

October 23, 2019

Brad Baldwin, Hydrogeologist
UST Management Division
Bureau of Land and Waste Management
South Carolina Department of Health & Environmental Control
2600 Bull Street
Columbia, South Carolina 29201



Re: Soil Vapor and Air Quality Assessment
Broad River Amoco (BP)
4335 Broad River Rd., Columbia
Richland County, South Carolina
UST Permit #11946; CA #60146
ARM Project #12-414.4-19

Dear Mr. Baldwin;

ARM Environmental Services, Inc. (ARM) has conducted additional sub-slab soil vapor and indoor and outdoor air sampling at the Broad River Amoco (BP) site on behalf of Enviro-Test Services, Inc. (Enviro-Test). The site is located along Broad River Rd. at the intersection of Dothan Rd. in Columbia, Richland County, South Carolina.

A summary of the services provided and data collected during this sampling event is documented in the following report and attached figures, tables, and appendices. Additionally, an updated receptor's survey was also conducted and is detailed in this report.

If you have any questions or comments regarding this report, please do not hesitate to contact us.

Sincerely,
ARM Environmental Services, Inc.

Michael L. Faris, P.G.
Senior Geologist / Principal

Andrew M. Wilson, P.G.
Sr. Project Manager / Principal

cc: Terry Teate, Enviro-Test Services, Inc.

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1.0 Assessment Activities

Prior to this assessment, the electricity was restored to the Play Pals structure. Once the electricity was restored, the HVAC system was turned back on and allowed to run normally for approximately one to two weeks prior to sample collection. The HVAC system was in normal operation during the indoor and outdoor sampling activities. In order to further evaluate the air quality and sub-slab soil vapor at the Play Pals property, the following assessment activities were completed:

1.1 Sub-Slab Soil Vapor Sampling:

Six (6) sub-slab soil vapor points (Vapor Pins), designated SG-1 through SG-6, were previously installed in the concrete slab inside the Play Pals structure closest to the subject site. The vapor pin sub-slab vapor monitoring points were installed in December 2018 in order to facilitate the collection of soil gas from beneath the concrete slab portion of the building. 5/8-inch diameter holes were drilled through the concrete slab at six locations and the vapor pins were securely placed within these holes by advancement with a dead blow hammer. The vapor pins included a silicone sleeve that compressed against the hole in the concrete slab, sealing the hole around the Vapor Pin. Subsequent to sample collection in 2018, each of the vapor pins were capped and left in place for potential future sampling events. The same six vapor pins were utilized during a sampling event in June 2019 and during this assessment for sample collection. The six sub-slab soil vapor points are indicated on Figure 3, the Play Pals Site Sketch. The site sketch consists of a photograph of the Play Pals Day Care building evacuation plan with sample locations indicated.

ARM mobilized to the site on September 13, 2019 and reconnected the vapor pins with tubing to 2.7L stainless steel Summa Canisters. The flow rate of soil vapor to the Summa Canisters was controlled with a flow controller set at the laboratory to continuously draw soil vapor at a rate of approximately 200 milliliters per minute (ml/min). Soil vapor sampling at less than or equal to 200 ml/min is recommended in order to minimize the potential for drawing ambient or other air / vapor into the sample (short circuiting).

The sample train tubing connections were pressure tested with a shut in test to insure no leakage within the sample train. The valve closest to the vapor pin was closed and a vacuum equivalent to 15 inches of mercury was placed on the sample train with the integrated syringe. A pressure gauge was used to monitor any vacuum loss within the train. A sample train with a vacuum loss of less than 0.5 inches of mercury over a 1 minute period was considered tight.

A leak test, using the water dam method, was also used to test the integrity of the tubing connection to the Vapor Pin and the silicone seal against the concrete hole. A two-inch PVC pipe couple was placed over the Vapor Pin and was sealed against the concrete floor with VOC free Play-Doh. When all tubing connections had been made and the “shut-in” test had been completed, distilled water was placed into the PVC pipe couple to a level above the tubing connection to the Vapor Pin. The sample point was then purged by removing approximately 3 to 5 tubing volumes of air with the syringe.

A sudden drop in water level, or the appearance of water in the tubing would indicate leakage. The connection to the syringe was then closed and the valve to the Summa Canister was opened to begin sampling. The water level in the pipe couple was monitored throughout the approximate 13 to 15 minute sampling period at each location to insure no leakage occurred during sample collection. The water level within the PVC water dam remained constant throughout sampling and no water was observed in the tubing at each location during this sampling event.

The sub-slab soil vapor samples (Summa canisters) were shipped overnight to a certified laboratory for analysis. Each sample was analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX), naphthalene, methyl tertiary-butyl ether (MTBE), and 1,2-dichloroethane (1,2-DCA) by EPA analytical method TO-15. The results are tabulated along with Vapor Intrusion Screening Levels (VISL) in Table 1. The commercial and residential VISLs are indicated on Tables 1A and 1B, respectively. A historical summary of all sub-slab soil vapor data is included on Table 3. Vapor sampling field data logs for each sample are included in Appendix A. The complete laboratory analytical data is included in Appendix B. The locations of each of the soil vapor samples are indicated on Figure 3.

1.2 Indoor Air, Outdoor Air, Crawlspace Vapor Sampling:

A total of six (6) indoor air, outdoor air, and crawlspace vapor samples, designated A-1, and A-3 through A-6, were collected at the Play Pals Daycare property and from the residence located adjacent to and downgradient (southwest) of the Play Pals property. The address of the adjacent residence is 1235 Dothan Rd.

ARM utilized 6 liter (L) stainless steel Summa canisters with flow controllers set by the laboratory for 8 hours. One canister was deployed outside the Play Pals building between the building and the Broad River BP location (A-1), one canister was deployed inside the portion of the Play Pals building that is over a slab (A-3), one canister was deployed inside the portion of the Play Pals building that is over a crawlspace (A-4), two canisters were deployed in the crawlspace of the Play Pals building (one above the polyethylene moisture barrier [A-5] and one below the polyethylene moisture barrier[A-6]), and one canister was deployed in the crawlspace of the residence located at 1238 Dothan Road (A-7).

The air samples (Summa canisters) were shipped overnight to a certified laboratory and analyzed for BTEX, naphthalene, MTBE, and 1,2-DCA via EPA analytical method TO-15. The results are tabulated along with Vapor Intrusion Screening Levels (VISL) in Table 2. The commercial and residential VISLs are indicated on Tables 2A and 2B, respectively. A historical summary of all indoor air, outdoor air, and crawlspace vapor data is included on Table 4. Vapor sampling field data logs for each sample are included in Appendix A. The complete laboratory analytical data is included in Appendix B. The locations of each of the air sample locations are indicated on Figure 3.

