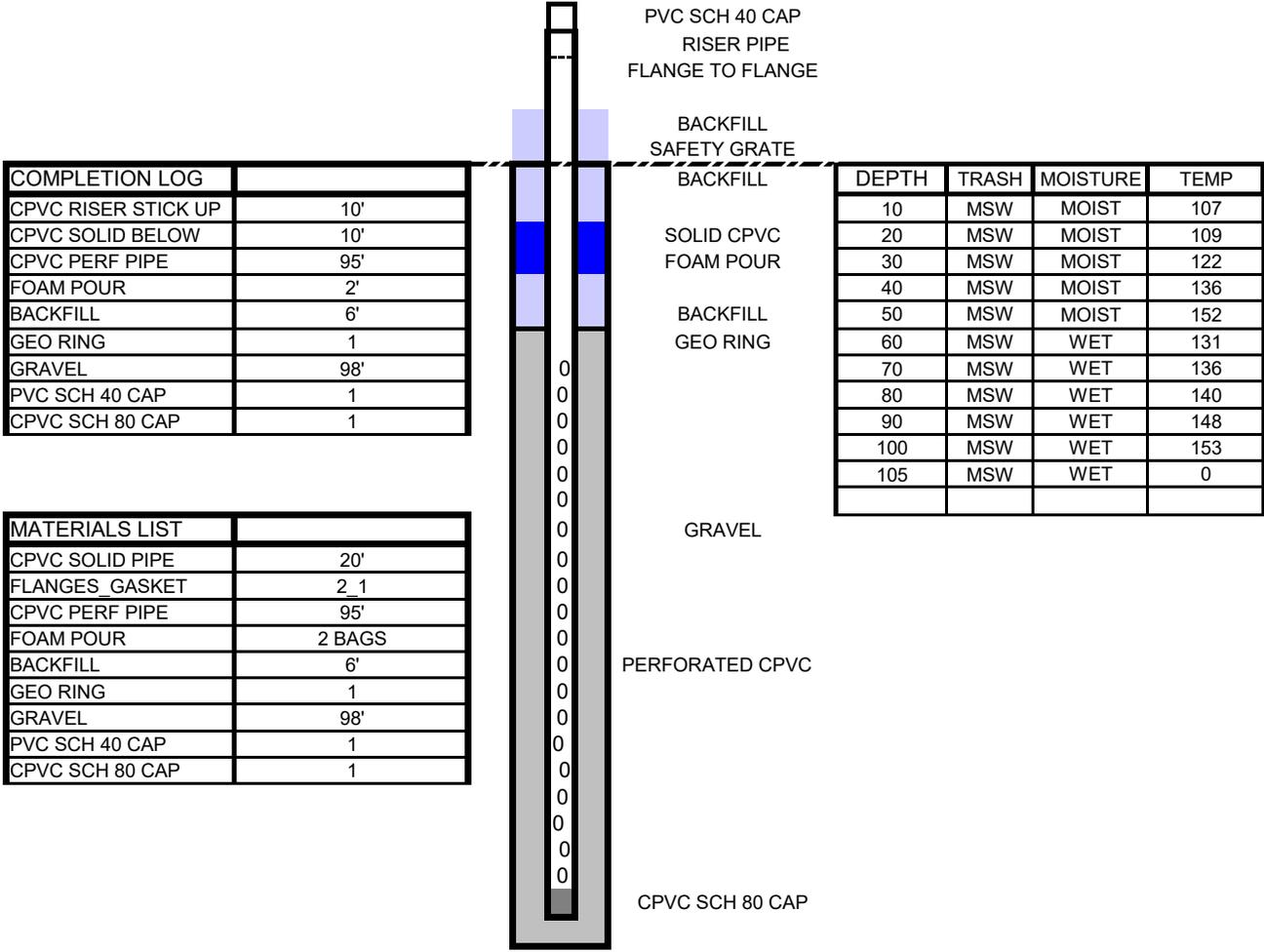
MATERIALS LIST	
CPVC SOLID PIPE	20'
FLANGES_GASKET	2_1
CPVC PERF PIPE	110'
FOAM POUR	2 BAGS
BACKFILL	6'
GEO RING	1
GRAVEL	113'
PVC SCH 40 CAP	1
CPVC SCH 80 CAP	1

COMMENTS Wet at 45'

QA/QC _____ DATE _____ APTIM REP. _____

APTIM

Site Name:	Bristol Landfill	Well Number:	GW-61
Location :	Bristol, VA		
Start Date:	10/1/2021		
Completed:	10/1/2021	Boring Diameter:	36"
Contractor:	APTIM	Pipe Material & Diameter:	8" CPVC
Rig:	SR-30	Total Depth Drilled:	105'
Inspector:	Draper Aden Associates	Completion:	105'
Driller:	Gene Thomas	Abandonment:	



COMPLETION LOG	
CPVC RISER STICK UP	10'
CPVC SOLID BELOW	10'
CPVC PERF PIPE	95'
FOAM POUR	2'
BACKFILL	6'
GEO RING	1
GRAVEL	98'
PVC SCH 40 CAP	1
CPVC SCH 80 CAP	1

