400619

ERM NC, Inc.

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Charlotte, NC 28226
704-541-8345
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www.erm.com

March 8, 2013

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SITE ASSESSMENT,
REMEDIATION &
REVITALIZATION

Mr. Lucas Berresford
SCDHEC – State Voluntary Cleanup Section
Bureau of Land & Waste Management
2600 Bull Street
Columbia, SC 29201
803-896-4071

ERM

Subject: Pre-Remedial Assessment
Soil Gas Survey Results - Revised
Joslyn Clark Controls, LLC. Facility
2013 West Meeting Street
Lancaster County, South Carolina

Dear Mr. Berresford:

On behalf of Joslyn Clark Controls, LLC., ERM NC, Inc. is pleased to present one hard copy and one electronic copy of the revised Soil Gas Survey Report for the above referenced site. The report also contains revised soil boring and monitor well installation locations per your February 27, 2013 response to the initial report, dated January 30, 2013.

Should you have any questions or comments, feel free to contact me at (704) 541-8345.

Sincerely,

Michael Pressley
Project Manager

Rick Tarravechia, P.G.
Partner-in Charge

RICHARD J. TARRAVECHIA REGISTERED NO. 2060 SOUTH CAROLINA PROFESSIONAL GEOLOGIST

enclosures

cc: Mr. Carl Grabinski – Joslyn Clark Controls

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ERM NC, Inc.
8000 Corporate Center Drive
Suite 200
Charlotte, NC 28226
(704) 541-8345
(704) 541-8416 (fax)

March 7, 2013

Mr. Lucas Berresford
SCDHEC – State Voluntary Cleanup Section
Bureau of Land & Waste Management
2600 Bull Street
Columbia, SC 29201
803-896-4071

Reference: Pre-Remedial Assessment
Soil Gas Survey Results - Revised
Joslyn Clark Controls, LLC Facility
2013 West Meeting Street
Lancaster County, South Carolina
SCDHEC File # 400619

Dear Mr. Berresford:

On behalf of Joslyn Clark Controls, LLC (Joslyn Clark), ERM NC, Inc. (ERM) is pleased to present the results of the soil-gas-survey (SGS) conducted at the above referenced site. The SGS was conducted in accordance with the *Pre-Remedial Assessment Plan* (ERM, September 11, 2012) conditionally approved by South Carolina Department of Health and Environmental Control (SCDHEC) in a letter dated October 29, 2012. A site location and layout map with soil-gas sample locations is provided as Figure 1 within Attachment A.

Background

Joslyn Clark retained ERM to conduct Phase I, II, and III Environmental Site Assessments at the Joslyn Clark facility located at 2013 W. Meeting Street in Lancaster, South Carolina. The Phase I, conducted in January 2009, identified onsite potential environmental concerns related to a former metal plating operation, and a former degreasing operation located near the northwest corner of the plant which used trichloroethene (TCE) as a solvent.

In order to investigate groundwater quality at the site, twelve groundwater monitor wells were subsequently installed. Ten of the monitor wells are shallow (55 to 60 feet deep) and two are deep (110 feet deep). Depth to groundwater is approximately 40 to 45 feet below grade. Groundwater samples collected from the monitor wells showed

multiple chlorinated compounds, with TCE being the most prevalent. TCE was detected in each monitor well except MW-5, MW-10, and MW-10D. Reported concentrations of TCE ranged from 3.0 µg/L (MW-8) to 12,000 µg/L (MW-9). Based on the analytical results, the TCE plume appears to originate from the northwestern portion of the building. The lateral extent of this TCE plume has been horizontally delineated and is confined to the subject property.

Rationale for Work

Soil gas contaminant concentrations often strongly correlate with the locations of soil and/or ground water contaminant concentrations and are used to identify "hot spots" for traditional subsequent assessment methods (Geoprobe® soil and or groundwater sampling). The objective of the SGS is to identify the most appropriate locations for additional soil samples and groundwater monitor wells inside the subject property building. This information will be used to further assess the source area and to facilitate future groundwater remediation activities.

Soil Gas Sampling

Sixty (60) soil gas survey points were installed within the western portion of the facility building on November 27 through November 29, 2012. Sample locations were placed in a grid pattern (approximate 35-foot centers) over site areas where historical information and/or previous sampling indicated a potential release mechanism. Specifically, these areas included a former TCE storage area, a plating operation, a wastewater treatment area, and a paint booth with a former sump. At each location, the concrete was drilled out and a soil gas module secured in the hole to a depth of 18 inches and capped. The modules were allowed to equilibrate in place for approximately 21 days. Following retrieval, the soil gas modules were submitted to a laboratory to be analyzed for VOCs by EPA Method 8260B. Soil gas locations are depicted on Figure 1 within Attachment A. The soil gas survey report along with sample collection procedures are discussed in more detail in Attachment A.

Soil Gas Results

Results of the soil gas sampling are included in Attachment A. Twenty-five VOCs were detected in soil gas samples including; vinyl chloride (VC), 1,1-dichloroethene (DCE), trans 1,2-dichloroethene, 1,1-dichloroethane, cis-1,2-dichloroethene, chloroform, 1,2-dichloroethane, 1,1,1-trichloroethane, benzene, trichloroethene (TCE), 1,4-dioxane, 1,1,2-trichloroethane, toluene, tetrachloroethene (PCE), ethylbenzene, p&m-xylene, o-xylene, isopropylbenzene, 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, 1,2,4-triclorobenzene, naphthalene, 2-methylnaphthalene, TPH C_5-C_9, and TPH C_{10}-C_{15}. The following compounds were detected in approximately fifty

percent of the samples at varying concentrations; 1,1-DCE, trans 1,2-dichloroethene, cis 1,2-DCE, and TCE. The remaining VOCs were detected in two to forty percent of the samples.

The highest VOC concentrations appear to be found in four (4) of the soil gas samples, namely:

- SG-2, located in in the northwest portion of the building
- SG-28, located near the former paint booth and sump (southern portion of building)
- SG-29, located adjacent to SG-28 and within the wastewater treatment area (southern portion of building)
- SG-30, located adjacent to SG-29 and within close proximity to the wastewater treatment area (southern portion of building)

Mapped results of six key indicator compounds including VC, 1,1-DCE, cis-1,2-DCE, TCE, 1,4-Dioxane, and PCE can be viewed in Attachment A (Figures 2 through 7).

Proposed Soil Sampling Activities

As outlined in our Pre-Remedial Assessment Plan, ERM will install five soil borings inside the building. Based on the soil gas survey results, ERM proposes to install one boring in each of the following four soil gas survey sample locations noted above (i.e., SG-2, SG-28, SG-29, and SG-30). The fifth soil boring will be installed at the soil gas survey point SG-19, which also detected slightly elevated concentrations relative to the surrounding areas. The proposed locations of these soil borings are illustrated on Figure 1.

The soil sampling will be conducted in accordance with ERM's Pre-Remedial Assessment Plan, as amended by the SCDHEC letter dated October 29, 2012. Specific amendments to the proposed soil sampling procedures are that soil borings will be screened using Color Tec® screening instead of with a PID. Samples for laboratory analysis will be based on the samples with the highest Color Tec® results. Also, based on the detection of 1,4-dioxane in the soil gas, each of the soil samples will also be analyzed for 1,4-dioxane using EPA Method 8270C.

Proposed Temporary Well Installation

As requested in the SCDHEC letter dated February 27, 2013, the proposed Geoprobe soil boring installed at the soil gas SG-2 location will be advanced into the shallow water table (estimated 55 feet) for the installation of a temporary monitor well. Well construction will include 1-inch PVC screen and riser and #2 filter sand in the annulus. A sample will be collected from the temporary well and sampled for VOCs by EPA Method 8260B and for 1,4-dioxane by EPA Method 8270C. Upon completion of sampling activities, the well pipe will be removed and the borehole will be abandoned according to South Carolina regulations.

Proposed Well Installation

As outlined in our Pre-Remedial Assessment Plan, ERM proposes to install three permanent monitor wells inside the building, in the suspected source areas. Of the three monitor wells, one is proposed to a "shallow" depth (MW-11), while the other two wells are proposed to an "intermediate" depth (MW-11-INT) and a "deep" depth (MW-11D). The locations of the three wells will be clustered at the SG-29 soil gas sample location, as shown on Figure 1. The well construction diagrams for the groundwater monitor wells are presented as Attachment B.

The monitor well installation and sampling activities will be conducted in accordance with ERM's Pre-Remedial Assessment Plan, as amended by the SCDHEC letter dated October 29, 2012. Specific amendments to the proposed procedures are:

1. Monitoring wells will be installed with 10 foot screened intervals instead of the previously proposed 15 foot screened intervals.

2. Groundwater monitoring wells will also be sampled for TAL metals as part of the baseline analysis.

3. Based on the detection of 1,4-dioxane in the soil gas, the groundwater samples from all monitor wells will also be analyzed for 1,4-dioxane using EPA Method 8270C.

Following the completion of the soil and groundwater sampling activities, ERM will refine the conceptual model for the subject property. ERM and Joslyn Clark will then contact SCDHEC to arrange a date and time to meet and discuss the need for pilot studies or a feasibility study work plan.

Should you have any questions or comments, please contact myself or Michael Pressley of ERM at (704) 541-8345.

Sincerely,

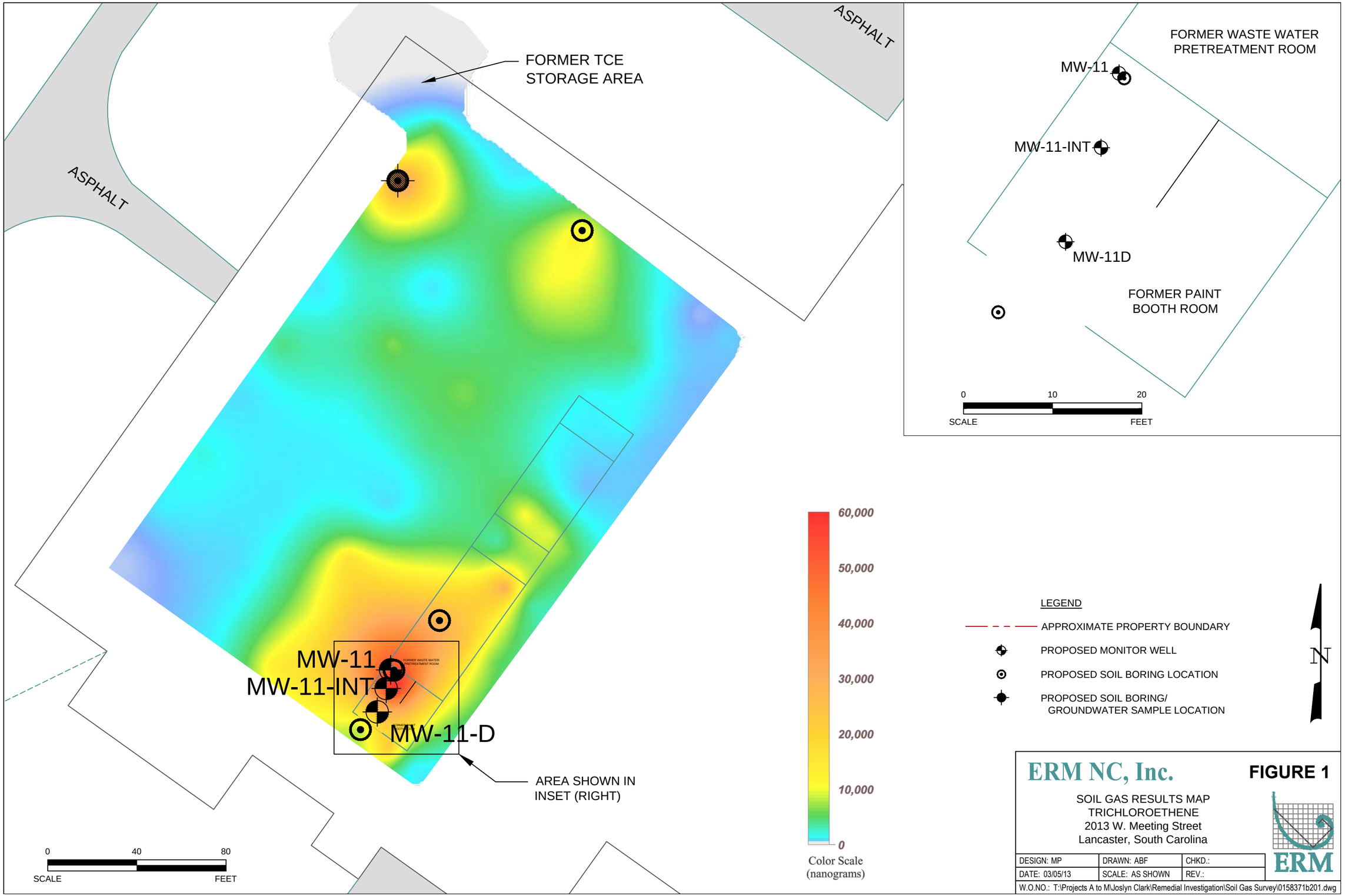
Michael Pressley
Project Manager

Rick Tarravechia, P.G.
Partner-in Charge

cc: Mr. Carl Grabinski – Joslyn Clark Controls

Enclosures
Figure 1 – Proposed Soil Boring and Monitor Well Locations
Attachment A – Beacon Environmental Services Report
Attachment B –Monitor Well Construction Diagrams

Figures



ERM NC, Inc.

FIGURE 1

SOIL GAS RESULTS MAP
TRICHLOROETHENE
2013 W. Meeting Street
Lancaster, South Carolina

DESIGN: MP	DRAWN: ABF	CHKD.:
DATE: 03/05/13	SCALE: AS SHOWN	REV.:

W.O.NO.: T:\Projects A to M\Joslyn Clark\Remedial Investigation\Soil Gas Survey\0158371b201.dwg

Attachment A
Beacon Environmental Services
Report

BEACON ENVIRONMENTAL SERVICES, INC.