2.0 Potential Receptor Survey:

During this assessment, ARM personnel conducted an updated receptor survey.

Receptor Survey Questions	No	Yes*
Is there a drinking water supply well (public or private) or surface water supply intake within 1,000 feet of the UST?	X	
Are irrigation or other non-drinking water wells located within 1,000 feet of the UST?	X	
Are there other potential receptors (i.e., utilities, surface waters, wetlands) less than 500 feet from the UST?		X

* If "yes" provide additional information:

2.1 Subsurface Utilities / Surface Water:

Based on the location of the known contaminant plume, and previous assessment data, it is apparent that the sanitary sewer system along Dothan Road has been previously impacted by the contamination. It is understood that the sewer system owner made repairs to the sewer line near the western corner of the Broad River BP site. Based on information provided by DHEC representatives it appears that no additional detections of elevated petroleum vapors have been identified in the sanitary sewer system since the repair. The sanitary sewer system remains a potential receptor of the contamination.

A series of storm drains are located downgradient of the subject property. One of the storm drains located in the southwestern corner of the Play Pals property was identified as a point of exposure during the emergency response effort. The local utility that maintains the storm water system was contacted and assisted in evaluating the flow to and from the drain. The storm drain collects surface water from the Play Pals property, as well as properties along Dothan Rd. from Broad River Rd. toward the southwest. Surface water then flows in a large diameter black corrugated pipe through the woods, and discharges into a wet-weather drainage ditch located behind the Rolling Pines community along Rolling Pines Way to the southwest of the Play Pals property.

The drainage ditch eventually flows into Stoop Creek several thousand feet southwest of the subject site.

Free-phase product was found flowing into the referenced storm drain system and drainage ditch during the emergency response effort. Petroleum absorbent booms were installed in the storm drain, at the discharge end of the black corrugated pipe, and at several locations along the aforementioned drainage ditch behind the Rolling Pines community. Product was observed flowing out of a subsurface french drain system on the Play Pals property into the storm drain. The french drain was capped on the Play Pals property along the southern property boundary in order to stop the flow of product into the storm drain. Product was vacuumed as often as observed in order to keep it out of the storm water system as much as possible. Petroleum absorbent booms were removed and replaced several times during the emergency response. Product and contaminated groundwater has been observed in the trenches connected to the remaining french drain system since the emergency response. Enviro-Test has continued to remove all free product and contaminated groundwater that may enter the storm water system since the emergency response.

The storm water system on the Play Pals property, including the french drain system and storm water draining piping and catch basins, remain a preferential pathway for the contamination.

A potential former septic tank system was identified on the southern side of the Play Pals property during a geophysical survey of the site during the emergency response. Based on the subsurface features identified, it is possible that the former septic tank and associated lines may act as a preferential pathway for the contaminants to flow beneath the portion of the Play Pals structure build on a crawlspace, particularly during a sudden rise in water levels.

2.2 *Air Quality*

Because of the high water table, wetter weather periods have likely been a driver for pushing contaminants and/or contaminant vapors into the sub-slab environment, which is likely a porous sand base beneath the concrete slab. Although recent indoor air quality results have been mostly below screening levels, it is important to recognize that the air sampling conducted in 2019 is merely a snapshot of conditions. Furthermore the conditions during the June and September 2019 air sampling were very dry. Should the water table quickly rise and more contaminants get transported downhill from the Broad River BP site toward the Play Pals property, outdoor and indoor air quality may once again degrade. At least a portion of the petroleum source still remains upgradient on the Broad River BP property. Therefore, the breathing zone of occupants of the Play Pals property is considered a potential receptor of the contamination.

2.3 *Contaminated Soils & Excavations:*

During the emergency response, free-phase product was observed flowing across the Play Pals property, particularly along the unpaved area south of the facility structure, and in the playground area of the property. The contaminated soils may be a potential receptor for dermal contact and potential ingestion.

It should be noted that several open excavations, primarily trenches and pits, remain open in the yard of the Play Pals property. The open excavations represent a potential exposure pathway to the dissolved and free-phase product, and potentially contaminated soils. The excavations also represent a potential safety hazard. It is recommended that all open excavations on the Play Pals property should be filled in and compacted to grade. Immediately prior to the closure of open excavations, any contaminated groundwater and free product present should be vacuumed up, and transported and disposed of at an approved disposal facility.

3.0 **Conclusions**

Sample results were compared to EPA VISLs indicative of a 10⁻⁶ cancer risk or a hazard quotient of 0.1 for non-carcinogens (default VISLs).

None of the sub-slab results exceeded the VISLs, indicating that vapor intrusion from the subsurface was not occurring at the time of sample collection. The weather pattern around this time had been very dry (no rain for an extended period of time). Because of the high water table, wetter weather periods have likely been a driver for pushing contaminants and/or contaminant vapors into the sub-slab environment, which is likely a porous sand base beneath the concrete slab. Therefore these recent results may be a snapshot of conditions in a favorable (dry) environment. Additionally, in this case, the HVAC system was operational, which may cause a periodic positive pressure in the building, helping to slow potential vapor intrusion.

Benzene was detected in the indoor air space in the crawlspace portion of the Play Pals building at a concentration exceeding the residential VISL. However, benzene was also detected in the exterior air sample and in the crawlspace portion of the Play Pals building, which may indicate that the source of the indoor benzene detection is from exterior and/or crawlspace air.

A significant concentration of naphthalene was detected in the crawlspace of the residence at 1238 Dothan Road. This concentration is, however, less than the naphthalene detected in this crawlspace during the June 2019 investigation.