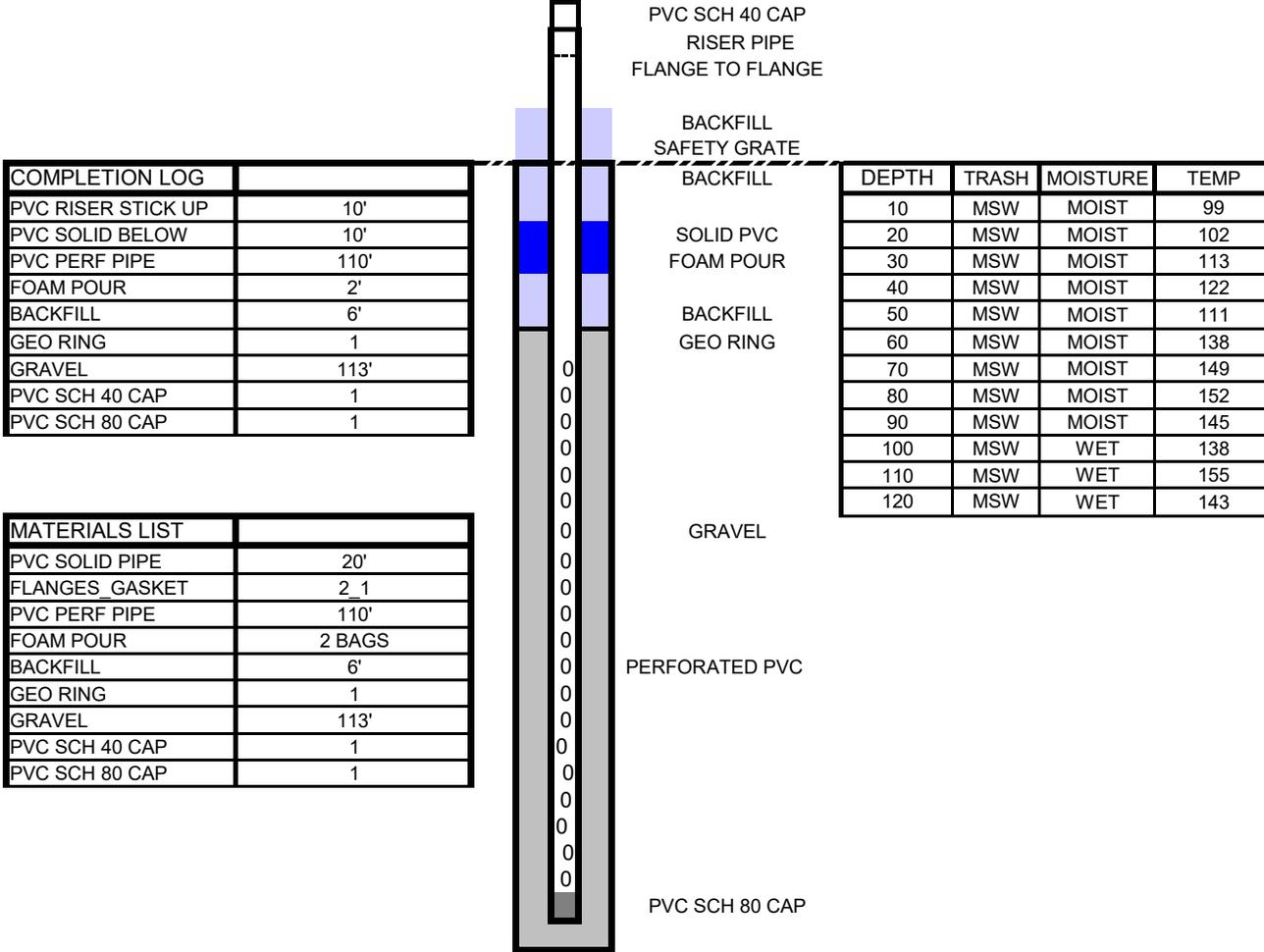
MATERIALS LIST	
CPVC SOLID PIPE	20'
FLANGES_GASKET	2_1
CPVC PERF PIPE	95'
FOAM POUR	2 BAGS
BACKFILL	6'
GEO RING	1
GRAVEL	98'
PVC SCH 40 CAP	1
CPVC SCH 80 CAP	1

COMMENTS Wet at 52'

QA/QC _____ DATE _____ APTIM REP. _____

APTIM

Site Name:	Bristol Landfill	Well Number:	GW-64
Location :	Bristol, VA		
Start Date:	10/2/2021		
Completed:	10/2/2021	Boring Diameter:	36"
Contractor:	APTIM	Pipe Material & Diameter:	8" PVC
Rig:	SR-30	Total Depth Drilled:	120'
Inspector:	Draper Aden Associates	Completion:	120'
Driller:	Gene Thomas	Abandonment:	