The Leaders in Soil Gas Surveys and Vapor Intrusion Monitoring

ERM NC, Inc.
8000 Corporate Center Drive, Suite 200
Charlotte, NC 28226
Attn: Mr. Michael Pressley

Passive Soil Gas Survey – Analytical Report

Date: January 18, 2013
Beacon Project No. 2507

Project Reference:	Joslyn Clark, Lancaster, SC
Samplers Installed:	November 27 through 29, 2012
Samplers Retrieved:	December 18, 2012
Samples Received:	December 19, 2012
Analyses Completed:	December 22, 2012
Laboratory Data Issued:	January 3, 2013

EPA Method 8260C (Modified)
All samples were successfully analyzed using thermal desorption-gas chromatography/mass spectrometry (TD-GC/MS) instrumentation to target a custom compound list following EPA Method 8260C. Laboratory results are reported in nanograms (ng) of specific compound per sample.

Laboratory QA/QC procedures included internal standards, surrogates, and blanks based on EPA Method 8260C. Analyses and reporting were in accordance with BEACON's Quality Assurance Project Plan.

Reporting limits
The contract required quantification limit (CRQL) is 25 nanograms (ng) for individual compounds and 5,000 ng for Total Petroleum Hydrocarbons (TPH). **Table 1** provides survey results in nanograms per sampler by sample-point number and compound name. The CRQLs represent a baseline above which results exceed laboratory-determined limits of precision and accuracy. Any field sample measurements above the upper calibration standard are estimated; however, these values are reported without qualifiers because all reported measurements are relative to each other and are appropriate to meet the survey objectives of locating source areas and vapor intrusion pathways and defining the lateral extent of contamination.

Calibration Verification
The continuing calibration verification (CCV) values for the calibration check compounds were all within ±20% of the true values as defined by the initial five-point calibration and met the requirements specified in Beacon Environmental's Quality Assurance Project Plan.

Method Blanks/Trip Blanks
Laboratory method blanks are run with each sample batch to identify contamination present in the laboratory. If contamination is detected on a method blank, measurements of identical compounds in that sample batch are flagged in the laboratory report. The laboratory method blanks analyzed in connection with the present samples revealed no contamination.

The trip blank is a sampler prepared, transported, and analyzed with other samples but intentionally not exposed. Any target compounds identified on the trip blanks are reported in the laboratory data. The analyses of the trip blanks (labeled Trip-1 and Trip-2 in **Table 1**) reported none of the targeted compounds.

Passive Soil-Gas Survey Notes

When sample locations are covered with or near the edge of an artificial surface (*e.g.*, asphalt or concrete), the concentrations of compounds in soil gas are often significantly higher than the concentrations would be if the surfacing were not present. Thus, a reading taken below or near an impermeable surface is much higher than it would be in the absence of such a cap. Therefore, the sample location conditions should be evaluated when comparing results between locations.

Survey findings are exclusive to this project and when the spatial relationships are compared with results of other BEACON Surveys it is necessary to incorporate survey and site information from both investigations (*e.g.*, depth to sources, soil types, porosity, soil moisture, presence of impervious surfacing, sample collection times). BEACON recommends the guidelines stated in **Attachment 1** to establish a relationship between reported soil-gas measurements and actual subsurface contaminant concentrations, which will indicate those measurements representing significant subsurface contamination.

Project Details

Samplers were deployed November 27 through 29, 2012, and were retrieved on December 18, 2012. **Attachment 2** describes the field procedures used. Individual deployment and retrieval times will be found in the Field Deployment Report (**Attachment 3**).

Sixty (60) field samples and two (2) trip blanks were received by BEACON on December 19, 2012. Adsorbent cartridges from the passive samplers were thermally desorbed, then analyzed using gas chromatography/mass spectrometry (GC/MS) equipment, in accordance with EPA Method 8260C (Modified), as described in **Attachment 4**. BEACON's laboratory analyzed each sample for the targeted compounds; analyses were completed on December 22, 2012. Following a laboratory review, results were provided to ERM on January 3, 2013. The Chain-of-Custody form, which was shipped with the samples for this survey, is supplied as **Attachment 5**.

Field sample SG-2 reported high measurements of petroleum-related compounds that masked the quantifying ions of the internal standard compounds (Chlorobenzene-d_5 and/or 1,4-Dichlorobenzene-d_4). A manual integration was performed on the quantification ions for these internal standards to ensure that data quality objectives were met, which is in accordance with BEACON's QA/QC program. All data reported for this sample are reported with high confidence.

Field sample SG-29 detected an inordinately high measurement of trichloroethene that was not automatically identified (*i.e.*, integrated) by the analytical software. To ensure that data quality objectives were met, manual integration was performed by the analyst to quantify the measurement of trichloroethene on this sample, in accordance with BEACON's QA/QC program. All data reported for this sample are reported with high confidence.

Sample locations are shown on **Figure 1**. The following table lists frequency of detections based on the number of field samples analyzed, the reporting limit, and the maximum value for each mapped compound. The table also includes the transformation and interpolation method for the compound distribution maps provided.

Figure No.	2	3	4	5	6	7
Compound	Vinyl Chloride	1,1-Dichloroethene	cis-1,2-dichlorothene	Trichloroethene	1,4-Dioxane	Tetra-chloroethene
Frequency	9	38	41	56	23	30
Reporting Limit (nanograms)	25	25	25	25	25	25
Max Value (nanograms)	100	1,826	3,772	61,595	12,044	1,497
Transformation Method	Log	Log	Log	Log	Log	Log
Interpolation Method	Kriging	Kriging	Kriging	Kriging	Kriging	Kriging

Attachments:

- **-1-** Applying Results From Passive Soil-Gas Surveys
- **-2-** Field Procedures
- **-3-** Field Deployment Report
- **-4-** Laboratory Procedures
- **-5-** Chain-of-Custody Form

ALL DATA MEET REQUIREMENTS AS SPECIFIED IN THE BEACON ENVIRONMENTAL SERVICES, INC. QUALITY ASSURANCE PROJECT PLAN AND THE RESULTS RELATE ONLY TO THE SAMPLES REPORTED. BEACON ENVIRONMENTAL SERVICES IS ACCREDITED TO ISO 17025:2005, AND THE WORK PERFORMED WAS IN ACCORDANCE WITH ISO 17025 REQUIREMENTS, WITH THE EXCEPTION THAT SAMPLES WERE ANALYZED WITHIN A 24-HOUR TUNE WINDOW AND FREON 113, 1,4-DIOXANE, 2-METHYLNAPHTHALENE, TPH C5-C9 AND TPH C10-C15 ARE NOT WITHIN OUR SCOPE OF ACCREDITATION. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF THE LABORATORY. RELEASE OF THE DATA CONTAINED IN THIS HARDCOPY DATA PACKAGE HAS BEEN AUTHORIZED BY THE LABORATORY DIRECTOR OR HIS SIGNEE, AS VERIFIED BY THE FOLLOWING SIGNATURES:

Steven C. Thornley
Laboratory Director

Patti J. Riggs
Quality Manager

Table 1

Beacon Environmental Services, Inc.
323 Williams Street
Bel Air, MD 21014 USA

Analysis by EPA Method 8260C (Modified)

Client Sample ID:	mb121220a	Trip-1	Trip-2	SG-1	SG-2	SG-3
Project Number:		2507	2507	2507	2507	2507
Lab File ID:	A12122003	A12122007	A12122008	A12122009	A12122010	A12122011
Received Date:		12/19/2012	12/19/2012	12/19/2012	12/19/2012	12/19/2012
Analysis Date:	12/20/2012	12/20/2012	12/20/2012	12/20/2012	12/20/2012	12/20/2012
Analysis Time:	15:25	16:56	17:19	17:42	18:05	18:28
Matrix:				Soil Gas	Soil Gas	Soil Gas
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
Trichlorofluoromethane (Freon 11)	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	**27**	**276**	**30**
1,1,2-Trichlorotrifluoroethane (Fr.113)	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	**311**	**30**
Methyl-t-butyl ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	**78**	**1,032**	**91**
Chloroform	<25	<25	<25	<25	**330**	**68**
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	<25	<25	<25	**293**	<25
Trichloroethene	<25	<25	<25	**3,875**	**33,901**	**3,618**
1,4-Dioxane	<25	<25	<25	**48**	**152**	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	<25	<25	<25	<25	**168**	<25
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	**46**	**1,497**	**72**
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25	**54**	<25
p & m-Xylene	<25	<25	<25	<25	**158**	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	<25	<25	**632**	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	**2,316**	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	**33,874**	<25
1,2,4-Trimethylbenzene	<25	<25	<25	<25	**24,792**	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	**1,084**	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25
2-Methylnaphthalene	<25	<25	<25	<25	**774**	<25
TPH C_5-C_9	<5,000	<5,000	<5,000	<5,000	**79,505**	<5,000
TPH C_{10}-C_{15}	<5,000	<5,000	<5,000	<5,000	**635,066**	<5,000

Results in nanograms (ng). B = Detected in method blank.

Table 1

Beacon Environmental Services, Inc.
323 Williams Street
Bel Air, MD 21014 USA

Analysis by EPA Method 8260C (Modified)

Client Sample ID:	SG-4	SG-5	SG-6	SG-7	SG-8	SG-9
Project Number:	2507	2507	2507	2507	2507	2507
Lab File ID:	A12122012	A12122013	A12122014	A12122015	A12122016	A12122017
Received Date:	12/19/2012	12/19/2012	12/19/2012	12/19/2012	12/19/2012	12/19/2012
Analysis Date:	12/20/2012	12/20/2012	12/20/2012	12/20/2012	12/20/2012	12/20/2012
Analysis Time:	18:51	19:14	19:37	20:00	20:23	20:45
Matrix:	Soil Gas	Soil Gas	Soil Gas	Soil Gas	Soil Gas	Soil Gas
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
Trichlorofluoromethane (Freon 11)	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	**90**	<25	<25	<25	<25
1,1,2-Trichlorotrifluoroethane (Fr.113)	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	**52**	<25	<25	<25	<25
Methyl-t-butyl ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	**39**	**169**	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	<25	<25	<25	<25	**50**
Trichloroethene	**922**	**3,240**	**700**	**1,718**	**1,106**	**72**
1,4-Dioxane	<25	<25	**51**	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	<25	<25	<25	**54**	**31**	<25
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	**26**	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25	<25	**72**
p & m-Xylene	<25	<25	<25	<25	<25	**314**
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	<25	<25	<25	**316**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	**59**	**56**
1,2,4-Trimethylbenzene	<25	<25	<25	**42**	**63**	**145**
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25
2-Methylnaphthalene	<25	<25	<25	<25	<25	<25
TPH C_5-C_9	<5,000	<5,000	<5,000	<5,000	<5,000	<5,000
TPH C_{10}-C_{15}	<5,000	**5,566**	<5,000	**5,979**	<5,000	<5,000

Results in nanograms (ng). B = Detected in method blank.

Table 1

Beacon Environmental Services, Inc.
323 Williams Street
Bel Air, MD 21014 USA

Analysis by EPA Method 8260C (Modified)

Client Sample ID:	SG-10	SG-11	SG-12	SG-13	SG-14	SG-15
Project Number:	2507	2507	2507	2507	2507	2507
Lab File ID:	A12122018	A12122019	A12122020	A12122021	A12122022	A12122023
Received Date:	12/19/2012	12/19/2012	12/19/2012	12/19/2012	12/19/2012	12/19/2012
Analysis Date:	12/20/2012	12/20/2012	12/20/2012	12/20/2012	12/20/2012	12/20/2012
Analysis Time:	21:08	21:30	21:53	22:15	22:38	23:01
Matrix:	Soil Gas	Soil Gas	Soil Gas	Soil Gas	Soil Gas	Soil Gas
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
Trichlorofluoromethane (Freon 11)	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	**37**	**99**
1,1,2-Trichlorotrifluoroethane (Fr.113)	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	**28**	<25
Methyl-t-butyl ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	**48**
cis-1,2-Dichloroethene	<25	<25	**35**	**28**	**77**	**72**
Chloroform	<25	<25	<25	<25	<25	**57**
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	<25	<25	<25	<25	<25
Trichloroethene	**562**	**661**	**870**	**984**	**1,713**	**4,989**
1,4-Dioxane	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	<25	**35**	**25**	**31**	<25	<25
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	**72**
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25	<25	<25
p & m-Xylene	**79**	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	**72**	<25	<25	<25	<25	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	**32**	<25	<25	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25
2-Methylnaphthalene	<25	<25	<25	<25	<25	<25
TPH C_5-C_9	<5,000	<5,000	<5,000	<5,000	<5,000	<5,000
TPH C_{10}-C_{15}	<5,000	**6,666**	<5,000	<5,000	<5,000	<5,000

Results in nanograms (ng). B = Detected in method blank.

Table 1

Beacon Environmental Services, Inc.
323 Williams Street
Bel Air, MD 21014 USA

Analysis by EPA Method 8260C (Modified)

Client Sample ID:	SG-16	SG-17	SG-18	SG-19	SG-20	SG-21
Project Number:	2507	2507	2507	2507	2507	2507
Lab File ID:	A12122024	A12122025	A12122026	A12122027	A12122028	A12122029
Received Date:	12/19/2012	12/19/2012	12/19/2012	12/19/2012	12/19/2012	12/19/2012
Analysis Date:	12/20/2012	12/20/2012	12/21/2012	12/21/2012	12/21/2012	12/21/2012
Analysis Time:	23:24	23:47	0:09	0:32	0:55	1:17
Matrix:	Soil Gas	Soil Gas	Soil Gas	Soil Gas	Soil Gas	Soil Gas
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
Trichlorofluoromethane (Freon 11)	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	**33**	<25	**160**	**146**	**35**
1,1,2-Trichlorotrifluoroethane (Fr.113)	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	**151**	**128**	<25
Methyl-t-butyl ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	**25**	**36**	<25
cis-1,2-Dichloroethene	<25	**50**	<25	**498**	**371**	**54**
Chloroform	<25	**32**	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	<25	<25	<25	<25	<25
Trichloroethene	**849**	**3,457**	**1,055**	**10,525**	**7,785**	**3,473**
1,4-Dioxane	<25	<25	<25	**740**	**44**	**71**
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	<25	<25	<25	**67**	<25	**32**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	**63**	<25	**104**	**85**	**50**
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25	<25	<25
p & m-Xylene	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	<25	<25	<25	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trimethylbenzene	<25	<25	<25	<25	<25	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25
2-Methylnaphthalene	<25	<25	<25	<25	<25	<25
TPH C_5-C_9	<5,000	<5,000	<5,000	<5,000	<5,000	<5,000
TPH C_{10}-C_{15}	<5,000	<5,000	**5,487**	<5,000	<5,000	**9,583**

Results in nanograms (ng). B = Detected in method blank.