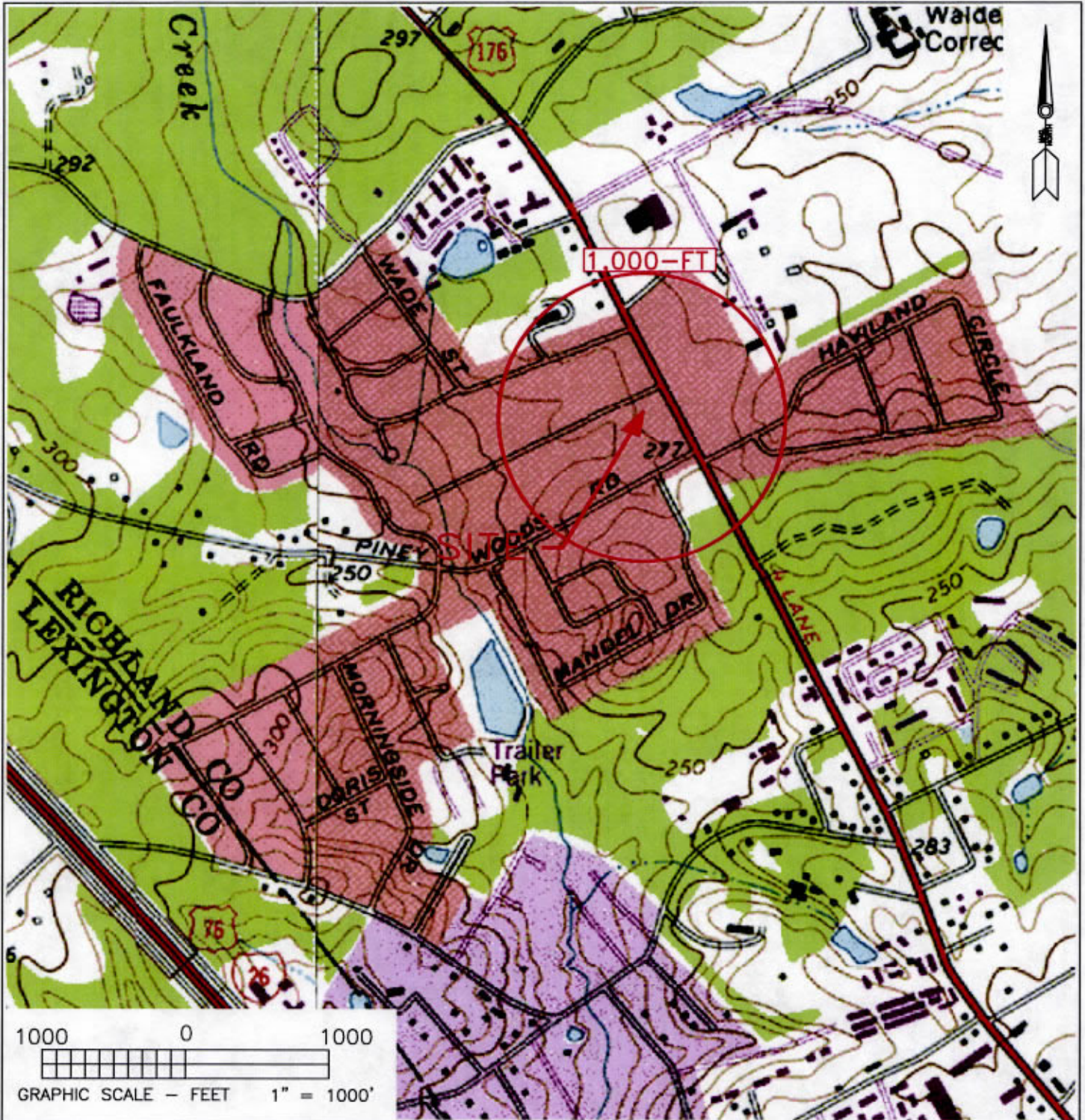
The sub-slab results do not suggest active vapor intrusion from the subsurface into that portion of the Play Pals building. This seems to suggest that the detected CoCs in indoor air are resulting from communication with outdoor air. It should be noted that the results are “snapshots” of conditions at a point in time and that the outdoor environment may change more dynamically than the indoor or crawlspace environments, where vapors may linger or there may be a lag effect.

FIGURES

FIG. 1 - SITE LOCATION MAP (Topo.)

FIG. 2 - SITE BASE MAP

**FIG. 3 - PLAY PALS STRUCTURE SKETCH with
VAPOR SAMPLING LOCATIONS**



PROJECT:
 SOIL VAPOR / AIR QUALITY ASSESS.
 BROAD RIVER AMOC
 4345 BROAD RIVER ROAD
 COLUMBIA, RICHLAND COUNTY, SC
 UST PERMIT #11946