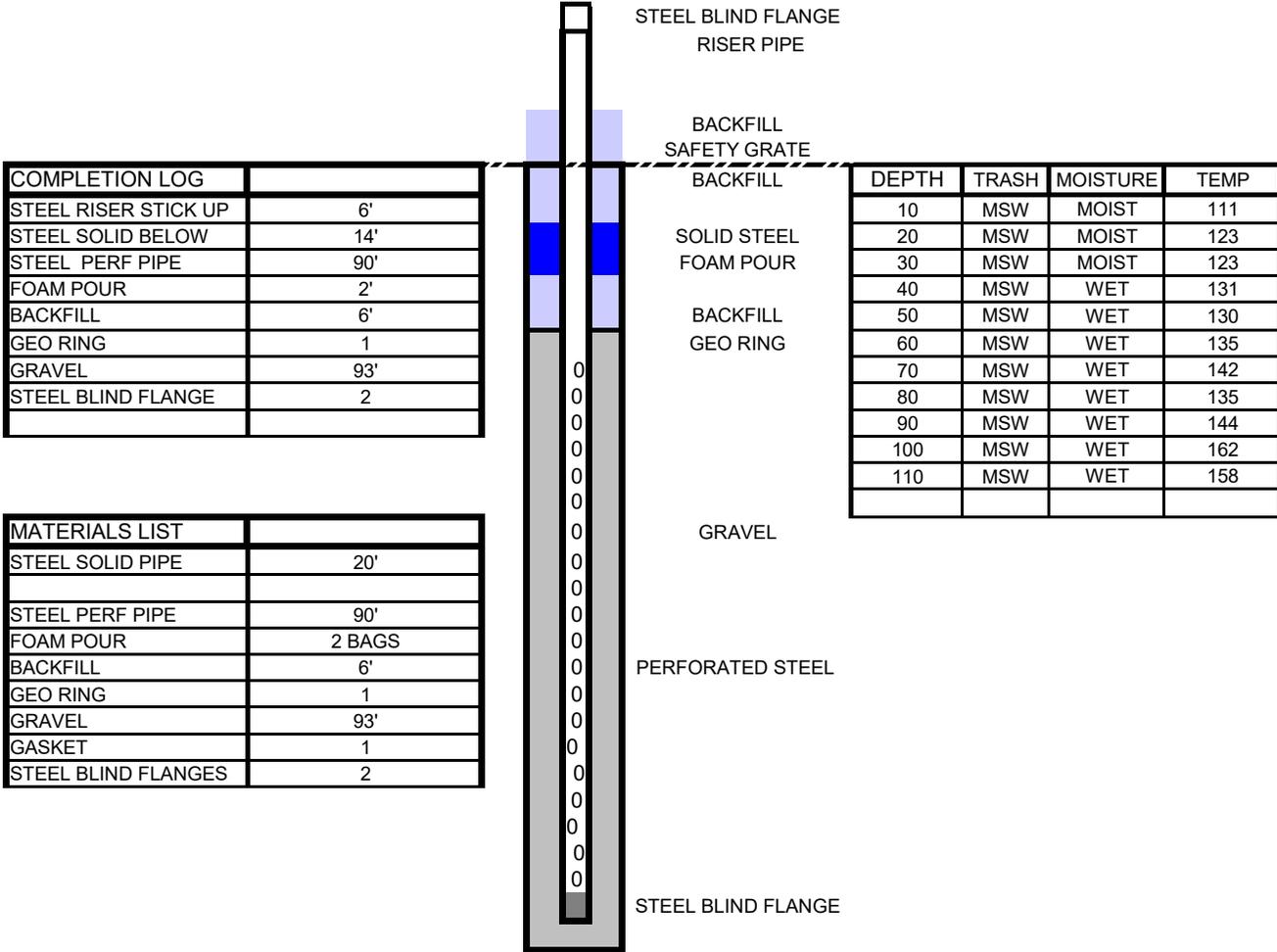
MATERIALS LIST	
PVC SOLID PIPE	20'
FLANGES_GASKET	2_1
PVC PERF PIPE	110'
FOAM POUR	2 BAGS
BACKFILL	6'
GEO RING	1
GRAVEL	113'
PVC SCH 40 CAP	1
PVC SCH 80 CAP	1

COMMENTS Wet at 99'

QA/QC _____ DATE _____ APTIM REP. _____

APTIM

Site Name:	Bristol Landfill	Well Number:	GW-49
Location :	Bristol, VA		
Start Date:	10/4/2021		
Completed:	10/4/2021	Boring Diameter:	36"
Contractor:	APTIM	Pipe Material & Diameter:	8" STEEL
Rig:	SR-30	Total Depth Drilled:	110'
Inspector:	Draper Aden Associates	Completion:	105'
Driller:	Gene Thomas	Abandonment:	



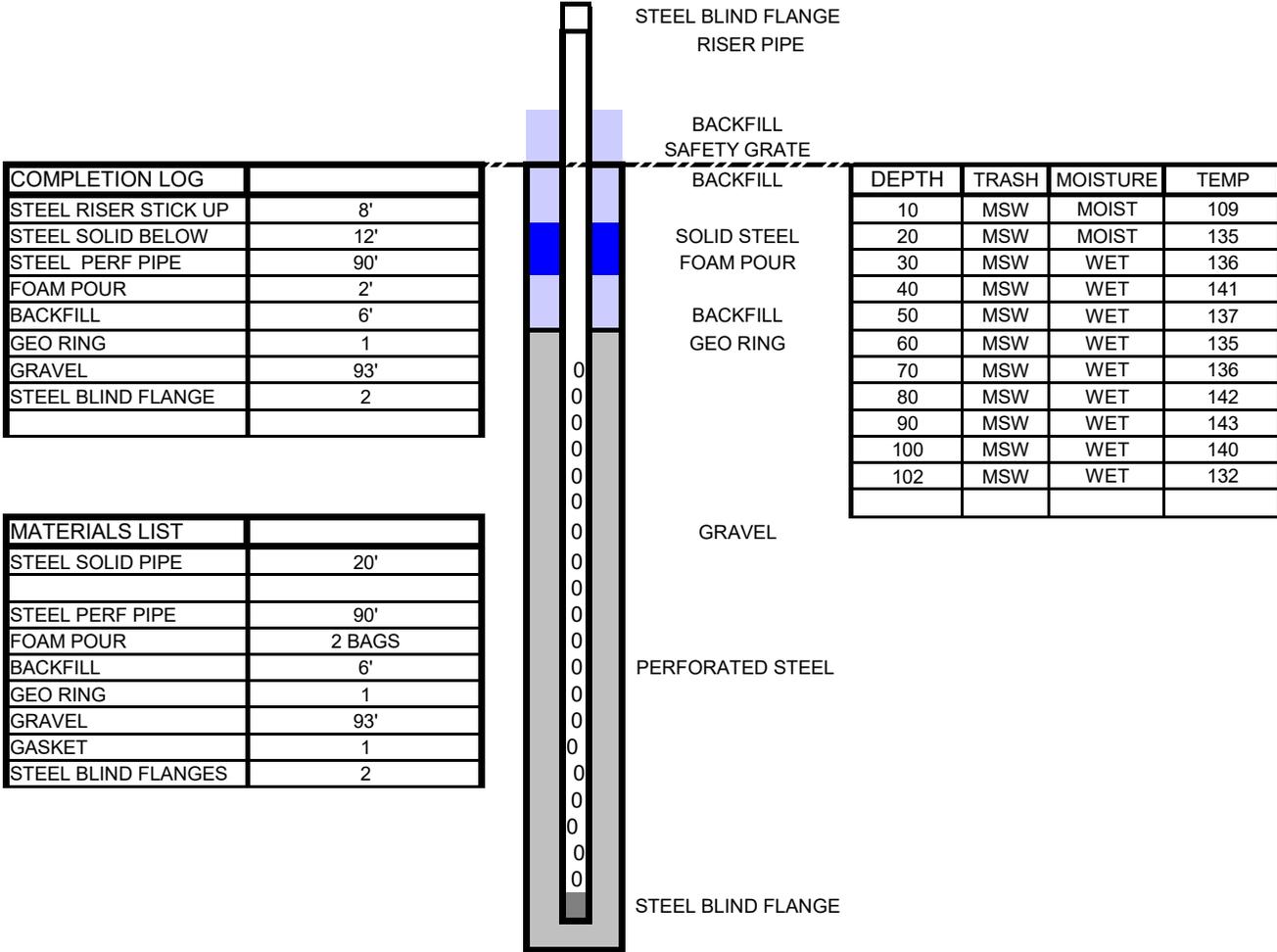
MATERIALS LIST	
STEEL SOLID PIPE	20'
STEEL PERF PIPE	90'
FOAM POUR	2 BAGS
BACKFILL	6'
GEO RING	1
GRAVEL	93'
GASKET	1
STEEL BLIND FLANGES	2