Table 1

Beacon Environmental Services, Inc.
323 Williams Street
Bel Air, MD 21014 USA

Analysis by EPA Method 8260C (Modified)

Client Sample ID:	SG-22	SG-23	SG-24	SG-25	SG-26	SG-27
Project Number:	2507	2507	2507	2507	2507	2507
Lab File ID:	A12122030	A12122031	A12122032	A12122033	A12122034	A12122035
Received Date:	12/19/2012	12/19/2012	12/19/2012	12/19/2012	12/19/2012	12/19/2012
Analysis Date:	12/21/2012	12/21/2012	12/21/2012	12/21/2012	12/21/2012	12/21/2012
Analysis Time:	1:40	2:03	2:25	2:48	3:11	3:33
Matrix:	Soil Gas	Soil Gas	Soil Gas	Soil Gas	Soil Gas	Soil Gas
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	<25	<25
Trichlorofluoromethane (Freon 11)	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	**149**	**39**	**30**	**504**	**602**	**680**
1,1,2-Trichlorotrifluoroethane (Fr.113)	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	**91**	**27**	<25	**228**	**123**	**276**
Methyl-t-butyl ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	**46**	<25	<25	<25	<25	<25
cis-1,2-Dichloroethene	**256**	**75**	**27**	**647**	**332**	**650**
Chloroform	<25	<25	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	<25	<25	<25	<25	<25
Trichloroethene	**4,846**	**2,859**	**714**	**12,560**	**7,640**	**10,438**
1,4-Dioxane	<25	<25	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	<25	<25	<25	**28**	<25	<25
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	**38**	**31**	<25	**120**	**74**	**75**
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25	<25	**54**
p & m-Xylene	<25	<25	<25	<25	<25	**221**
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	<25	<25	<25	**215**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	**49**
1,2,4-Trimethylbenzene	<25	<25	<25	<25	<25	**82**
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25
2-Methylnaphthalene	<25	<25	<25	<25	<25	<25
TPH C_5-C_9	<5,000	<5,000	<5,000	<5,000	<5,000	<5,000
TPH C_{10}-C_{15}	**9,680**	<5,000	<5,000	**7,355**	<5,000	<5,000

Results in nanograms (ng). B = Detected in method blank.

Table 1

Beacon Environmental Services, Inc.
323 Williams Street
Bel Air, MD 21014 USA

Analysis by EPA Method 8260C (Modified)

Client Sample ID:	SG-28	SG-29	SG-30	SG-31	SG-32	SG-33
Project Number:	2507	2507	2507	2507	2507	2507
Lab File ID:	A12122036	A12122037	A12122038	A12122039	A12122040	A12122041
Received Date:	12/19/2012	12/19/2012	12/19/2012	12/19/2012	12/19/2012	12/19/2012
Analysis Date:	12/21/2012	12/21/2012	12/21/2012	12/21/2012	12/21/2012	12/21/2012
Analysis Time:	3:57	4:19	4:42	5:05	5:28	5:50
Matrix:	Soil Gas	Soil Gas	Soil Gas	Soil Gas	Soil Gas	Soil Gas
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	**42**	**43**	<25	**72**	<25
Trichlorofluoromethane (Freon 11)	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	**610**	**1,280**	**1,826**	**219**	**231**	**27**
1,1,2-Trichlorotrifluoroethane (Fr.113)	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	**95**	**1,137**	**330**	**96**	**133**	<25
Methyl-t-butyl ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	**49**	<25	**169**	**50**
cis-1,2-Dichloroethene	**375**	**3,772**	**1,054**	**238**	**331**	**26**
Chloroform	<25	**40**	**70**	<25	**161**	**33**
1,2-Dichloroethane	<25	<25	**34**	<25	<25	<25
1,1,1-Trichloroethane	<25	**64**	**33**	**62**	**174**	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	<25	<25	<25	<25	<25
Trichloroethene	**6,210**	**61,595**	**23,446**	**7,123**	**8,802**	**1,045**
1,4-Dioxane	**12,044**	**10,132**	**208**	<25	**112**	<25
1,1,2-Trichloroethane	<25	**33**	**26**	<25	<25	<25
Toluene	**29**	**54**	<25	<25	<25	<25
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	**72**	**627**	**433**	**124**	**141**	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25	<25	<25
p & m-Xylene	<25	**65**	**65**	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	**47**	**42**	<25	<25	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	<25	**53**	<25	<25	<25	<25
1,2,4-Trimethylbenzene	**28**	**180**	**45**	<25	**44**	<25
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	**5,961**	**68**	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25
2-Methylnaphthalene	<25	**670**	<25	<25	<25	<25
TPH C_5-C_9	<5,000	<5,000	<5,000	<5,000	<5,000	<5,000
TPH C_{10}-C_{15}	**6,368**	**42,816**	<5,000	<5,000	<5,000	<5,000

Results in nanograms (ng). B = Detected in method blank.

Table 1

Beacon Environmental Services, Inc.
323 Williams Street
Bel Air, MD 21014 USA

Analysis by EPA Method 8260C (Modified)

Client Sample ID:	SG-34	SG-35	SG-36	SG-37	SG-38	SG-39
Project Number:	2507	2507	2507	2507	2507	2507
Lab File ID:	A12122042	A12122043	A12122044	A12122045	A12122046	A12122047
Received Date:	12/19/2012	12/19/2012	12/19/2012	12/19/2012	12/19/2012	12/19/2012
Analysis Date:	12/21/2012	12/21/2012	12/21/2012	12/21/2012	12/21/2012	12/21/2012
Analysis Time:	6:13	6:36	6:59	7:21	7:44	8:07
Matrix:	Soil Gas	Soil Gas	Soil Gas	Soil Gas	Soil Gas	Soil Gas
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	**39**	<25	<25	<25	<25
Trichlorofluoromethane (Freon 11)	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	**50**	**152**	<25	<25	**26**	**33**
1,1,2-Trichlorotrifluoroethane (Fr.113)	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	**33**	**81**	<25	<25	<25	<25
Methyl-t-butyl ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	<25	**38**
cis-1,2-Dichloroethene	**78**	**259**	<25	<25	**33**	**28**
Chloroform	<25	<25	<25	<25	<25	**28**
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	<25	<25	<25	<25	<25
Trichloroethene	**1,104**	**3,496**	**939**	**126**	**1,103**	**1,374**
1,4-Dioxane	**33**	<25	**88**	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	<25	<25	<25	<25	<25	<25
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25	<25	<25
p & m-Xylene	<25	<25	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	<25	<25	<25	<25
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	<25
1,3,5-Trimethylbenzene	**26**	<25	<25	<25	<25	**88**
1,2,4-Trimethylbenzene	**47**	<25	<25	<25	<25	**121**
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25
2-Methylnaphthalene	<25	<25	<25	<25	<25	<25
TPH C_5-C_9	<5,000	<5,000	<5,000	<5,000	<5,000	<5,000
TPH C_{10}-C_{15}	<5,000	<5,000	<5,000	<5,000	<5,000	**7,232**

Results in nanograms (ng). B = Detected in method blank.

Table 1

Beacon Environmental Services, Inc.
323 Williams Street
Bel Air, MD 21014 USA

Analysis by EPA Method 8260C (Modified)

Client Sample ID:	SG-40	SG-41	SG-42	SG-43	SG-44	SG-45
Project Number:	2507	2507	2507	2507	2507	2507
Lab File ID:	A12122048	A12122049	A12122050	A12122051	A12122052	A12122053
Received Date:	12/19/2012	12/19/2012	12/19/2012	12/19/2012	12/19/2012	12/19/2012
Analysis Date:	12/21/2012	12/21/2012	12/21/2012	12/21/2012	12/21/2012	12/21/2012
Analysis Time:	8:30	8:52	9:15	9:38	10:01	10:24
Matrix:	Soil Gas	Soil Gas	Soil Gas	Soil Gas	Soil Gas	Soil Gas
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	**100**	<25	**34**	**27**
Trichlorofluoromethane (Freon 11)	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	**181**	**1,295**	**779**	**1,666**	**628**
1,1,2-Trichlorotrifluoroethane (Fr.113)	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	**129**	**195**	**177**	**449**	**134**
Methyl-t-butyl ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	**251**	<25	<25	<25
cis-1,2-Dichloroethene	<25	**226**	**498**	**516**	**1,738**	**824**
Chloroform	<25	**96**	**445**	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	**32**	**28**	**35**
1,1,1-Trichloroethane	<25	<25	**557**	**36**	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	**54**	<25	<25	<25	<25
Trichloroethene	**339**	**7,417**	**25,111**	**17,374**	**17,456**	**17,166**
1,4-Dioxane	**237**	**120**	**117**	<25	**4,922**	**500**
1,1,2-Trichloroethane	<25	<25	<25	**40**	<25	**31**
Toluene	<25	**366**	<25	**28**	**469**	<25
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	**71**	**503**	**642**	**295**	**396**
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	**2,055**	<25	<25	**669**	<25
p & m-Xylene	**118**	**11,975**	**29**	<25	**3,313**	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	**287**	**24,091**	**80**	**26**	**6,510**	**30**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	**29**	**7,561**	<25	<25	**236**	<25
1,3,5-Trimethylbenzene	**48**	<25	**122**	**38**	**360**	**27**
1,2,4-Trimethylbenzene	**99**	**31,659**	**269**	**97**	**318**	**56**
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	**49**	<25
Naphthalene	<25	**155**	<25	<25	**129**	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25
2-Methylnaphthalene	<25	<25	<25	<25	**31**	<25
TPH C_5-C_9	<5,000	**21,776**	<5,000	<5,000	<5,000	<5,000
TPH C_{10}-C_{15}	<5,000	**207,949**	<5,000	<5,000	**27,431**	<5,000

Results in nanograms (ng). B = Detected in method blank.

Table 1

Beacon Environmental Services, Inc.
323 Williams Street
Bel Air, MD 21014 USA

Analysis by EPA Method 8260C (Modified)

Client Sample ID:	SG-46	SG-47	SG-48	SG-49	SG-50	SG-51
Project Number:	2507	2507	2507	2507	2507	2507
Lab File ID:	A12122054	A12122055	A12122056	A12122057	A12122058	A12122059
Received Date:	12/19/2012	12/19/2012	12/19/2012	12/19/2012	12/19/2012	12/19/2012
Analysis Date:	12/21/2012	12/21/2012	12/21/2012	12/21/2012	12/21/2012	12/21/2012
Analysis Time:	10:47	11:10	11:33	11:55	12:18	12:41
Matrix:	Soil Gas	Soil Gas	Soil Gas	Soil Gas	Soil Gas	Soil Gas
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	**66**	<25
Trichlorofluoromethane (Freon 11)	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	**168**	**354**	**505**	**153**	**208**	<25
1,1,2-Trichlorotrifluoroethane (Fr.113)	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	**33**	**97**	**112**	**36**	**114**	<25
Methyl-t-butyl ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	**27**	**97**	<25
cis-1,2-Dichloroethene	**179**	**448**	**271**	**101**	**236**	<25
Chloroform	<25	<25	<25	**33**	**162**	<25
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	**27**	**144**	<25
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	<25	<25	<25	<25	<25
Trichloroethene	**1,050**	**5,744**	**4,938**	**2,523**	**4,497**	**519**
1,4-Dioxane	<25	**28**	<25	**26**	**72**	**48**
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	<25	<25	<25	<25	<25	**32**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	**97**	**66**	**31**	**66**	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25	**32**	<25
p & m-Xylene	<25	<25	<25	<25	**260**	**47**
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	<25	<25	**1,638**	**144**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	**108**	<25
1,3,5-Trimethylbenzene	<25	<25	<25	<25	**527**	**85**
1,2,4-Trimethylbenzene	**34**	<25	<25	<25	**1,654**	**161**
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	**48**	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25
2-Methylnaphthalene	<25	<25	<25	<25	<25	<25
TPH C_5-C_9	<5,000	<5,000	<5,000	<5,000	<5,000	<5,000
TPH C_{10}-C_{15}	<5,000	<5,000	<5,000	<5,000	**9,540**	<5,000

Results in nanograms (ng). B = Detected in method blank.