DESCRIPTION:
 SITE LOCATION MAP

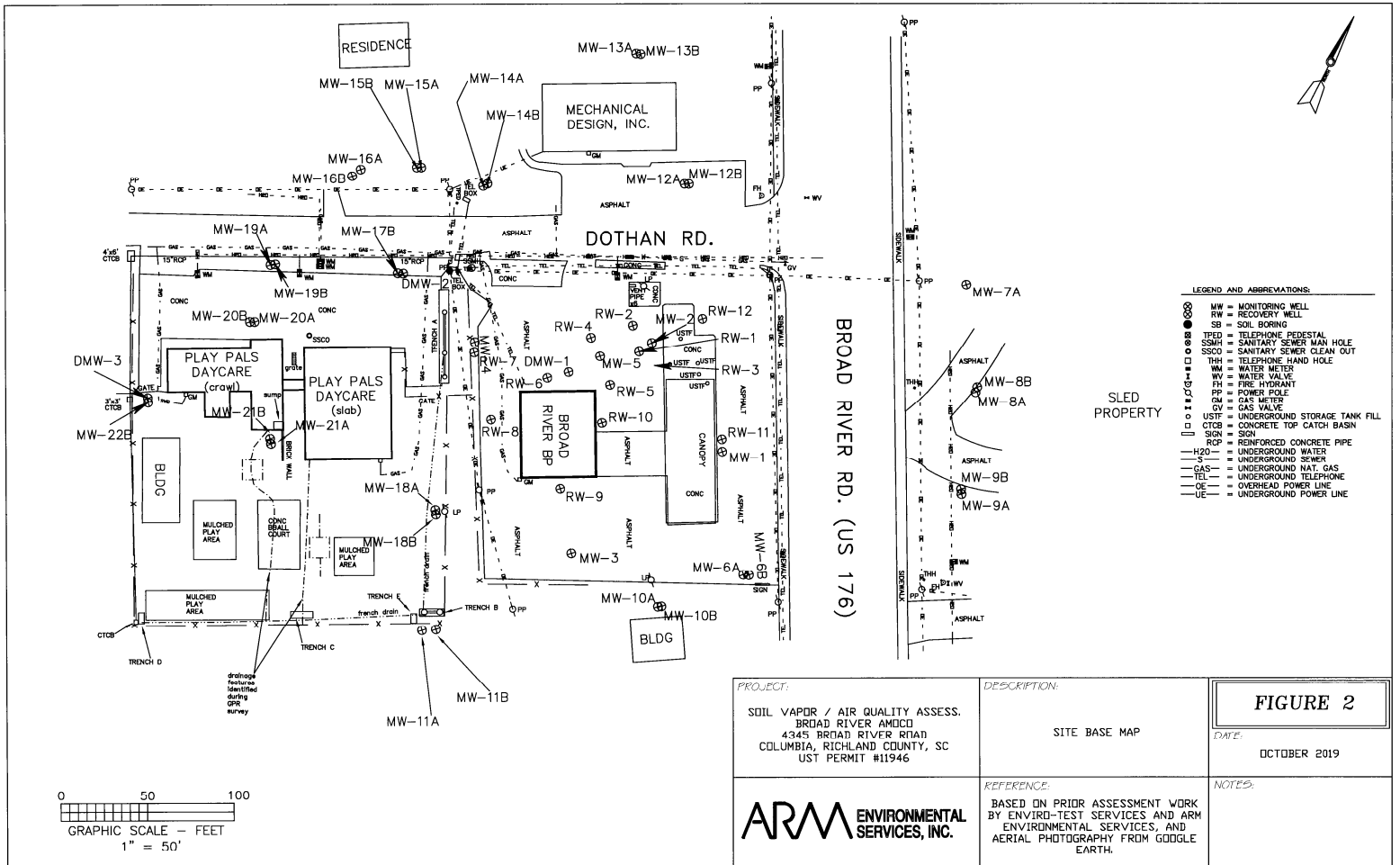
FIGURE 1

DATE:
 OCTOBER 2019

ARM ENVIRONMENTAL SERVICES, INC.

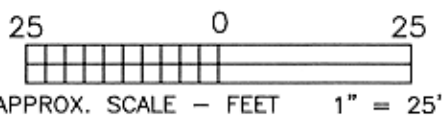
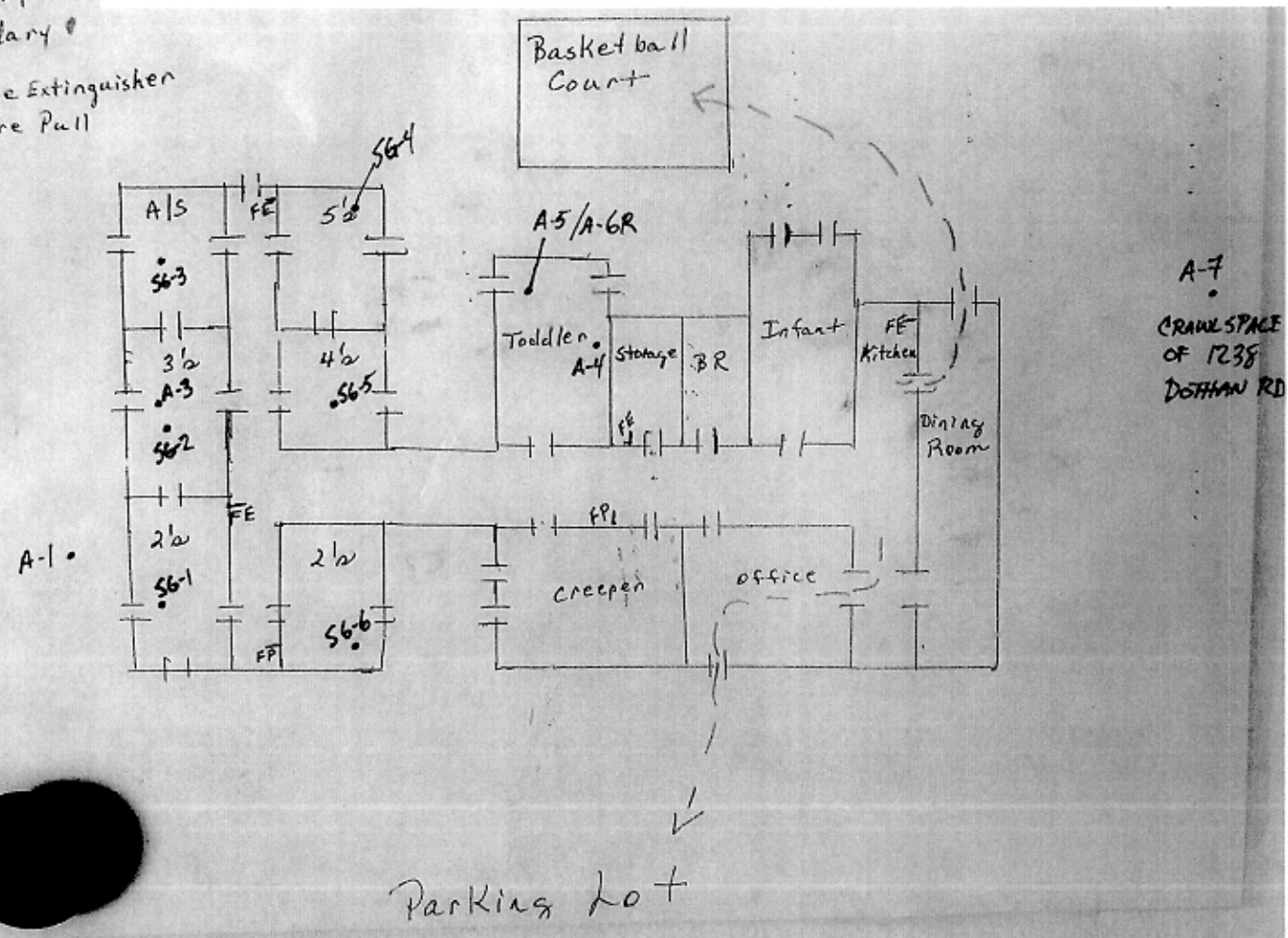
REFERENCE:
 U.S.G.S. TOPOGRAPHIC MAP
 (7.5 MINUTE SERIES)
 COLUMBIA NORTH - 1972, REV. 1990
 SOUTH CAROLINA QUADRANGLE

LEGEND:





Primary
 Secondary
 FE - Fire Extinguisher
 FP - Fire Pull



<p>PROJECT: SOIL VAPOR / AIR QUALITY ASSESS. BROAD RIVER AMOCD 4345 BROAD RIVER ROAD COLUMBIA, RICHLAND COUNTY, SC UST PERMIT #11946</p>	<p>DESCRIPTION: PLAY PALS STRUCTURE SKETCH WITH AIR / VAPOR SAMPLE LOCATIONS</p>	<p>FIGURE 3</p> <p>DATE: OCTOBER 2019</p>
	<p>REFERENCE: SITE SKETCH IS THE BUILDING LAYOUT AND EVACUATION PLAN FROM PLAY PALS DAYCARE</p>	<p>LEGEND:</p>

TABLES

Table 1 - Sub-Slab Soil Vapor Results – Sept. 2019

Table 2 - Indoor Air, Outdoor Air, Crawlspace
Vapor Results – Sept. 2019

Table 3 - Sub-Slab Soil Vapor Results –
(Historical Summary)

Table 4 - Indoor Air, Outdoor Air, Crawlspace
Vapor Results – (Historical Summary)

**Table 3 - Vapor Intrusion Screening Levels (VISLs)
Subslab Soil Gas - Historical Summary
Play Pals - 1246 Dothan Rd.**

Chemical	Date	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MTBE	1,2-Dichloroethane
Commercial Vapor Intrusion Screening Level	---	52.4	73,000	164	1,460	12	1,570	15.7
Residential Vapor Intrusion Screening Level	---	12	17,400	37.4	348	2.75	360	3.6
SG-1 - Classroom 1	12/6/2018	28.6	23.5	ND (23.6)	ND (47.3)	ND (28.5)	ND (19.6)	ND (22.0)
	6/3/2019	ND (0.639)	5.69	1.06	4.81	ND (1.05)	ND (0.721)	ND (0.809)
	9/13/2019	ND (0.639)	3.00	0.947	4.28	ND (1.05)	ND (0.721)	ND (0.809)
SG-2 - Classroom 2	12/6/2018	ND (6.39)	30.4	ND (8.69)	47.1	ND (10.5)	ND (7.21)	ND (8.09)
	6/3/2019	ND (0.639)	7.12	1.44	6.72	ND (1.05)	ND (0.721)	ND (0.809)
	9/13/2019	ND (0.639)	3.84	1.12	5.08	ND (1.05)	ND (0.721)	ND (0.809)
SG-3 - Classroom 3	12/6/2018	5.69	43.3	11.2	64.5	2.69	ND (0.721)	ND (0.809)
	6/3/2019	ND (0.639)	4.33	0.921	4.23	ND (1.05)	ND (0.721)	ND (0.809)
	9/13/2019	ND (0.639)	4.18	1.19	5.39	ND (1.05)	ND (0.721)	ND (0.809)
SG-4 - Classroom 4	12/6/2018	3.45	32.8	9.16	55.6	1.64	ND (0.721)	ND (0.809)
	6/3/2019	ND (0.639)	6.93	1.65	7.95	ND (1.05)	ND (0.721)	ND (0.809)
	9/13/2019	ND (0.639)	3.13	ND (0.869)	3.81	ND (1.05)	ND (0.721)	ND (0.809)
SG-5 - Classroom 5	12/6/2018	4.54	40.3	12.2	73.9	2.63	ND (0.721)	ND (0.809)
	6/3/2019	2.21	5.77	1.80	6.85	ND (1.05)	ND (0.721)	ND (0.809)
	9/13/2019	ND (0.639)	1.86	ND (0.869)	2.01	ND (1.05)	ND (0.721)	ND (0.809)
SG-6 - Classroom 6	12/6/2018	22.8	52.4	12.6	73.8	ND (10.5)	ND (0.721)	ND (8.09)
	6/3/2019	ND (0.639)	4.60	1.26	5.68	ND (1.05)	ND (0.721)	ND (0.809)
	9/13/2019	ND (0.639)	2.59	ND (0.869)	3.71	ND (1.05)	ND (0.721)	ND (0.809)

Note:

All units expressed in µg/m3 (PPB)
 ND - Not Detected at or above Limit of Quantitation (LOQ)
Bold - Greater than Residential VISL
Highlighted - Greater than Residential & Commercial VISL

**Table 4 - Vapor Intrusion Screening Levels (VISLs)
Indoor Air, Outdoor Air & Crawlspace Vapor - Historical Summary
Play Pals - 1246 Dothan Rd.**

Chemical	Date	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MTBE	1,2-Dichloroethane
Commercial Vapor Intrusion Screening Level	---	1.57	2,190	4.91	43.8	0.361	47.2	0.472
Residential Vapor Intrusion Screening Level	---	0.36	521	1.12	10.4	0.083	10.8	0.108
A-1 (Exterior Air)	12/5/2019	2.6	9.91	2.03	10.36	ND (1.05)	ND (0.721)	ND (0.809)
	6/4/2019	0.677	2.82	0.304	3.27	ND (1.05)	ND (0.721)	0.117
	9/12/2019	0.639	2.69	0.404	2.90	ND (0.262)	ND (0.721)	ND (0.081)
A-3 (Interior of Slab Building) 1246 Dothan Rd.	12/5/2019	183	1,790	530	2,956	12.9	ND (0.721)	ND (0.809)
	6/4/2019	1.03	5.28	4.06	13.24	1.32	ND (0.721)	0.36
	9/12/2019	ND (0.319)	1.72	0.339	1.47	ND (0.262)	ND (0.721)	ND (0.081)
A-4 (Interior of Crawlspace Bldg.) 1246 Dothan Rd.	12/5/2019	19.0	120	29.4	199	2.43	ND (0.721)	ND (0.809)
	6/4/2019	2.2	2.59	0.604	2.933	ND (1.05)	ND (0.721)	0.295
	9/12/2019	0.45	0.897	0.152	0.656	ND (0.262)	ND (0.721)	ND (0.081)
A-5 (Crawlspace Air - above poly) 1246 Dothan Rd.	12/7/2018	15.3	81.4	15.4	110.3	3.2	ND (0.721)	ND (0.809)
	6/4/2019	1.02	6.82	0.5	3.8	ND (1.05)	ND (0.721)	0.105
	9/12/2019	0.329	0.648	0.109	0.539	ND (0.262)	ND (0.721)	ND (0.081)
A-6 (Crawlspace Air - below poly) 1246 Dothan Rd.	12/7/2018	57.5	347	66	496	36.4	ND (0.721)	ND (0.809)
	6/4/2019	0.393	1.09	0.161	0.573	ND (1.05)	ND (0.721)	ND (0.081)
	9/12/2019	0.319	0.92	1.15	0.642	ND (0.262)	ND (0.721)	ND (0.081)
A-7 (Crawlspace Air) 1238 Dothan Rd.	12/7/2018	2.34	5.54	ND (0.869)	2.14	ND (1.05)	ND (0.721)	ND (0.809)
	6/4/2019	0.361	2.69	0.208	1.107	21.1	ND (0.721)	0.17
	9/12/2019	ND (0.466)	1.72	0.304	1.244	5.82	ND (1.05)	ND (0.118)