COMMENTS Wet at 33'

QA/QC _____ DATE _____ APTIM REP. _____

APTIM

Site Name:	Bristol Landfill	Well Number:	GW-66
Location :	Bristol, VA		
Start Date:	10/5/2021		
Completed:	10/7/2021	Boring Diameter:	36"
Contractor:	APTIM	Pipe Material & Diameter:	8" STEEL
Rig:	SR-30	Total Depth Drilled:	102'
Inspector:	Draper Aden Associates	Completion:	102'
Driller:	Gene Thomas	Abandonment:	



COMPLETION LOG	
STEEL RISER STICK UP	8'
STEEL SOLID BELOW	12'
STEEL PERF PIPE	90'
FOAM POUR	2'
BACKFILL	6'
GEO RING	1
GRAVEL	93'
STEEL BLIND FLANGE	2

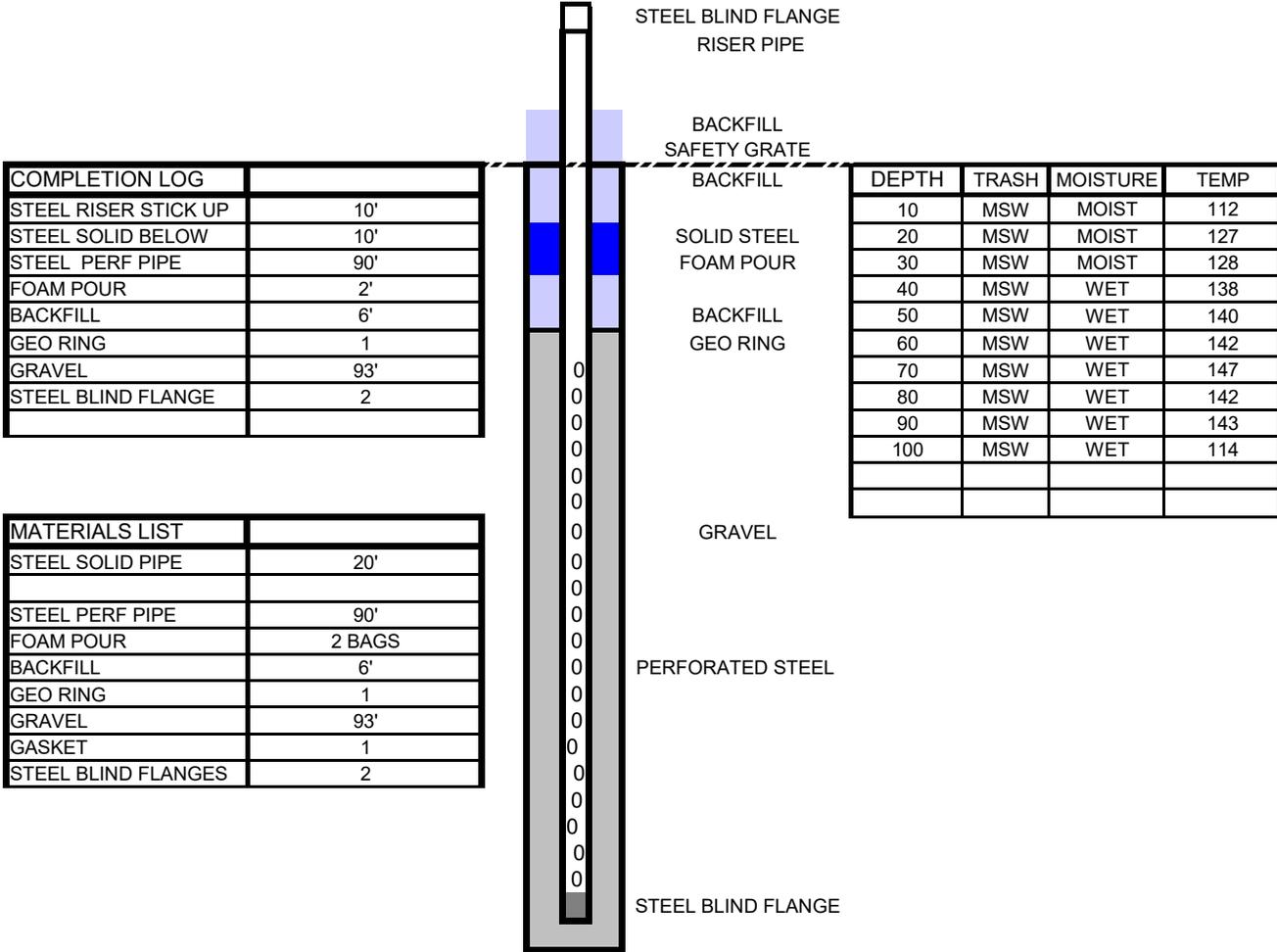
MATERIALS LIST	
STEEL SOLID PIPE	20'
STEEL PERF PIPE	90'
FOAM POUR	2 BAGS
BACKFILL	6'
GEO RING	1
GRAVEL	93'
GASKET	1
STEEL BLIND FLANGES	2