Table 1

Beacon Environmental Services, Inc.
323 Williams Street
Bel Air, MD 21014 USA

Analysis by EPA Method 8260C (Modified)

Client Sample ID:	SG-52	SG-53	SG-54	mb121221a	SG-55	SG-56
Project Number:	2507	2507	2507		2507	2507
Lab File ID:	A12122060	A12122061	A12122062	A12122127	A12122129	A12122130
Received Date:	12/19/2012	12/19/2012	12/19/2012		12/19/2012	12/19/2012
Analysis Date:	12/21/2012	12/21/2012	12/21/2012	12/22/2012	12/22/2012	12/22/2012
Analysis Time:	13:04	13:27	13:50	0:31	1:16	1:39
Matrix:	Soil Gas	Soil Gas	Soil Gas		Soil Gas	Soil Gas
Units:	ng	ng	ng	ng	ng	ng
COMPOUNDS						
Vinyl Chloride	<25	<25	<25	<25	**53**	<25
Trichlorofluoromethane (Freon 11)	<25	<25	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25	**192**	**146**
1,1,2-Trichlorotrifluoroethane (Fr.113)	<25	<25	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25	**54**	**117**
Methyl-t-butyl ether	<25	<25	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25	**83**	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25	**119**	**299**
Chloroform	<25	<25	<25	<25	**79**	**62**
1,2-Dichloroethane	<25	<25	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25	**68**	**127**
Carbon Tetrachloride	<25	<25	<25	<25	<25	<25
Benzene	<25	<25	<25	<25	<25	**75**
Trichloroethene	**400**	**329**	**505**	<25	**2,525**	**5,596**
1,4-Dioxane	<25	<25	<25	<25	**72**	**75**
1,1,2-Trichloroethane	<25	<25	<25	<25	<25	<25
Toluene	<25	<25	<25	<25	<25	**224**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25	**35**	**162**
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25	<25	**691**
p & m-Xylene	<25	<25	<25	<25	<25	**5,629**
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25	<25	<25
o-Xylene	<25	<25	<25	<25	<25	**17,871**
1,2,3-Trichloropropane	<25	<25	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25	<25	**3,418**
1,3,5-Trimethylbenzene	<25	<25	<25	<25	<25	**14,248**
1,2,4-Trimethylbenzene	<25	<25	<25	<25	<25	**18,398**
1,3-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25	<25	**865**
1,2,3-Trichlorobenzene	<25	<25	<25	<25	<25	<25
2-Methylnaphthalene	<25	<25	<25	<25	<25	**425**
TPH C_5-C_9	<5,000	<5,000	<5,000	<5,000	<5,000	**17,063**
TPH C_{10}-C_{15}	<5,000	<5,000	**13,375**	<5,000	<5,000	**218,781**

Results in nanograms (ng). B = Detected in method blank.

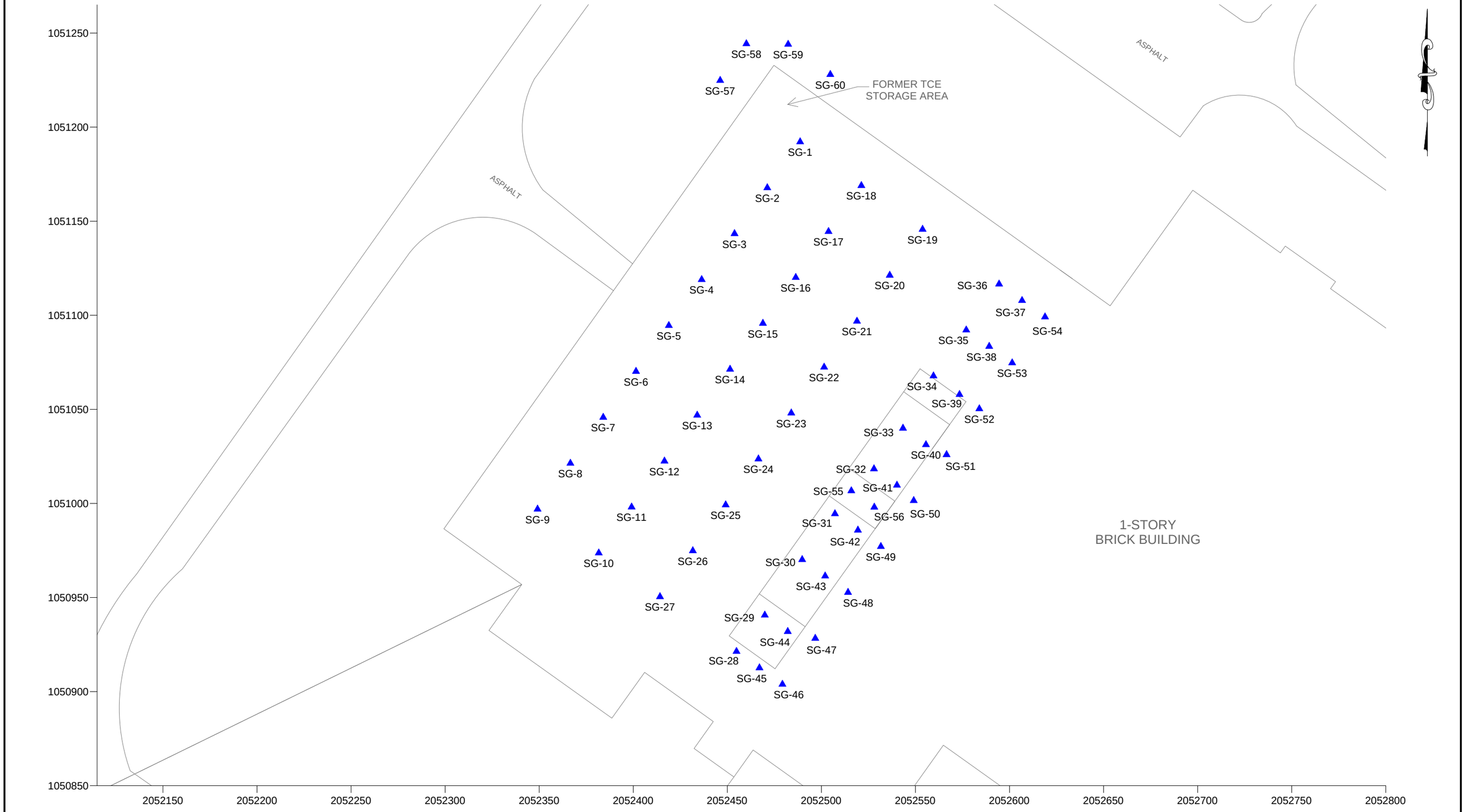
Table 1

Beacon Environmental Services, Inc.
323 Williams Street
Bel Air, MD 21014 USA

Analysis by EPA Method 8260C (Modified)

Client Sample ID:	SG-57	SG-58	SG-59	SG-60
Project Number:	2507	2507	2507	2507
Lab File ID:	A12122131	A12122132	A12122133	A12122134
Received Date:	12/19/2012	12/19/2012	12/19/2012	12/19/2012
Analysis Date:	12/22/2012	12/22/2012	12/22/2012	12/22/2012
Analysis Time:	2:02	2:24	2:47	3:10
Matrix:	Soil Gas	Soil Gas	Soil Gas	Soil Gas
Units:	ng	ng	ng	ng
COMPOUNDS				
Vinyl Chloride	<25	<25	<25	<25
Trichlorofluoromethane (Freon 11)	<25	<25	<25	<25
1,1-Dichloroethene	<25	<25	<25	<25
1,1,2-Trichlorotrifluoroethane (Fr.113)	<25	<25	<25	<25
trans-1,2-Dichloroethene	<25	<25	<25	<25
Methyl-t-butyl ether	<25	<25	<25	<25
1,1-Dichloroethane	<25	<25	<25	<25
cis-1,2-Dichloroethene	<25	<25	<25	<25
Chloroform	<25	<25	<25	<25
1,2-Dichloroethane	<25	<25	<25	<25
1,1,1-Trichloroethane	<25	<25	<25	<25
Carbon Tetrachloride	<25	<25	<25	<25
Benzene	<25	<25	<25	<25
Trichloroethene	<25	<25	<25	<25
1,4-Dioxane	<25	<25	<25	<25
1,1,2-Trichloroethane	<25	<25	<25	<25
Toluene	<25	<25	**27**	**208**
1,2-Dibromoethane (EDB)	<25	<25	<25	<25
Tetrachloroethene	<25	<25	<25	<25
1,1,1,2-Tetrachloroethane	<25	<25	<25	<25
Chlorobenzene	<25	<25	<25	<25
Ethylbenzene	<25	<25	<25	<25
p & m-Xylene	<25	<25	<25	<25
1,1,2,2-Tetrachloroethane	<25	<25	<25	<25
o-Xylene	**75**	<25	<25	**86**
1,2,3-Trichloropropane	<25	<25	<25	<25
Isopropylbenzene	<25	<25	<25	<25
1,3,5-Trimethylbenzene	**85**	**26**	<25	**87**
1,2,4-Trimethylbenzene	**109**	**33**	<25	**114**
1,3-Dichlorobenzene	<25	<25	<25	<25
1,4-Dichlorobenzene	<25	<25	<25	<25
1,2-Dichlorobenzene	<25	<25	<25	<25
1,2,4-Trichlorobenzene	<25	<25	<25	<25
Naphthalene	<25	<25	<25	<25
1,2,3-Trichlorobenzene	<25	<25	<25	<25
2-Methylnaphthalene	<25	<25	<25	<25
TPH C_5-C_9	<5,000	<5,000	<5,000	<5,000
TPH C_{10}-C_{15}	<5,000	<5,000	<5,000	**7,178**

Results in nanograms (ng). B = Detected in method blank.



BEACON ENVIRONMENTAL SERVICES, INC.
323 Williams Street, Bel Air, MD, 21014, USA 1-410-838-8780
Beacon Project No. 2507, January 2013

LEGEND

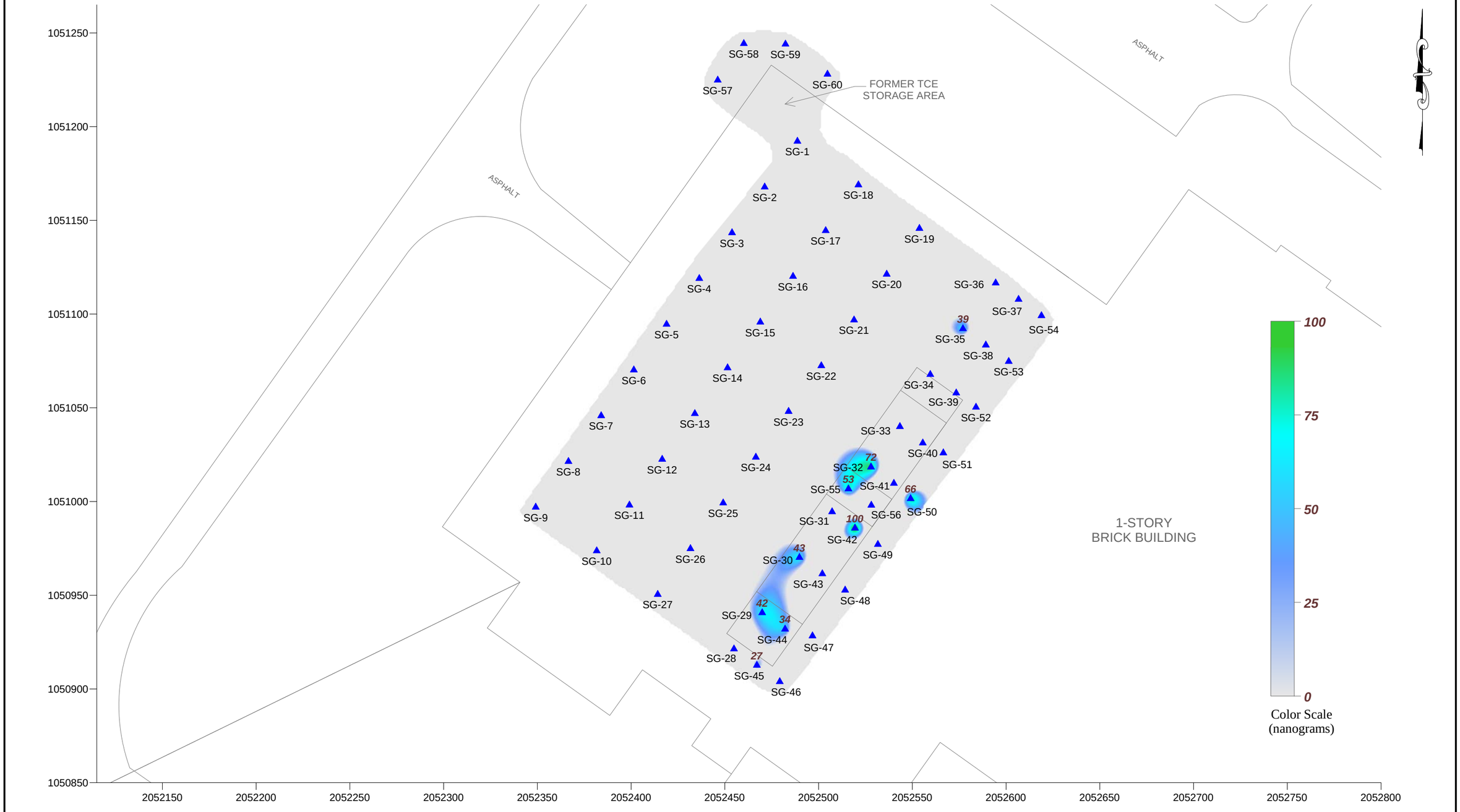
▲ SG-8 PASSIVE SOIL-GAS SAMPLE LOCATION

Scale in Feet

0 50 100

Figure 1
Passive Soil-Gas Survey
Sample Locations

Joslyn Clark
Lancaster, SC



BEACON ENVIRONMENTAL SERVICES, INC.
323 Williams Street, Bel Air, MD, 21014, USA 1-410-838-8780
Beacon Project No. 2507, January 2013