Note:

All units expressed in µg/m3 (PPB)

ND - Not Detected at or above Limit of Quantitation (LOQ)

Bold - Greater than Residential VISL

Highlighted - Greater than Residential & Commercial VISL

APPENDICES

- A. FIELD DATA - VAPOR SAMPLING LOGS**
- B. LABORATORY ANALYTICAL REPORTS**

APPENDIX A

FIELD DATA – VAPOR SAMPLING LOGS

Day 1

DO NOT FORGET TO LABEL EACH CANISTER TAG

The two big blue boxes are the air cans. There are two extras. Both are set up for tubing.

- Set outdoor air canister = **A-1**
- Set crawlspace canister beneath Play Pals above poly = **A-5**
- Set crawlspace canister beneath Play Pals beneath poly with tubing = **A-6**
- Set crawlspace canister beneath house next door = **A-7**
- Set indoor air canister in slab building – **Classroom 2 = A-3**
- Set indoor air canister in crawlspace building – **Classroom 1 = A-4**

Set canisters in the morning and pick up in the afternoon before the gauges read 0. Try to check each canister at least 30 minutes before the full 8 hours.

Day 2

- Label canister on the tag
- For each Pin – place PVC and Playdo, connect sample train, and connect Multi Meter to tubing to check organic vapor concentration
- For each pin, record the VOC reading
- Connect summa canister
- Pressure test – you want 15 on the gauge and watch the needle for 1 minute
- Fill PVC couple with water. Watch.
- Purge sample train. Purge out half of a syringe (30 ml). Watch water.
- Start sampling and watch water. Make sure all valves are in the right position so air is flowing correctly.
- Make sure data sheet is filled out correctly.


Leave Vapor Pins in place and put a cone at each location with a sign.

Make sure each Vapor Pin is covered

Vapor Intrusion Equipment Checklist

Vapor Pin Case				
Sample Trains				
Syringe / Gauge Assembly				
Gloves				
Tubing				
Silicone / Tygon Tubing				
Scissors				
DI Water				
Water Dam PVC Couples				
Play-Do / Clay				
Summa Canisters and Flow Controllers				
Data Sheets				
Wrenches				
Syringe for sucking out water dam				
3/16" ID Tubing = 5.43 ml/ft				


Vapor Sampling Log

		Sample Collection Log	
		Sample ID	SG-1
Client	SC DHEC	Date of Collection	9-13-19
Project	PLAY PALS	SUMMA Canister Size	2.7L
Location	1246 DOTHAN RD	Canister ID	2362
Project #	12-414.4-19	Flow Controller ID	01196
Personnel	AD	Outdoor/Indoor	
Sample Location	CLASS 1 SLAB BLDG	Sample Intake Height	Ground level / Sub Slab
Sampling Depth	VAPOR PIN	Misc. Equipment	/
Sample Type (Soil Gas, <u>Sub-Slab</u> Indoor, etc.)		Time On / Off	0858
			0913
PID Reading	7.3 7.3	Time of Collection	15 min.
	3/16" ID Tubing = 5.43 ml/ft Hand pump = 15 ml/stroke	Approximate Purge Volume & Method	30 ml/syringe
		Barometric Pressure (Start)	30.15
		Canister Pressure (Start)	29.61
		Temperature (Start)	79°
		Barometric Pressure (End)	30.15
		Canister Pressure (End)	0.00
		Temperature (End)	79°

VACUUM TEST: 15" Hg FOR 1 MIN

WATER DAM TEST:


Vapor Sampling Log

		Sample Collection Log	
		Sample ID	SG-2
Client	SC DHEC	Date of Collection	9-13-19
Project	PLAY PALS	SUMMA Canister Size	2.7L
Location	1246 DOTHAN RA.	Canister ID	2867
Project #	12-414.4-19	Flow Controller ID	0535
Personnel	AD	Outdoor/ Indoor	
Sample Location	CLASS 2, SLAB BLDG	Sample Intake Height	Ground level / Sub Slab
Sampling Depth	VAPOR PIN	Misc. Equipment	/
Sample Type (Soil Gas, <u>Sub-Slab</u> Indoor, etc.)		Time On / Off	0926
			0942
PID Reading	5.3	Time of Collection	16 min.
	3/16" ID Tubing = 5.43 ml/ft Hand pump = 15 ml/stroke	Approximate Purge Volume & Method	30 ml / Syringe
		Barometric Pressure (Start)	30.15
		Canister Pressure (Start)	29.56
		Temperature (Start)	79°
		Barometric Pressure (End)	30.15
		Canister Pressure (End)	0.00
		Temperature (End)	79°

VACUUM TEST: 15" Hg FOR 1 MIN

WATER DAM TEST:


Vapor Sampling Log

		Sample Collection Log	
		Sample ID	SG-3
Client	SC DHEC	Date of Collection	9-13-17
Project	PLAY PALS	SUMMA Canister Size	2.7L
Location	1246 DOTHAN RA.	Canister ID	474
Project #	12-414.4-19	Flow Controller ID	0540
Personnel	AD	Outdoor/Indoor	
Sample Location	CLAS 3; SLAB BLDG	Sample Intake Height	Ground Level / Sub Slab
Sampling Depth	VAPOR PIN	Misc. Equipment	/
Sample Type (Soil Gas, <u>Sub-Slab</u> Indoor, etc.)		Time On / Off	0956
			1012
PID Reading	3.0	Time of Collection	16 min.
	3/16" ID Tubing = 5.43 ml/ft Hand pump = 15 ml/stroke	Approximate Purge Volume & Method	30 ml
		Barometric Pressure (Start)	30.15
		Canister Pressure (Start)	29.62
		Temperature (Start)	79°
		Barometric Pressure (End)	30.16
		Canister Pressure (End)	0 00
		Temperature (End)	81°

VACUUM TEST: 15" Hg FOR 1 MIN

WATER DAM TEST:


Vapor Sampling Log

		Sample Collection Log	
		Sample ID	SG-4
Client	SC DHEC	Date of Collection	9-13-19
Project	PLAY PALS	SUMMA Canister Size	2.7L
Location	1246 DOTMAN RD.	Canister ID	2213
Project #	12-414.4-19	Flow Controller ID	01182
Personnel	AD	Outdoor/Indoor	Indoor
Sample Location	CLASS 4, SCAB. BLDG	Sample Intake Height	Ground Level / Sub Slab
Sampling Depth	VAPOR PIN	Misc. Equipment	/
Sample Type (Soil Gas, <u>Sub-Slab</u> Indoor, etc.)		Time On / Off	1023
			1039
PID Reading	6.5	Time of Collection	16 min.
	3/16" ID Tubing = 5.43 ml/ft Hand pump = 15 ml/stroke	Approximate Purge Volume & Method	30 ml / syringe
		Barometric Pressure (Start)	30.16
		Canister Pressure (Start)	29.50
		Temperature (Start)	82°
		Barometric Pressure (End)	30.16
		Canister Pressure (End)	0.00
		Temperature (End)	82°


VACUUM TEST: 15" Hg FOR 1 MIN

WATER DAM TEST:

Vapor Sampling Log

		Sample Collection Log	
		Sample ID	86-5
Client	SC DHEC	Date of Collection	9-13-19
Project	Play Pals	SUMMA Canister Size	2.7 L
Location	1246 Dotman Rd.	Canister ID	450
Project #	12.414.4-19	Flow Controller ID	0995
Personnel	AD	Outdoor/ Indoor	
Sample Location	Class S / Slab Building	Sample Intake Height	Ground Level / Sub Slab
Sampling Depth	Vapor Pin	Misc. Equipment	/
Sample Type (Soil Gas, <u>Sub-Slab</u> , Indoor, etc.)		Time On / Off	1102
			1119
PID Reading	3.3	Time of Collection	17 min
	3/16" ID Tubing = 5.43 ml/ft Hand pump = 15 ml/stroke	Approximate Purge Volume & Method	30 ml / syringe
		Barometric Pressure (Start)	30.16
		Canister Pressure (Start)	30.03
		Temperature (Start)	87°
		Barometric Pressure (End)	30.16
		Canister Pressure (End)	0.10
		Temperature (End)	87°


Vapor Sampling Log

		Sample Collection Log	
		Sample ID	5G-6
Client	SC DHEC	Date of Collection	9-13-19
Project	PLAY PALS	SUMMA Canister Size	2.7L
Location	1246 DOTHAN RA.	Canister ID	535
Project #	12-414.4-19	Flow Controller ID	01052
Personnel	AD	Outdoor <input checked="" type="checkbox"/> Indoor <input type="checkbox"/>	
Sample Location	CLASS 6, SLAB BLOG	Sample Intake Height	Ground level / Sub-slab
Sampling Depth	VAPOR PIN	Misc. Equipment	/
Sample Type (Soil Gas, <u>Sub-Slab</u> Indoor, etc.)		Time On / Off	1130
			1145
PID Reading	1.2	Time of Collection	
	3/16" ID Tubing = 5.43 ml/ft Hand pump = 15 ml/stroke	Approximate Purge Volume & Method	30 ml / syringe
		Barometric Pressure (Start)	30.16
		Canister Pressure (Start)	29.70
		Temperature (Start)	87°
		Barometric Pressure (End)	30.16
		Canister Pressure (End)	
		Temperature (End)	87°


VACUUM TEST: 15" Hg FOR 1 MIN

WATER DAM TEST:


Vapor Sampling Log

		Sample Collection Log	
		Sample ID	A-1
Client	SC DHEC	Date of Collection	9-12-19
Project	PLAY PALS	SUMMA Canister Size	6L
Location	1246 DOTHAN RD	Canister ID	1904
Project #	12-414.4-19	Flow Controller ID	0758
Personnel	AD	Outdoor/Indoor	Outdoor
Sample Location	EXT, E SIDE, FENCE	Sample Intake Height	3'
Sampling Depth	—	Misc. Equipment	/
Sample Type (Soil Gas, Sub-Slab, Indoor, etc.)	OUTDOOR AMBIENT	Time On / Off	0956
			1756
PID Reading	0.0	Time of Collection	8 hr.
	3/16" ID Tubing = 5.43 ml/ft Hand pump = 15 ml/stroke	Approximate Purge Volume & Method	/
		Barometric Pressure (Start)	30.15
		Canister Pressure (Start)	29.90
		Temperature (Start)	78°
		Barometric Pressure (End)	30.03
		Canister Pressure (End)	6.41
		Temperature (End)	94°


Vapor Sampling Log

		Sample Collection Log	
		Sample ID	A-3
Client	SC DHEC	Date of Collection	9-12-19
Project	PLAY PALS	SUMMA Canister Size	6L
Location	1246 DOTHAN RD.	Canister ID	2715 (2715)
Project #	12-414.4-19	Flow Controller ID	0490
Personnel	AD	Outdoor/ Indoor	Indoor
Sample Location	CLASS 2, SLAB BLDG	Sample Intake Height	2.5' - 3.0'
Sampling Depth	—	Misc. Equipment	/
Sample Type (Soil Gas, Sub-Slab, <u>Indoor</u> etc.)		Time On / Off	1004
			1804
PID Reading	0.0	Time of Collection	8 hr
	3/16" ID Tubing = 5.43 ml/ft Hand pump = 15 ml/stroke	Approximate Purge Volume & Method	/
		Barometric Pressure (Start)	30.15
		Canister Pressure (Start)	29.98
		Temperature (Start)	78°
		Barometric Pressure (End)	30.03
		Canister Pressure (End)	5.64
		Temperature (End)	94° (outside)


Vapor Sampling Log

		Sample Collection Log	
		Sample ID	A-4
Client	SC DHEC	Date of Collection	9-12-19
Project	PLAY PALS	SUMMA Canister Size	6L
Location	1246 DOTHAN RD.	Canister ID	2286
Project #	12-414.4-19	Flow Controller ID	0038
Personnel	AD	Outdoor (Indoor)	Indoor
Sample Location	CLASS 1, CRANKSPACE BLDG	Sample Intake Height	3.0'
Sampling Depth	—	Misc. Equipment	/
Sample Type (Soil Gas, Sub-Slab, <u>Indoor</u> etc.)		Time On / Off	1010
			1810
PID Reading	0.0	Time of Collection	8 hr.
	3/16" ID Tubing = 5.43 ml/ft Hand pump = 15 ml/stroke	Approximate Purge Volume & Method	/
		Barometric Pressure (Start)	30.15
		Canister Pressure (Start)	29.89
		Temperature (Start)	79°
		Barometric Pressure (End)	30.03
		Canister Pressure (End)	5.66
		Temperature (End)	94° (outside)