COMMENTS Wet at 26'

QA/QC _____ DATE _____ APTIM REP. _____

APTIM

Site Name:	Bristol Landfill	Well Number:	GW-67
Location :	Bristol, VA		
Start Date:	10/8/2021		
Completed:	10/8/2021	Boring Diameter:	36"
Contractor:	APTIM	Pipe Material & Diameter:	8" STEEL
Rig:	SR-30	Total Depth Drilled:	100'
Inspector:	Draper Aden Associates	Completion:	100'
Driller:	Gene Thomas	Abandonment:	



COMPLETION LOG	
STEEL RISER STICK UP	10'
STEEL SOLID BELOW	10'
STEEL PERF PIPE	90'
FOAM POUR	2'
BACKFILL	6'
GEO RING	1
GRAVEL	93'
STEEL BLIND FLANGE	2

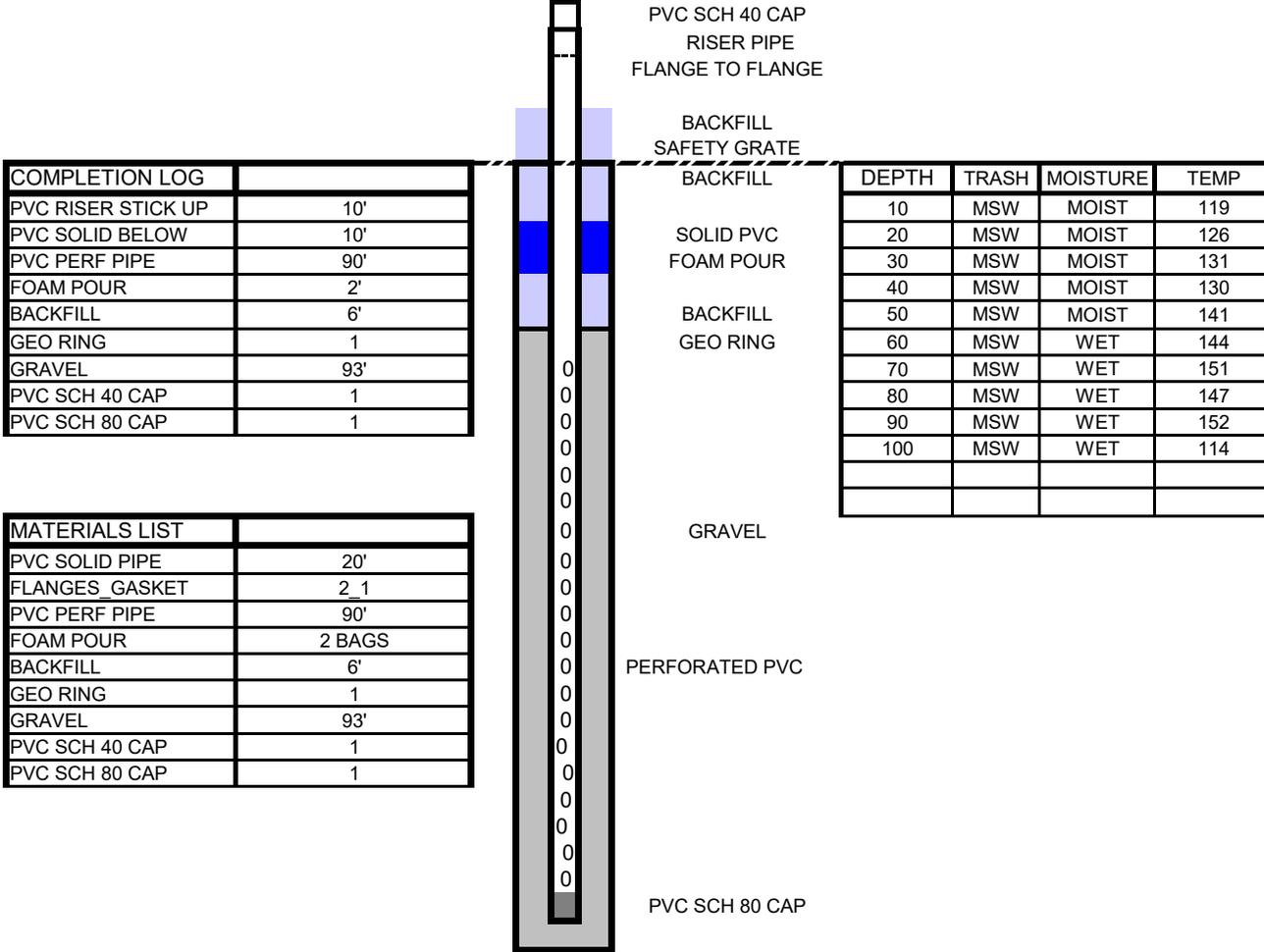
MATERIALS LIST	
STEEL SOLID PIPE	20'
STEEL PERF PIPE	90'
FOAM POUR	2 BAGS
BACKFILL	6'
GEO RING	1
GRAVEL	93'
GASKET	1
STEEL BLIND FLANGES	2