LEGEND

1,000 NANOGRAMS/SAMPLER

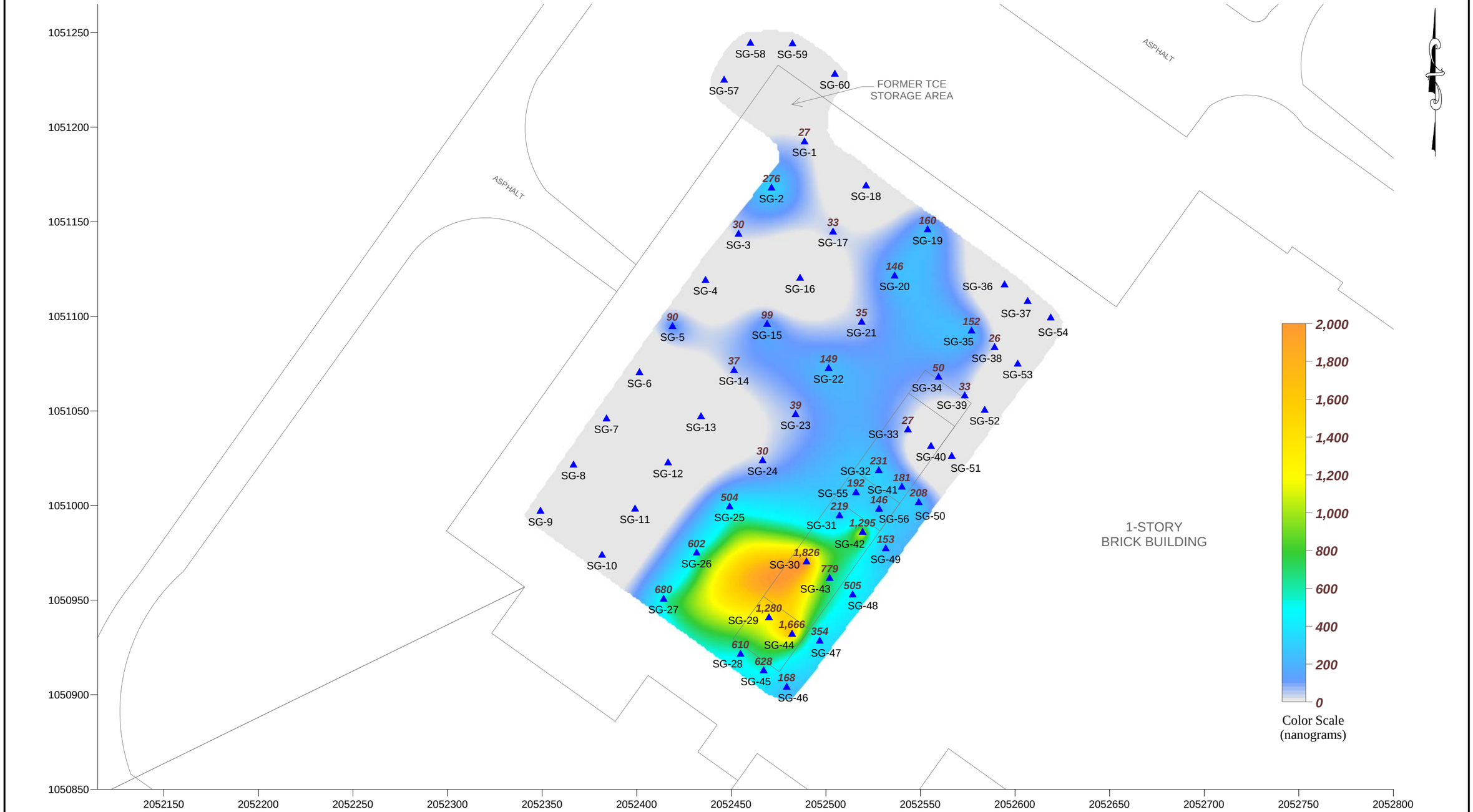
▲ SG-8 PASSIVE SOIL-GAS SAMPLE LOCATION

Scale in Feet

0 50 100

Figure 2
Passive Soil-Gas Survey
Vinyl Chloride

Joslyn Clark
Lancaster, SC



BEACON ENVIRONMENTAL SERVICES, INC.

323 Williams Street, Bel Air, MD, 21014, USA 1-410-838-8780

Beacon Project No. 2507, January 2013

LEGEND

1,000 NANOGRAMS/SAMPLER

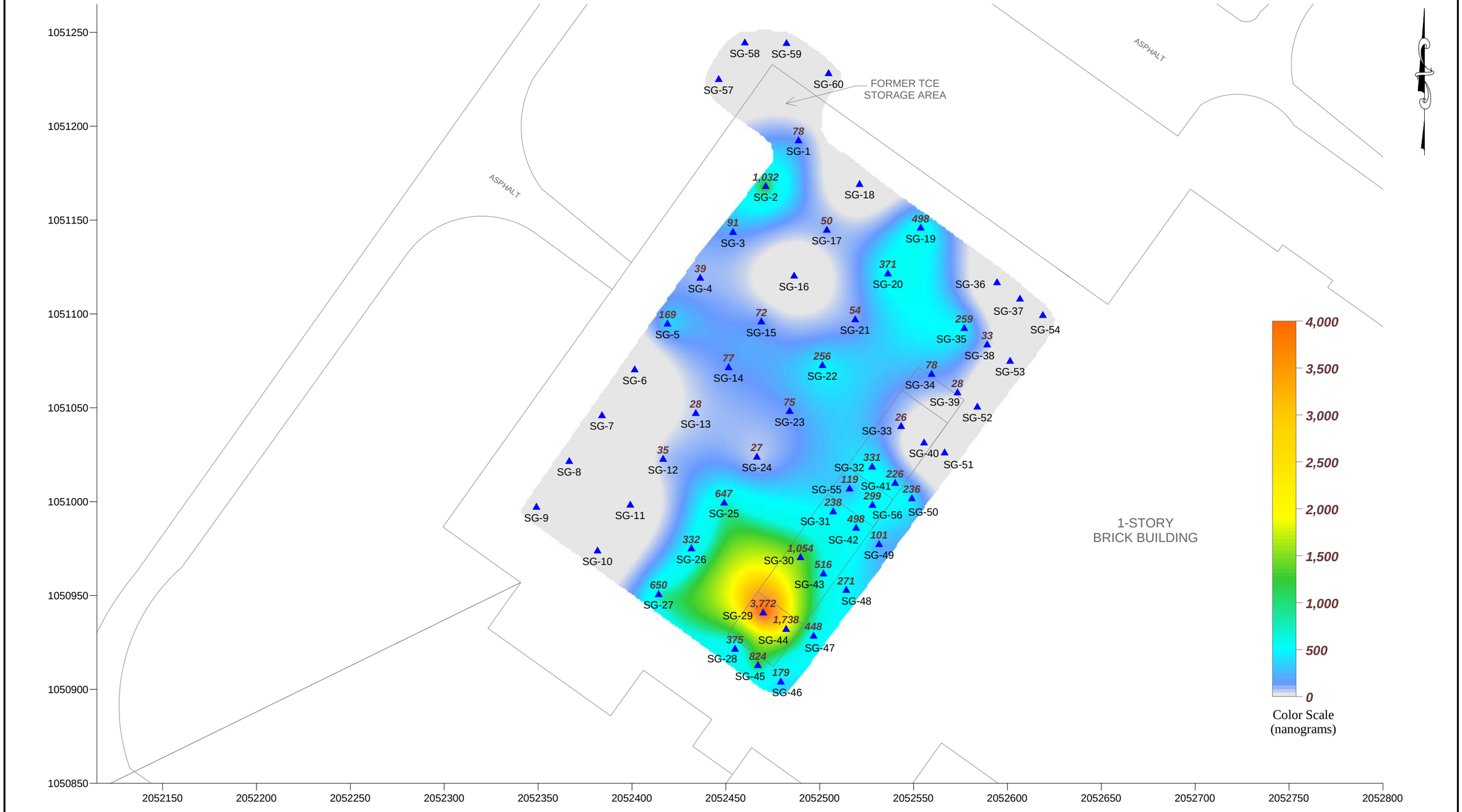
▲ **SG-8** PASSIVE SOIL-GAS SAMPLE LOCATION

Scale in Feet

0 50 100

Figure 3
Passive Soil-Gas Survey
1,1-Dichloroethene

Joslyn Clark
Lancaster, SC



LEGEND

1,000 NANOGRAMS/SAMPLER

▲ **SG-8** PASSIVE SOIL-GAS SAMPLE LOCATION

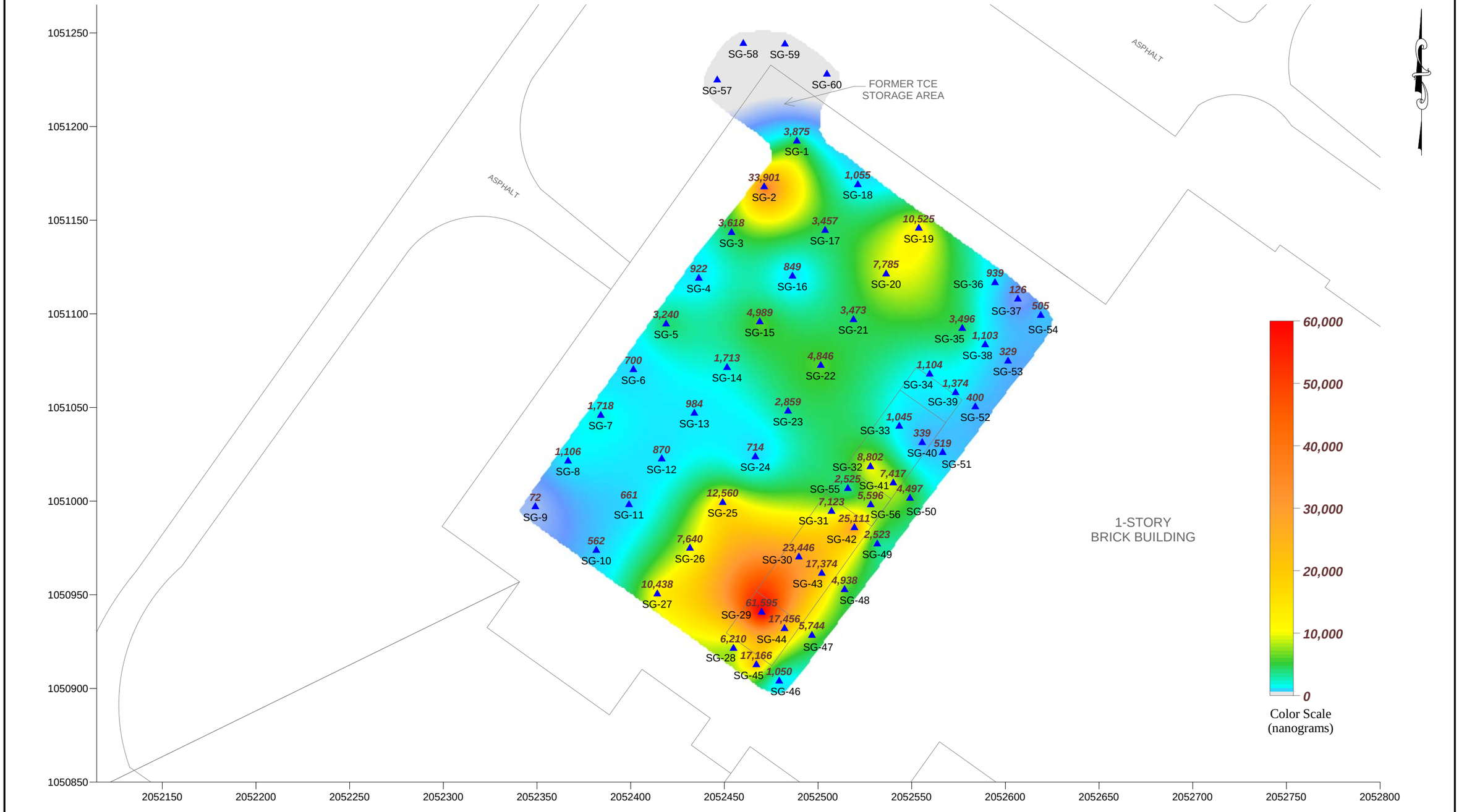
Scale in Feet

0 50 100

BEACON ENVIRONMENTAL SERVICES, INC.
323 Williams Street, Bel Air, MD, 21014, USA 1-410-838-8780
Beacon Project No. 2507, January 2013

Figure 4
Passive Soil-Gas Survey
cis-1,2-Dichloroethene

Joslyn Clark
Lancaster, SC



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Beacon Project No. 2507, January 2013

LEGEND

1,000 NANOGRAMS/SAMPLER

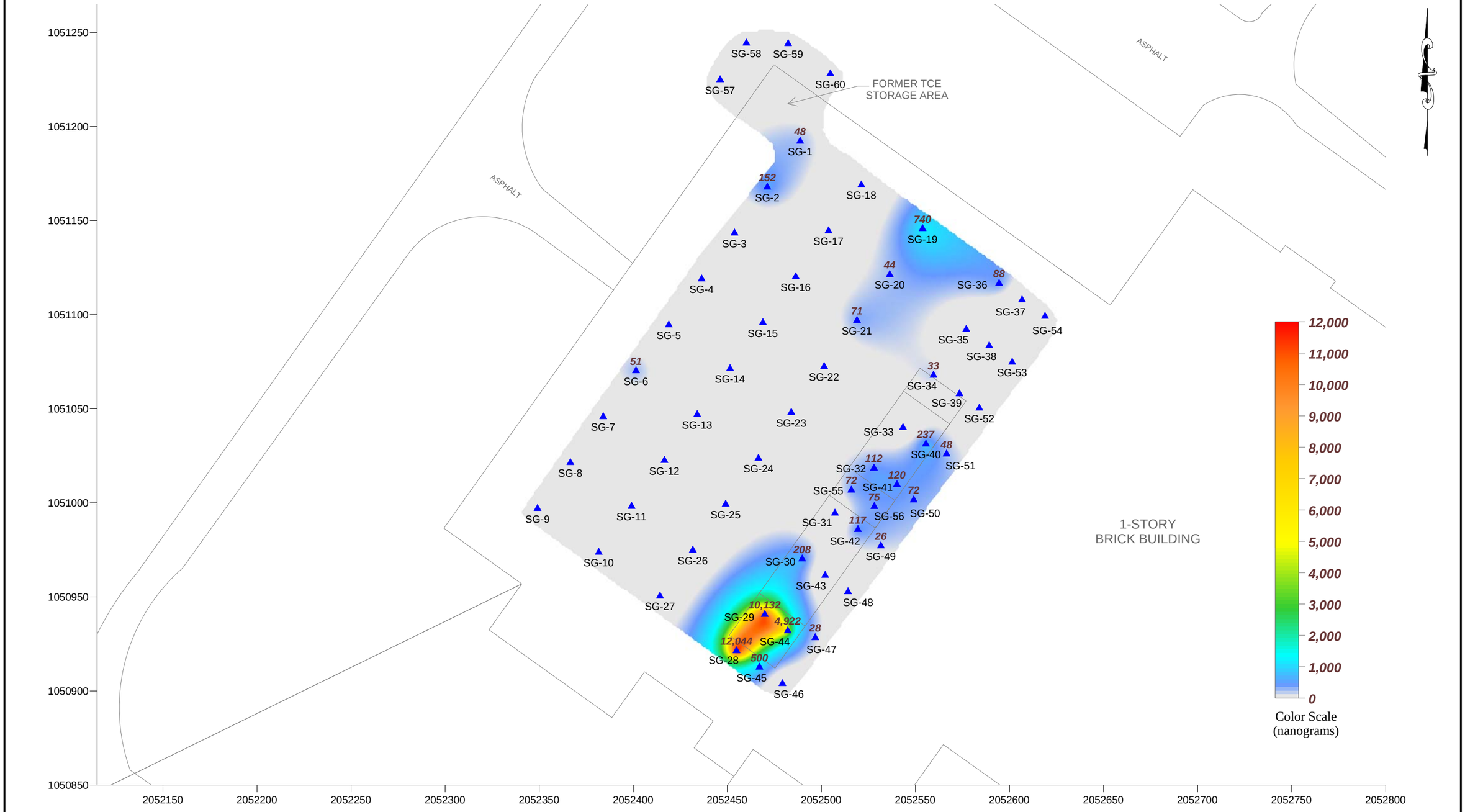
▲ SG-8 PASSIVE SOIL-GAS SAMPLE LOCATION

Scale in Feet

0 50 100

Figure 5
Passive Soil-Gas Survey
Trichloroethene

Joslyn Clark
Lancaster, SC



BEACON ENVIRONMENTAL SERVICES, INC.