COMMENTS Wet at 40'

QA/QC _____ DATE _____ APTIM REP. _____

APTIM

Site Name:	Bristol Landfill	Well Number:	GW-65
Location :	Bristol, VA		
Start Date:	10/11/2021		
Completed:	10/11/2021	Boring Diameter:	36"
Contractor:	APTIM	Pipe Material & Diameter:	8" PVC
Rig:	SR-30	Total Depth Drilled:	100'
Inspector:	Draper Aden Associates	Completion:	100'
Driller:	Gene Thomas	Abandonment:	



COMPLETION LOG	
PVC RISER STICK UP	10'
PVC SOLID BELOW	10'
PVC PERF PIPE	90'
FOAM POUR	2'
BACKFILL	6'
GEO RING	1
GRAVEL	93'
PVC SCH 40 CAP	1
PVC SCH 80 CAP	1

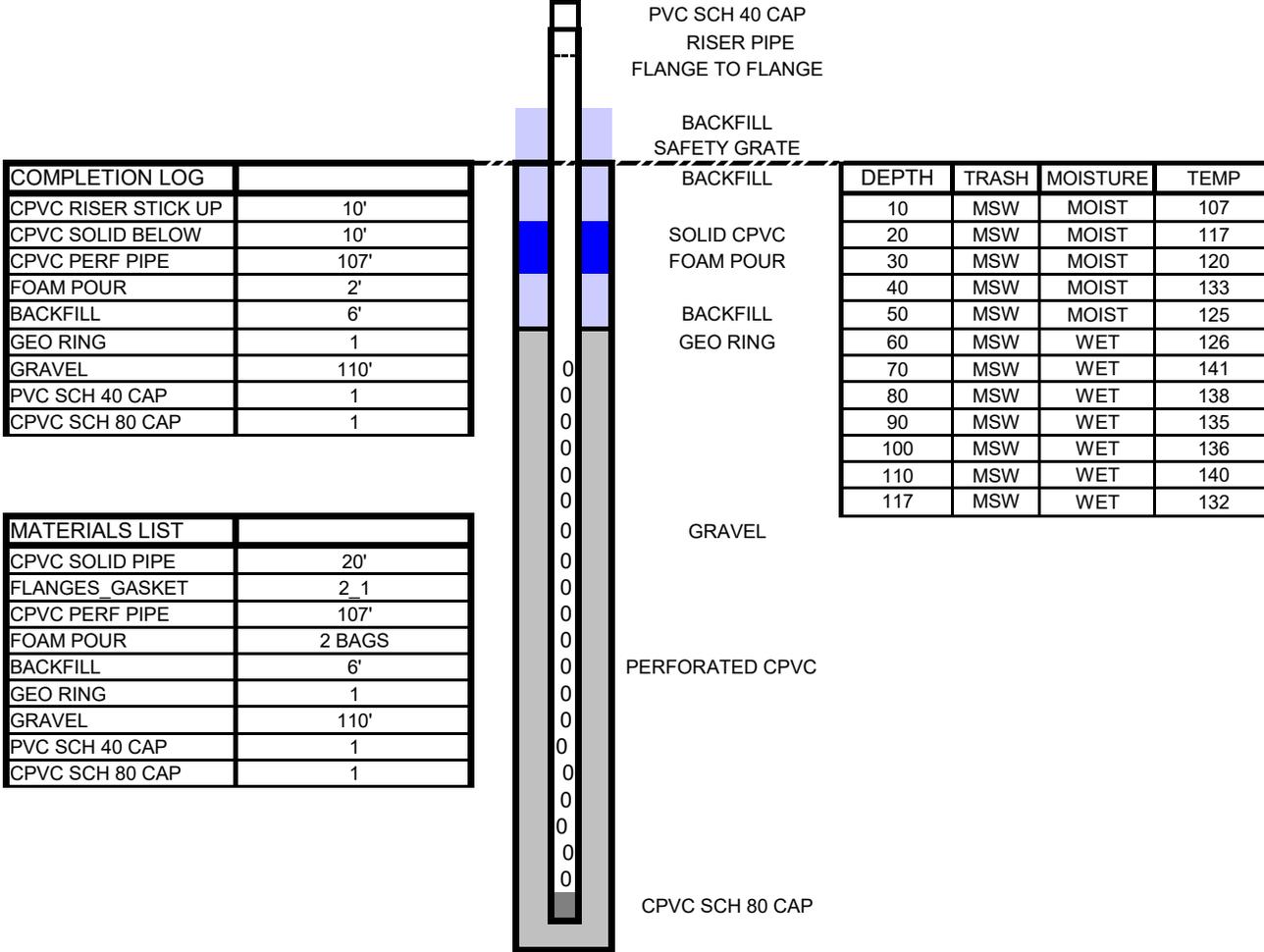
MATERIALS LIST	
PVC SOLID PIPE	20'
FLANGES_GASKET	2_1
PVC PERF PIPE	90'
FOAM POUR	2 BAGS
BACKFILL	6'
GEO RING	1
GRAVEL	93'
PVC SCH 40 CAP	1
PVC SCH 80 CAP	1

COMMENTS Wet at 52'

QA/QC _____ DATE _____ APTIM REP. _____

APTIM

Site Name:	Bristol Landfill	Well Number:	GW-63
Location :	Bristol, VA		
Start Date:	10/12/2021		
Completed:	10/12/2021	Boring Diameter:	36"
Contractor:	APTIM	Pipe Material & Diameter:	8" CPVC
Rig:	SR-30	Total Depth Drilled:	117'
Inspector:	Draper Aden Associates	Completion:	117'
Driller:	Gene Thomas	Abandonment:	



COMPLETION LOG	
CPVC RISER STICK UP	10'
CPVC SOLID BELOW	10'
CPVC PERF PIPE	107'
FOAM POUR	2'
BACKFILL	6'
GEO RING	1
GRAVEL	110'
PVC SCH 40 CAP	1
CPVC SCH 80 CAP	1

MATERIALS LIST	
CPVC SOLID PIPE	20'
FLANGES_GASKET	2_1
CPVC PERF PIPE	107'
FOAM POUR	2 BAGS
BACKFILL	6'
GEO RING	1
GRAVEL	110'
PVC SCH 40 CAP	1
CPVC SCH 80 CAP	1

COMMENTS

Wet at 54'

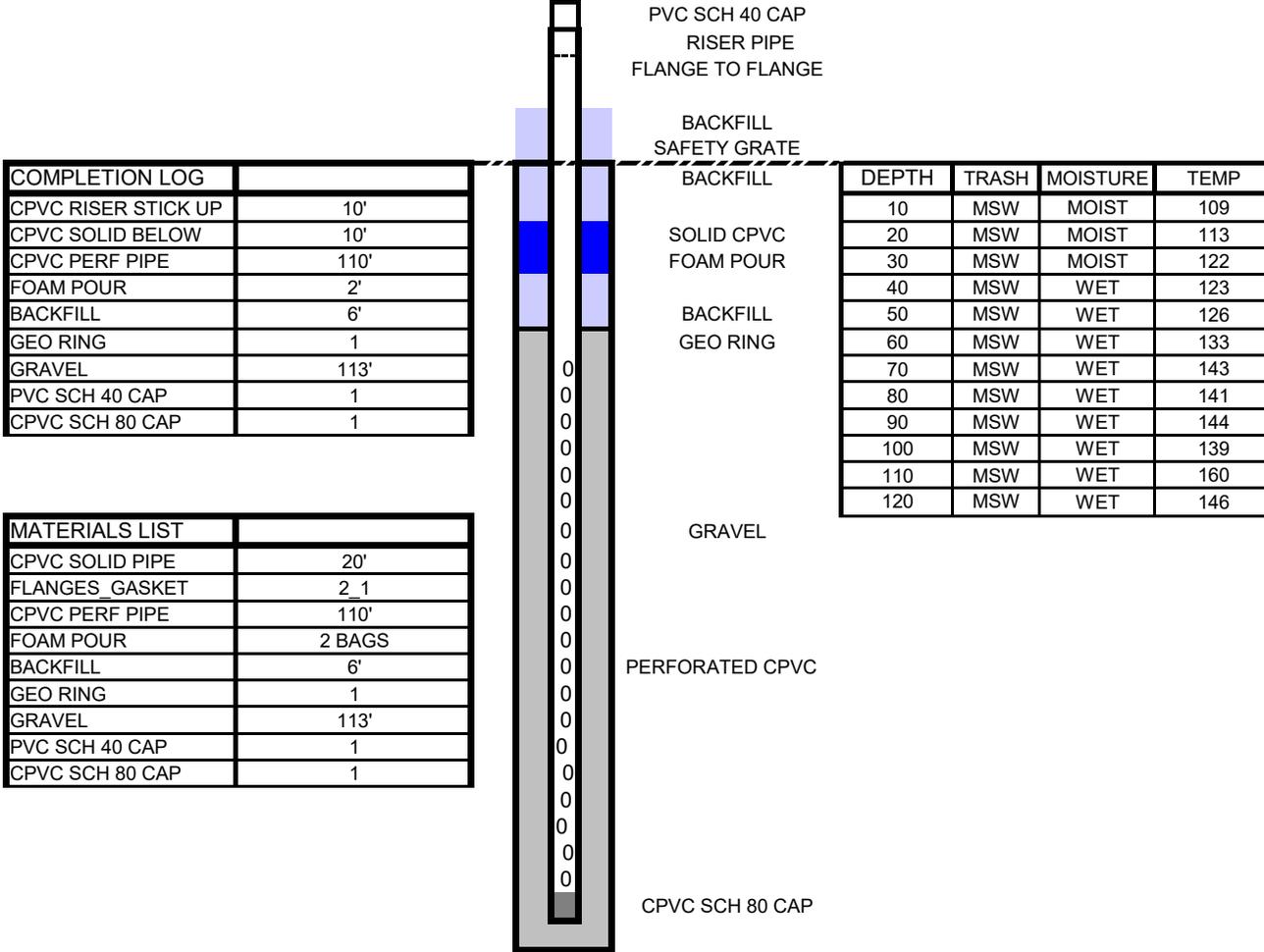
QA/QC

DATE

APTIM REP.