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Beacon Project No. 2507, January 2013

LEGEND

1,000 NANOGRAMS/SAMPLER

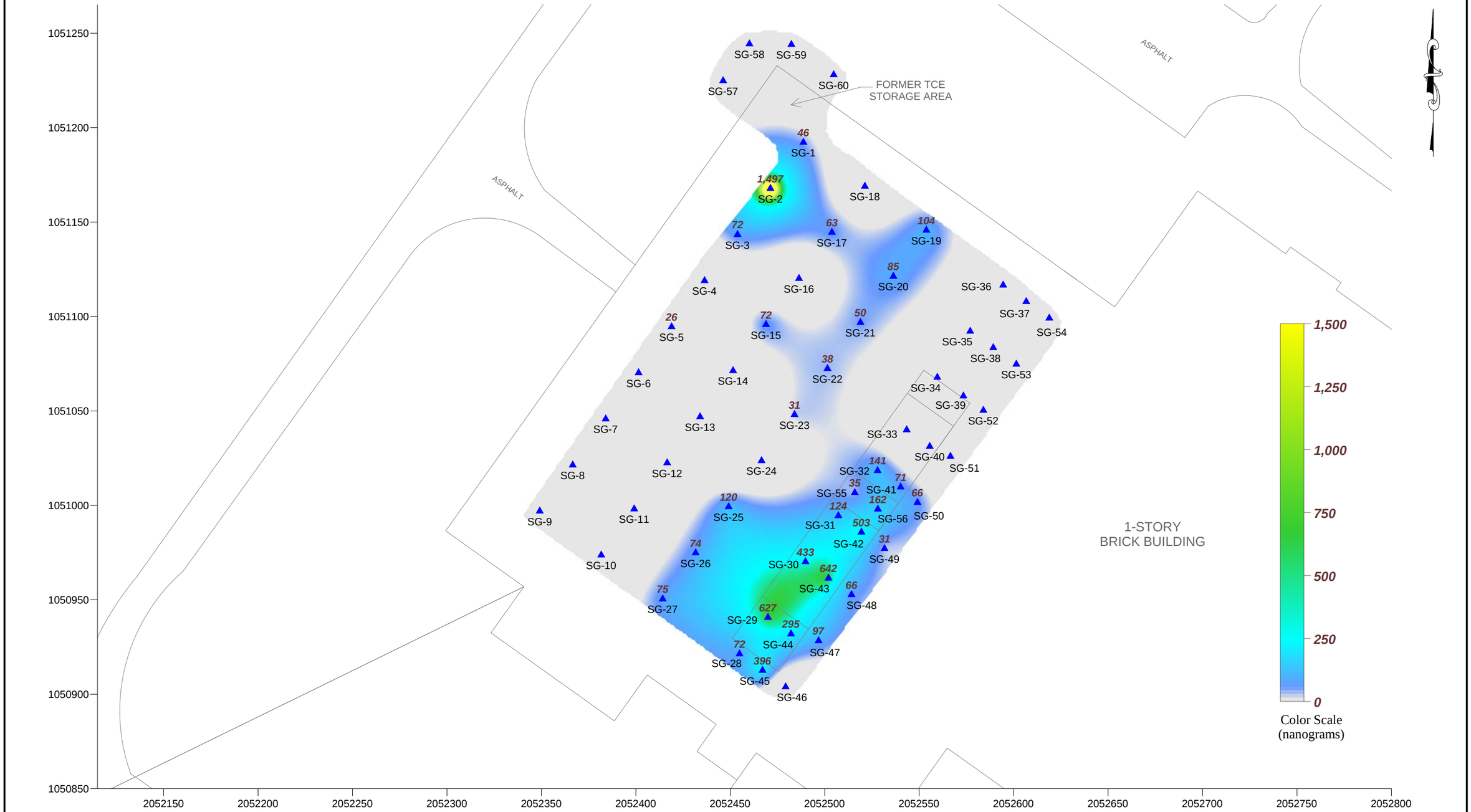
▲ SG-8 PASSIVE SOIL-GAS SAMPLE LOCATION

Scale in Feet

0 50 100

Figure 6
Passive Soil-Gas Survey
1,4-Dioxane

Joslyn Clark
Lancaster, SC



BEACON ENVIRONMENTAL SERVICES, INC.
323 Williams Street, Bel Air, MD, 21014, USA 1-410-838-8780
Beacon Project No. 2507, January 2013

LEGEND

1,000 NANOGRAMS/SAMPLER

▲ SG-8 PASSIVE SOIL-GAS SAMPLE LOCATION

Scale in Feet

0 50 100

Figure 7
Passive Soil-Gas Survey
Tetrachloroethene

Joslyn Clark
Lancaster, SC

Attachments

Attachment 1

APPLYING RESULTS FROM PASSIVE SOIL-GAS SURVEYS

The utility of soil-gas surveys is directly proportional to their accuracy in reflecting and representing changes in the subsurface concentrations of source compounds. Passive soil-gas survey results are the mass collected from the vapor-phase emanating from the source(s). The vapor-phase is merely a fractional trace of the source(s) and, as a matter of convenience, the units used in reporting detection values from passive soil-gas surveys are smaller than those employed for source-compound concentrations.

Passive soil gas data are reported in mass of compounds identified per sample location (e.g., nanograms (ng) or micrograms (µg) per sampler). Results from a passive soil gas survey typically are then used to guide where follow-on intrusive samples should be collected to obtain corresponding concentrations of the contaminants in soil, soil gas, and/or groundwater, as well as eliminate those areas where intrusive samples are not required. It is not practical to report passive soil gas data as concentration because the sampler's uptake rates of the compounds are often greater than the replenishment rates of the compounds around the sampler, which results in low bias measurements, and the replenishment rates will be dependent on several factors that include, at a minimum, soil gas concentrations, soil porosity and permeability, and soil moisture level.

Whatever the relative concentrations of source and associated soil gas, best results are realized when the ratio of soil-gas measurements to actual subsurface concentrations remains as close to constant as the real world permits. It is the reliability and consistency of this ratio, not the particular units of mass (*e.g.*, nanograms) that determine usefulness. Thus, BEACON emphasizes the necessity of conducting — at minimum — follow-on intrusive sampling in areas that show relatively high soil-gas measurements to obtain corresponding concentrations of soil and groundwater contaminants. These correspondent values furnish the basis for approximating a relationship. For extrapolating passive soil gas results to vapor intrusion evaluations, we recommend a minimum of three passive soil gas locations be converted to a shallow vapor well then sampled using an active soil gas method. Once a relationship is established, it can be used in conjunction with the remaining soil-gas measurements to estimate subsurface contaminant concentrations across the survey field. (See www.beacon-usa.com/passivesoilgas.html, Publication 1: *Mass to Concentration Tie-In for PSG Surveys* and Publication 4: *Groundwater and PSG Correlation*.) It is important to keep in mind, however, that specific conditions at individual sample points, including soil porosity and permeability, depth to contamination, and perched ground water, can have an impact on soil-gas measurements at those locations.

When passive soil-gas surveys are utilized as described above, the data provide information that can yield substantial savings in drilling costs and in time. They furnish, among other things, a checklist of compounds expected at each survey location and help to determine how and where drilling budgets can most effectively be spent. Passive soil-gas surveys can also be used as a remediation or general site monitoring tool that can be implemented on a quarterly, semi-annual or annual basis.

Attachment 2

FIELD PROCEDURES FOR PASSIVE SOIL-GAS SURVEYS

The following field procedures are routinely used during a BEACON Passive Soil-Gas Survey. Modifications can be and are incorporated from time to time in response to individual project requirements. In all instances, BEACON adheres to EPA-approved Quality Assurance and Quality Control practices.

A. Field personnel carry a BESURE Sample Collection Kit™ and support equipment to the site and deploy the passive samplers in a prearranged survey pattern. A passive sampler consists of a borosilicate glass vial containing hydrophobic adsorbent cartridges with a length of wire attached to the vial for retrieval. Although samplers require only one person for emplacement and retrieval, the specific number of field personnel required depends upon the scope and schedule of the project. Each Sampler emplacement generally takes less than two minutes.

B. At each survey point a field technician clears vegetation as needed and, using a hammer drill with a 1″- to 1½″-diameter bit, creates a hole 12 to 14 inches deep. [Note: For locations covered with asphalt, concrete, or gravel surfacing, the field technician drills a 1″- to 1½″-diameter hole through the surfacing to the soils beneath]. The hole is then sleeved with a 1″-diameter metal sleeve.

C. The technician then removes the solid plastic cap from a sampler and replaces it with a Sampling Cap (a plastic cap with a hole covered by screen meshing). The technician inserts the sampler, with the Sampling Cap end facing down, into the hole (**see attached figure**). The sampler is then covered with an aluminum foil plug and soils for uncapped locations or, for capped locations, an aluminum foil plug and a concrete patch. The sampler's location, time and date of emplacement, and other relevant information are recorded on the Field Deployment Form.

D. One or more trip blanks are included as part of the quality-control procedures.

E. Once all the samplers have been deployed, field personnel schedule sampler recovery and depart, taking all other equipment and materials with them.

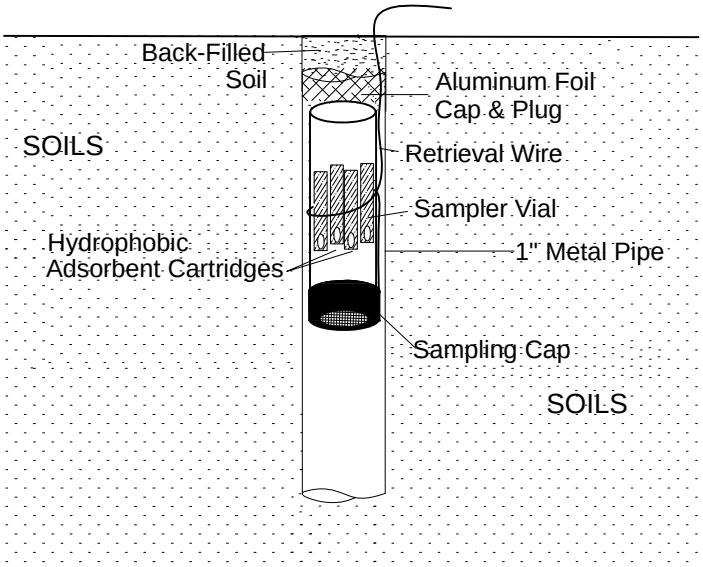
F. Field personnel retrieve the samplers at the end of the exposure period. At each location, a field technician withdraws the sampler from its hole, removes the retrieval wire, and wipes the outside of the vial clean using gauze cloth; following removal of the Sampling Cap, the threads of the vial are also cleaned. A solid plastic cap is screwed onto the vial and the sample location number is written on the label. The technician then records sample-point location, date, time, etc. on the Field Deployment Form.

G. Sampling holes are refilled with soil, sand, or other suitable material. If samplers have been installed through asphalt or concrete, the hole is filled to grade with a plug of cold patch or cement.

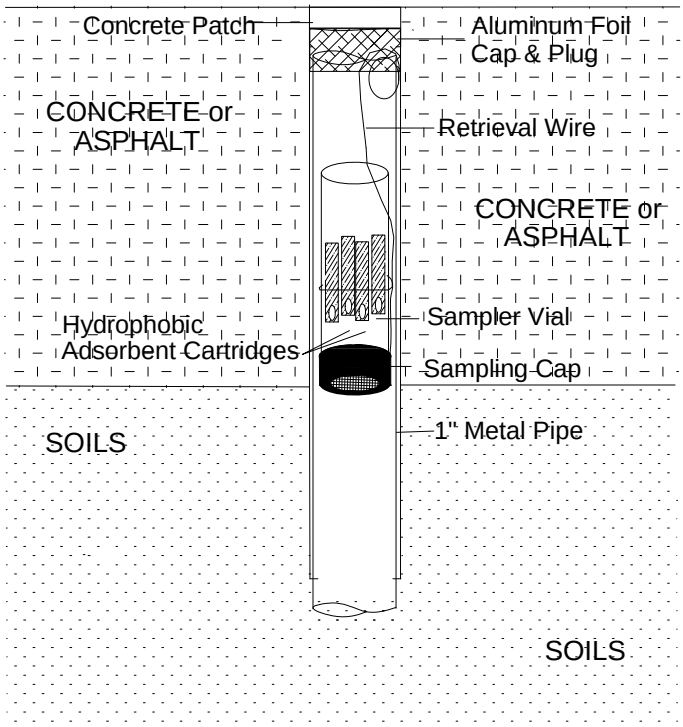
H. Following retrieval, field personnel ship or transport the passive samplers to BEACON’s laboratory.