APTIM

Site Name:	Bristol Landfill	Well Number:	GW-62
Location :	Bristol, VA		
Start Date:	10/13/2021		
Completed:	10/13/2021	Boring Diameter:	36"
Contractor:	APTIM	Pipe Material & Diameter:	8" CPVC
Rig:	SR-30	Total Depth Drilled:	120'
Inspector:	Draper Aden Associates	Completion:	120'
Driller:	Gene Thomas	Abandonment:	



COMPLETION LOG	
CPVC RISER STICK UP	10'
CPVC SOLID BELOW	10'
CPVC PERF PIPE	110'
FOAM POUR	2'
BACKFILL	6'
GEO RING	1
GRAVEL	113'
PVC SCH 40 CAP	1
CPVC SCH 80 CAP	1

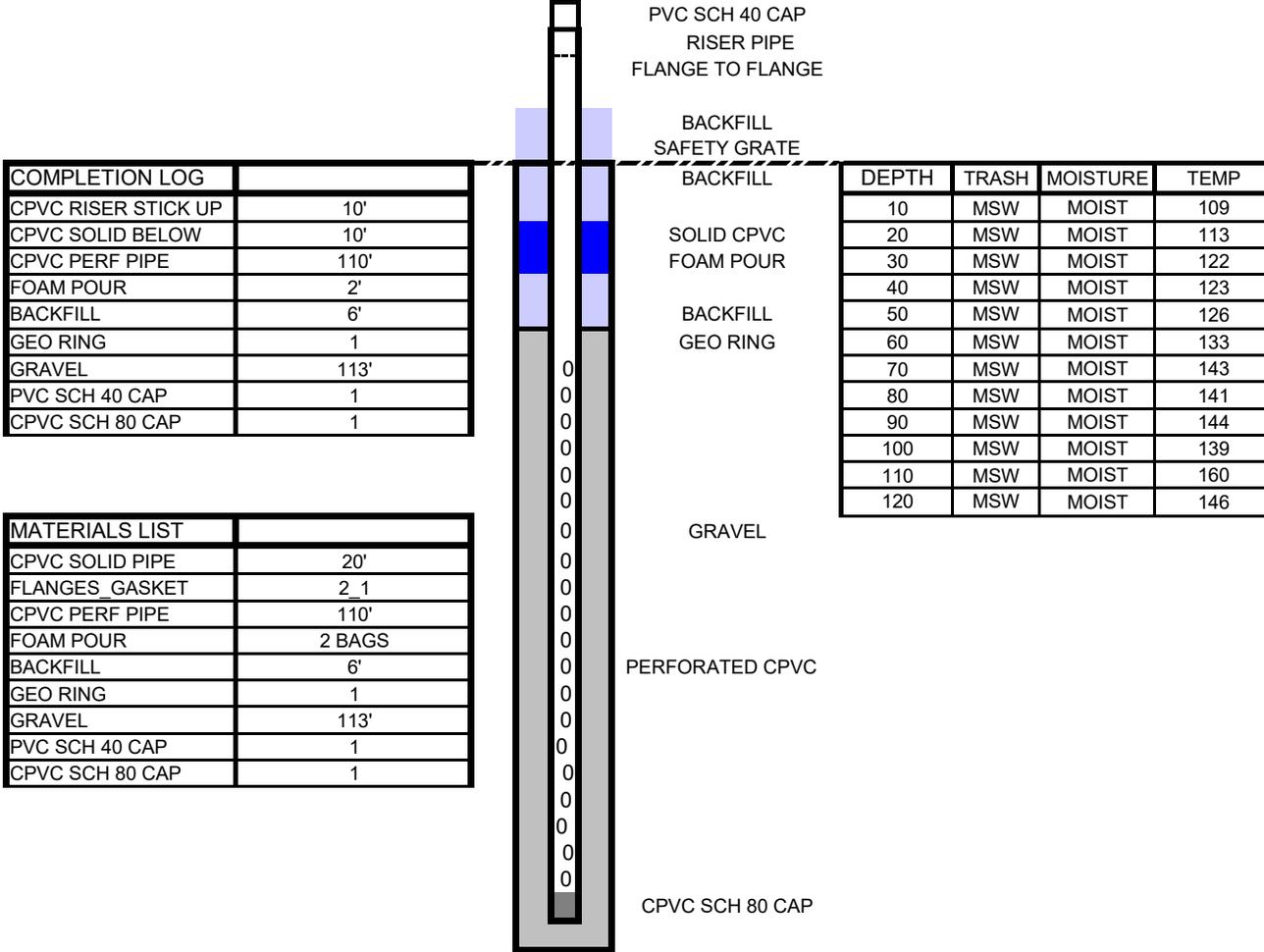
MATERIALS LIST	
CPVC SOLID PIPE	20'
FLANGES_GASKET	2_1
CPVC PERF PIPE	110'
FOAM POUR	2 BAGS
BACKFILL	6'
GEO RING	1
GRAVEL	113'
PVC SCH 40 CAP	1
CPVC SCH 80 CAP	1

COMMENTS Wet at 37'

QA/QC _____ DATE _____ APTIM REP. _____

APTIM

Site Name:	Bristol Landfill	Well Number:	GW-32R
Location :	Bristol, VA		
Start Date:	10/14/2021		
Completed:	10/14/2021	Boring Diameter:	36"
Contractor:	APTIM	Pipe Material & Diameter:	8" CPVC
Rig:	SR-30	Total Depth Drilled:	120'
Inspector:	Draper Aden Associates	Completion:	120'
Driller:	Gene Thomas	Abandonment:	



COMPLETION LOG	
CPVC RISER STICK UP	10'
CPVC SOLID BELOW	10'
CPVC PERF PIPE	110'
FOAM POUR	2'
BACKFILL	6'
GEO RING	1
GRAVEL	113'
PVC SCH 40 CAP	1
CPVC SCH 80 CAP	1

MATERIALS LIST	
CPVC SOLID PIPE	20'
FLANGES_GASKET	2_1
CPVC PERF PIPE	110'
FOAM POUR	2 BAGS
BACKFILL	6'
GEO RING	1
GRAVEL	113'
PVC SCH 40 CAP	1
CPVC SCH 80 CAP	1

COMMENTS _____

QA/QC

DATE

APTIM REP.