BEACON PASSIVE SAMPLER

DEPLOYMENT THROUGH SOILS



DEPLOYMENT THROUGH AN ASPHALT/CONCRETE CAP



Attachment 3

Field Deployment Report

PASSIVE SOIL-GAS SURVEY
FIELD DEPLOYMENT REPORT

Project Information	
Beacon Project No.:	2507
Site Name:	Joslyn Clark
Site Location:	Lancaster, SC

BEACON ENVIRONMENTAL SERVICES, INC.
323 Williams Street, Suite D, Bel Air, MD 21014 (800) 878-5510

Client Information	
Company Name:	ERM NC, Inc.
Office Location:	Charlotte, NC
Samples Collected By:	TF / AF

FIELD SAMPLE ID	Date Emplaced / Time Emplaced	Date Retrieved / Time Retrieved	Sampling Hole Depth (inches)	FIELD NOTES (e.g., asphalt/concrete/gravel, description of sample location, PID/FID readings)
	11/27/12 /	12/18/12 /		
SG-1	1424	0927	14"	concrete ~6"
SG-2	1429	0930	14"	concrete ~6"
SG-3	1433	0932	14"	" "
SG-4	1437	0934	14"	" "
SG-5	1440	0936	14"	" "
SG-6	1444	0938	14"	" "
SG-7	1449	0939	14"	" "
SG-8	1452	0941	14"	" "
SG-9	1456	0943	14"	" "
11/28 SG-10	950	0945	14"	" " near column J13.
SG-11	1000	0947	14"	" " near column I13
SG-12	1010	0949	14	" " near column H13
SG-13	1020	0950	14	" " near column G13
SG-14	1030	0952	14	" " near column F13
SG-15	1040	0954	14	" " near column E13

PASSIVE SOIL-GAS SURVEY
FIELD DEPLOYMENT REPORT

Project Information	
Beacon Project No.:	2507
Site Name:	Joslyn Clark
Site Location:	Lancaster, SC

BEACON ENVIRONMENTAL SERVICES, INC.
323 Williams Street, Suite D, Bel Air, MD 21014 (800) 878-5510

Client Information	
Company Name:	ERM NC, Inc.
Office Location:	Charlotte, NC
Samples Collected By:	TF / AF

FIELD SAMPLE ID	Date Emplaced / Time Emplaced	Date Retrieved / Time Retrieved	Sampling Hole Depth (inches)	FIELD NOTES (e.g., asphalt/concrete/gravel, description of sample location, PID/FID readings)
SG-16	11/28/12 1050	12/18/12 0956	14"	concrete 6" / near column D-13
SG-17	1100	0957	14"	concrete 6" / near column C-13
SG-18	1110	0959	14"	concrete 6" / near column B-13
SG-19	1120	1001	14"	concrete 6" / near column B-12
SG-20	1127	1002	14"	concrete 6" / near column C-12
SG-21	1133	1004	14"	concrete 6" / near column D-12
SG-22	1245	1006	14"	concrete 6" / near column E-12
SG-23	1255	1008	14"	concrete 6" / near column F-12
SG-24	1305	1009	14"	concrete 6" / near column G-12
SG-25	1315	1011	14"	concrete 6" / near column H-12
SG-26	1323	1012	14"	concrete 6" / near column I-12
SG-27	1328	1014	14"	concrete 6" / near column J-12
SG-28	1340	1017	14"	concrete 6" / near column J-11
SG-29	1350	1023	14"	concrete 6" / inside paint room
SG-44	1400	1024	14"	concrete 6" / inside paint room

PASSIVE SOIL-GAS SURVEY
FIELD DEPLOYMENT REPORT

Project Information	
Beacon Project No.:	2507
Site Name:	Joslyn Clark
Site Location:	Lancaster, SC

BEACON ENVIRONMENTAL SERVICES, INC.
323 Williams Street, Suite D, Bel Air, MD 21014 (800) 878-5510

Client Information	
Company Name:	ERM NC, Inc.
Office Location:	Charlotte, NC
Samples Collected By:	TS/AF

FIELD SAMPLE ID	Date Emplaced / Time Emplaced	Date Retrieved / Time Retrieved	Sampling Hole Depth (inches)	FIELD NOTES (e.g., asphalt/concrete/gravel, description of sample location, PID/FID readings)
	11/28/12	12/18/12		
SG-31	1410	1029	14	concrete
SG-42	1420	1031	14	concrete
SG-30	1430	1027	14	"
SG-43	1440	1033	14	"
SG-32	1445	1042	14	"
SG-41	1450	1044	14	"
SG-40	1500	1047	14	"
SG-33	1510	1046	14	"
SG-34	1515	1049	14	"
SG-39	1520	1050	14	"
SG-35	1525	1051	14	"
SG-38	1530	1053	14	"
SG-37	1535	1055	14	"
SG-36	1540	1054	14	"
SG-55	1455	1035	14	"
SG-56	1505	1037		

PASSIVE SOIL-GAS SURVEY
FIELD DEPLOYMENT REPORT

Project Information	
Beacon Project No.:	2507
Site Name:	Joslyn Clark
Site Location:	Lancaster, SC

BEACON ENVIRONMENTAL SERVICES, INC.
323 Williams Street, Suite D, Bel Air, MD 21014 (800) 878-5510

Client Information	
Company Name:	ERM NC, Inc.
Office Location:	Charlotte, NC
Samples Collected By:	TF / AF

FIELD SAMPLE ID	Date Emplaced / Time Emplaced	Date Retrieved / Time Retrieved	Sampling Hole Depth (inches)	FIELD NOTES (*e.g.*, asphalt/concrete/gravel, description of sample location, PID/FID readings)
	11/29/12	12/18/12		
SG-46	1110	1217	14	Concrete 6" thick
SG-47	1105	1215	14	" "
SG-48	1058	1214	14	" "
SG-49	1050	1213	14	" "
SG-50	1040	1211	14	" "
SG-51	1030	1210	14	" "
SG-52	1020	1208	14	" "
SG-53	1000	1207	14	" "
SG-54	1010	1205	14	" "
SG-45	1118	1019	14	~~Grass~~ "
SG-57	1440	1308	12	Grass
SG-58	1450	1310	12	Grass
SG-59	1500	1312	12	Grass
SG-60	1510	1314	12	Grass

Attachment 4

LABORATORY PROCEDURES FOR PASSIVE SOIL-GAS SAMPLES

Following are laboratory procedures used with BEACON Passive Soil-Gas Surveys, a screening technology for expedited site investigation. After exposure, adsorbent cartridges from the passive samplers are analyzed using U.S. EPA Method 8260C as a guidance document, a capillary gas chromatographic/mass spectrometric method, modified to accommodate high temperature thermal desorption of the adsorbent cartridges and to meet the objecitves of reporting semi-quantitative data. This procedure is summarized as follows:

A. The adsorbent cartridges are loaded with internal standards and surrogates prior to loading the autosampler with the cartridges. The loaded cartridges are purged in a helium flow. Then the cartridges are thermally desorbed in a helium flow onto a focusing trap. Any analytes in the helium stream are adsorbed onto a focusing trap.

B. Following trap focusing, the trap is thermally desorbed onto a Rxi-624Sil MS 20m, 0.18 mm ID, 1.00 micron filament thickness capillary column.

C. The GC/MS is scanned between 35 and 270 Atomic Mass Units (AMU) at 3.12 scans per second.

D. BFB tuning criteria and the initial five-point calibration procedures are those stated in method SW846-8260C. System performance and calibration check criteria are met prior to analysis of samples. A laboratory method blank is analyzed after the daily standard to determine that the system is contaminant-free.

E. The instrumentation used for these analyses includes:

- Agilent 6890-5973a Gas Chromatograph/Mass Spectrometer;
- Markes Unity thermal desorber;
- Markes UltrA autosampler; and
- Markes Mass Flow Controller Modules

Attachment 5

Chain-of-Custody Form

CHAIN-OF-CUSTODY
PASSIVE SOIL-GAS SAMPLES

Project Information	
Beacon Project No.:	2507
Site Name:	Joslyn Clark
Site Location:	Lancaster, SC
Analytical Method:	EPA Method 8260C
Target Compounds:	Beacon Project Number 2507 Target Compound List

BEACON ENVIRONMENTAL SERVICES, INC.
323 Williams Street, Suite D, Bel Air, MD 21014 (800) 878-5510

Client Information	
Company Name:	ERM NC, Inc.
Office Location:	Charlotte, NC
Samples Submitted By:	~~Ann~~ Michael Pressley
Contact Phone No.:	704 5418345

Field Sample ID	Comments (only necessary if problem or discrepancy) Notes	Date	Time	Initial
Trip-1		12/18/12		
Trip-2				
SG-1			0927	ABF
SG-2			0930	ABF
SG-3			0932	ABF
SG-4			0934	ABF
SG-5			0936	ABF
SG-6			0938	ABF
SG-7			0939	ABF
SG-8			0941	ABF
SG-9			0943	ABF
SG-10			0945	ABF
SG-11			0947	ABF
SG-12			0949	ABF
SG-13			0950	ABF
SG-14			0952	ABF
SG-15			0954	ABF
SG-16			0956	ABF
SG-17			0957	ABF
SG-18			0959	ABF

Shipment of Field Kit to Site — Custody Seal # 17350255 **Intact?** (Y) N

Relinquished by:	Date/Time	Courier	Received by:	Date/Time
Kenny Ipeachis	11-14-2012 / 1700 Hours	FedEx		11/27/12 / 0800

Shipment of Field Kit to Laboratory — Custody Seal # 17350257 **Intact?** (Y) N

Relinquished by:	Date/Time	Courier	Received by:	Date/Time
Amanda Simmons	12/18/12 1600	Fedex	Steven Thornley	12.19.2012 / 1100

CHAIN-OF-CUSTODY
PASSIVE SOIL-GAS SAMPLES

Project Information	
Beacon Project No.:	2507
Site Name:	Joslyn Clark
Site Location:	Lancaster, SC
Analytical Method:	EPA Method 8260C
Target Compounds:	Beacon Project Number 2507 Target Compound List

BEACON ENVIRONMENTAL SERVICES, INC.
323 Williams Street, Suite D, Bel Air, MD 21014 (800) 878-5510

Client Information	
Company Name:	ERM NC, Inc.
Office Location:	Charlotte, NC
Samples Submitted By:	Michael Pressley
Contact Phone No.:	704 541 8345

Field Sample ID	Comments (only necessary if problem or discrepancy) Notes	Date	Time	Initial
SG-19		12/18/12	1001	ABF
SG-20			1002	ABF
SG-21			1004	ABF
SG-22			1006	ABF
SG-23			1008	ABF
SG-24			1009	ABF
SG-25			1011	ABF
SG-26			1012	ABF
SG-27			1014	ABF
SG-28			1017	ABF
SG-29			1023	ABF
SG-30			1027	ABF
SG-31			1029	ABF
SG-32			1042	ABF
SG-33			1046	ABF
SG-34			1049	ABF
SG-35			1051	ABF
SG-36			1054	ABF
SG-37			1055	ABF
SG-38			1053	ABF

Shipment of Field Kit to Site — Custody Seal # 17350255 **Intact?** (Y) N

Relinquished by:	Date/Time	Courier	Received by:	Date/Time
Kenny Ipacho	11-14-2012 / 1700 Hours	FedEx		11/27/12 0800

Shipment of Field Kit to Laboratory — Custody Seal # 17350257 **Intact?** (Y) N

Relinquished by:	Date/Time	Courier	Received by:	Date/Time
	12/18/12 1600	Fedex	Steven J Hawley	12.19.2012 / 1100

CHAIN-OF-CUSTODY
PASSIVE SOIL-GAS SAMPLES

Project Information	
Beacon Project No.:	2507
Site Name:	Joslyn Clark
Site Location:	Lancaster, SC
Analytical Method:	EPA Method 8260C
Target Compounds:	Beacon Project Number 2507 Target Compound List

BEACON ENVIRONMENTAL SERVICES, INC.
323 Williams Street, Suite D, Bel Air, MD 21014 (800) 878-5510

Client Information	
Company Name:	ERM NC, Inc.
Office Location:	Charlotte, NC
Samples Submitted By:	Michael Pressley
Contact Phone No.:	704 541 8345

Field Sample ID	Comments (only necessary if problem or discrepancy) Notes	Date	Time	Initial
SG-39		12/18/12	1050	ABF
SG-40			1047	ABF
SG-41			1044	ABF
SG-42			1031	ABF
SG-43			1033	ABF
SG-44			1021	ABF
SG-45			1019	ABF
SG-46			1217	ABF
SG-47			1215	ABF
SG-48			1214	ABF
SG-49			1213	ABF
SG-50			1211	ABF
SG-51			1210	ABF
SG-52			1208	ABF
SG-53			1207	ABF
SG-54			1205	ABF
SG-55			1035	ABF
SG-56			1057	ABF
SG-57			1308	ABF
SG-58	Wet		1310	ABF

Shipment of Field Kit to Site — Custody Seal # 17350255 **Intact?** (Y) N

Relinquished by:	Date/Time	Courier	Received by:	Date/Time
Kenny Ipeacho	11-14-2012 / 1700 Hours	FedEx		11/27/12 / 0800

Shipment of Field Kit to Laboratory — Custody Seal # 17350257 **Intact?** (Y) N

Relinquished by:	Date/Time	Courier	Received by:	Date/Time
Amar James	12/18/12 1600	Fedex	Steven Thornley	12.19.2012 / 1100

CHAIN-OF-CUSTODY
PASSIVE SOIL-GAS SAMPLES

Project Information	
Beacon Project No.:	2507
Site Name:	Joslyn Clark
Site Location:	Lancaster, SC
Analytical Method:	EPA Method 8260C
Target Compounds:	Beacon Project Number 2507 Target Compound List

BEACON ENVIRONMENTAL SERVICES, INC.
323 Williams Street, Suite D, Bel Air, MD 21014 (800) 878-5510

Client Information	
Company Name:	ERM NC, Inc.
Office Location:	Charlotte, NC
Samples Submitted By:	Michael Pressley
Contact Phone No.:	704 541 8345

Field Sample ID	Comments (only necessary if problem or discrepancy) Notes	Date	Time	Initial
SG-59		12/18/12	1312	ABF
SG-60		"	1314	ABF

Shipment of Field Kit to Site — Custody Seal # 17350255 **Intact?** (Y) N

Relinquished by:	Date/Time	Courier	Received by:	Date/Time
Kenny Ipeachs	11-14-2012 / 1700 Hours	FedEx		11/27/12 / 0800

Shipment of Field Kit to Laboratory — Custody Seal # 17350257 **Intact?** (Y) N

Relinquished by:	Date/Time	Courier	Received by:	Date/Time
	12/18/12 1600	Fedex		12.19.2012 / 1100

Attachment B
Monitor Well Construction Diagrams

JOB NAME: Former Joslyn Clark Facility

JOB NUMBER:

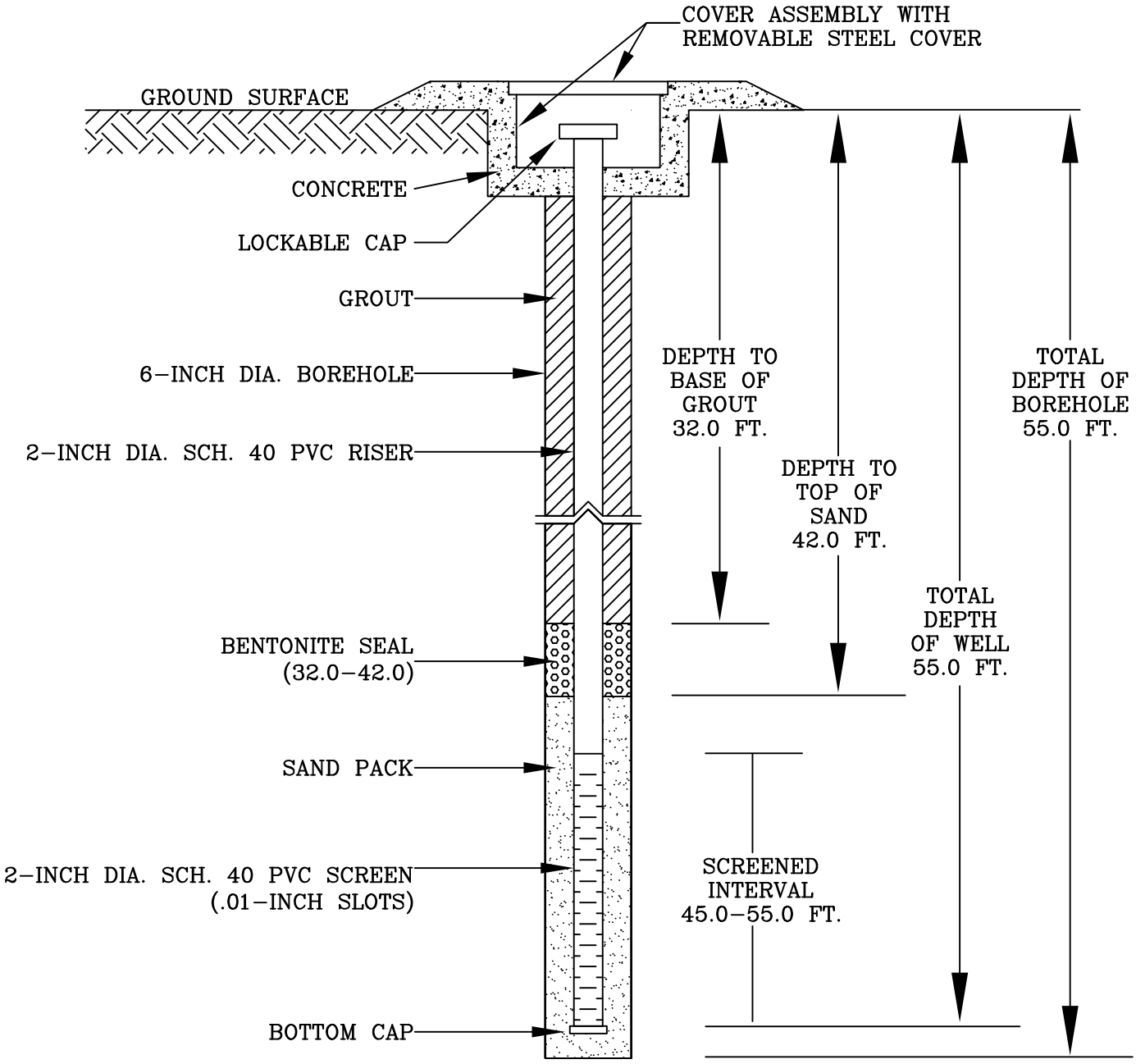
WELL NUMBER:

GROUND SURFACE ELEVATION*:

LOCATION: Joslyn Clark, Lancaster, SC

TOP OF CASING (TOC) ELEVATION*:

INSTALLATION DATE:



* REFERENCED TO SOUTH CAROLINA VRS

NOTE: ALL PVC JOINTS ARE FLUSH THREADED

ERM

ERM NC, Inc.

SHALLOW MONITOR WELL CONSTRUCTION DIAGRAM

JOB NAME: Former Joslyn Clark Facility

JOB NUMBER:

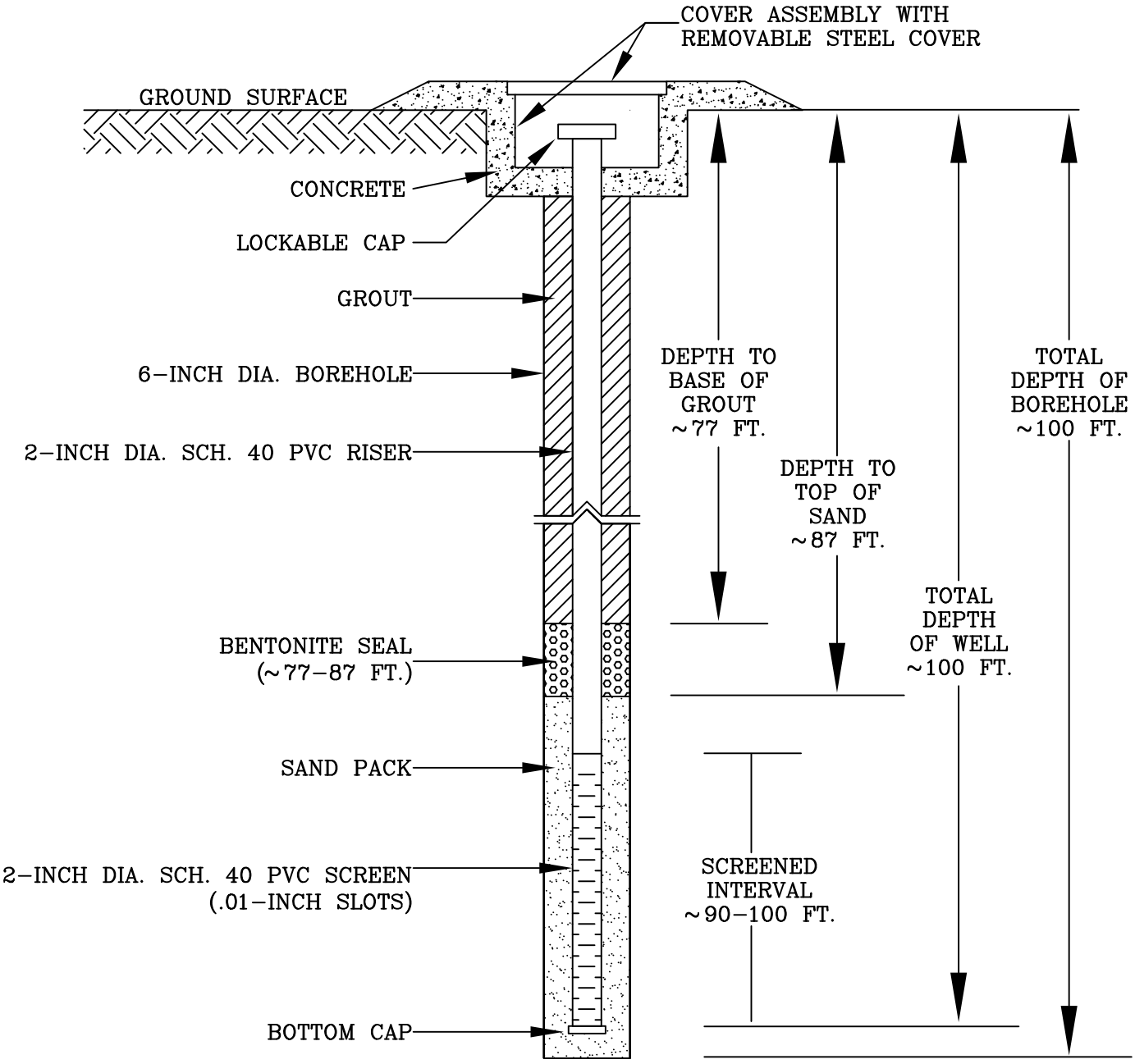
WELL NUMBER:

GROUND SURFACE ELEVATION*:

LOCATION: Joslyn Clark, Lancaster, SC

TOP OF CASING (TOC) ELEVATION*:

INSTALLATION DATE:



* REFERENCED TO SOUTH CAROLINA VRS

NOTE: ALL PVC JOINTS ARE FLUSH THREADED

ERM

ERM NC, Inc.

INTERMEDIATE DEPTH MONITOR WELL CONSTRUCTION DIAGRAM

JOB NAME: Former Joslyn Clark Facility

JOB NUMBER:

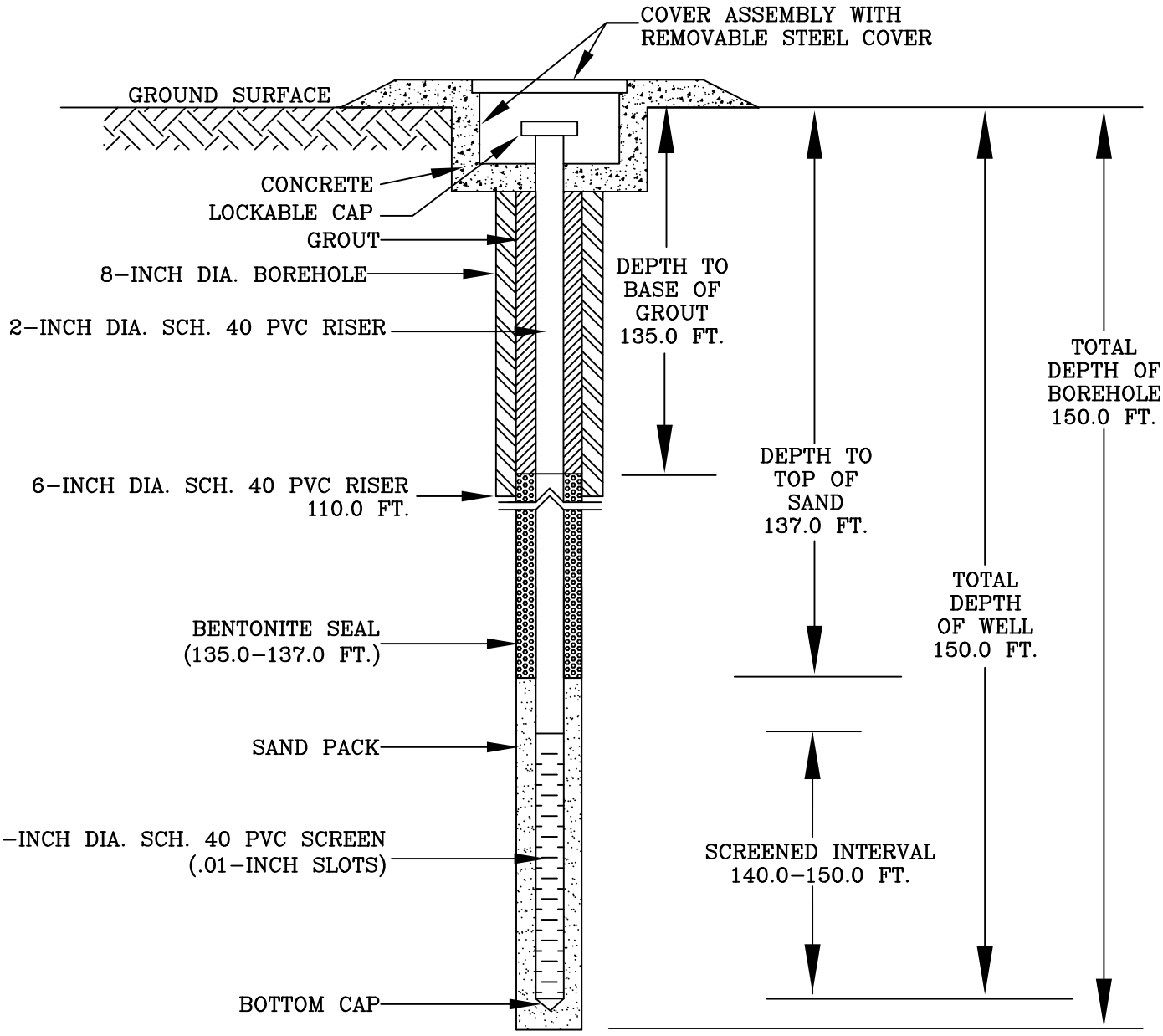
WELL NUMBER:

GROUND SURFACE ELEVATION*:

LOCATION: Joslyn Clark, Lancaster, SC

INSTALLATION DATE:

TOP OF CASING (TOC) ELEVATION*:



* REFERENCED TO AN ASSUMED SITE DATUM

NOTE: ALL PVC JOINTS ARE FLUSH THREADED

ERM

ERM NC, Inc.

DEEP MONITOR WELL CONSTRUCTION DIAGRAM