Vapor Sampling Log

		Sample Collection Log	
		Sample ID	A-5
Client	SC DHEC	Date of Collection	9-12-19
Project	PLAY PALS	SUMMA Canister Size	6L
Location	1246 DOTHAN RD.	Canister ID	2326
Project #	12-414.4-19	Flow Controller ID	0018
Personnel	AD	Outdoor /Indoor	Outdoor/Crawlspace
Sample Location	CRAWSPACE ABOVE POLY	Sample Intake Height	Ground Level
Sampling Depth	—	Misc. Equipment	/
Sample Type (Soil Gas, Sub-Slab, Indoor, etc.)	CRAWSPACE	Time On / Off	1018
			1818
PID Reading	0.0	Time of Collection	8 hrs
	3/16" ID Tubing = 5.43 ml/ft Hand pump = 15 ml/stroke	Approximate Purge Volume & Method	/
		Barometric Pressure (Start)	30.16
		Canister Pressure (Start)	30.06
		Temperature (Start)	80°
		Barometric Pressure (End)	30.03
		Canister Pressure (End)	6.14
		Temperature (End)	94°

Vapor Sampling Log

		Sample Collection Log	
		Sample ID	A-6
Client	SC DHEC	Date of Collection	9-12-19
Project	PLAY PALS	SUMMA Canister Size	6L
Location	1246 DOTHAN RD	Canister ID	1710
Project #	12-414.4-19	Flow Controller ID	0076
Personnel	AD	Outdoor /Indoor	Outdoor / Crawlspace
Sample Location	CRAWL SPACE - BELOW POLY	Sample Intake Height	Ground Level
Sampling Depth	—	Misc. Equipment	/
Sample Type (Soil Gas, Sub-Slab, Indoor, etc.)	CRAWL SPACE	Time On / Off	1026
			1826
PID Reading	6.1	Time of Collection	8 min.
	3/16" ID Tubing = 5.43 ml/ft Hand pump = 15 ml/stroke	Approximate Purge Volume & Method	/
		Barometric Pressure (Start)	30.16
		Canister Pressure (Start)	30.03
		Temperature (Start)	82°
		Barometric Pressure (End)	30.03
		Canister Pressure (End)	4.56
		Temperature (End)	94°

Vapor Sampling Log

		Sample Collection Log	
		Sample ID	A-7
Client	SC DHEC	Date of Collection	9-12-17
Project	PLAY PALS	SUMMA Canister Size	6L
Location	1246 DOTHAN RD	Canister ID	1667
Project #	12-414.4-19	Flow Controller ID	0010
Personnel	AD	Outdoor/Indoor	Outdoor / Crawlspace
Sample Location	CRAWLSPACE UNDER 1238 DOTHAN RD	Sample Intake Height	Ground Level
Sampling Depth		Misc. Equipment	/
Sample Type (Soil Gas, Sub-Slab, Indoor, etc.)	CRAWLSPACE	Time On / Off	1035
			1735
PID Reading	0.0	Time of Collection	8hr.
	3/16" ID Tubing = 5.43 ml/ft Hand pump = 15 ml/stroke	Approximate Purge Volume & Method	/
		Barometric Pressure (Start)	30.16
		Canister Pressure (Start)	29.46
		Temperature (Start)	82°
		Barometric Pressure (End)	30.04
		Canister Pressure (End)	15.66
		Temperature (End)	92°

APPENDIX B

LABORATORY ANALYTICAL REPORTS



ANALYTICAL REPORT

Lab Number:	L1942598
Client:	ARM Environmental Services, Inc. 1210 First Street South Ext. Columbia, SC 29209
ATTN:	Richard Ciccolella
Phone:	(803) 783-3314
Project Name:	1246 DOTHAN RD.
Project Number:	12-414.4-19
Report Date:	09/24/19

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Serial_No:09241916:14

Project Name: 1246 DOTHAN RD.
Project Number: 12-414.4-19

Lab Number: L1942598
Report Date: 09/24/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1942598-01	A-1	AIR	1246 DOTHAN RD.	09/12/19 17:56	09/17/19
L1942598-02	A-3	AIR	1246 DOTHAN RD.	09/12/19 18:04	09/17/19
L1942598-03	A-4	AIR	1246 DOTHAN RD.	09/12/19 18:10	09/17/19
L1942598-04	A-5	AIR	1246 DOTHAN RD.	09/12/19 18:18	09/17/19
L1942598-05	A-6	AIR	1246 DOTHAN RD.	09/12/19 18:26	09/17/19
L1942598-06	A-7	AIR	1246 DOTHAN RD.	09/12/19 18:35	09/17/19
L1942598-07	SG-1	SOIL_VAPOR	1246 DOTHAN RD.	09/13/19 09:13	09/17/19
L1942598-08	SG-2	SOIL_VAPOR	1246 DOTHAN RD.	09/13/19 09:42	09/17/19
L1942598-09	SG-3	SOIL_VAPOR	1246 DOTHAN RD.	09/13/19 10:12	09/17/19
L1942598-10	SG-4	SOIL_VAPOR	1246 DOTHAN RD.	09/13/19 10:39	09/17/19
L1942598-11	SG-5	SOIL_VAPOR	1246 DOTHAN RD.	09/13/19 11:19	09/17/19
L1942598-12	SG-6	SOIL_VAPOR	1246 DOTHAN RD.	09/13/19 11:45	09/17/19
L1942598-13	UNUSED CAN #1850	SOIL_VAPOR	1246 DOTHAN RD.		09/17/19
L1942598-14	UNUSED CAN #1863	SOIL_VAPOR	1246 DOTHAN RD.		09/17/19
L1942598-15	UNUSED CAN #2866	SOIL_VAPOR	1246 DOTHAN RD.		09/17/19



Project Name: 1246 DOTHAN RD.
Project Number: 12-414.4-19

Lab Number: L1942598
Report Date: 09/24/19

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: 1246 DOTHAN RD.
Project Number: 12-414.4-19

Lab Number: L1942598
Report Date: 09/24/19

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on September 4, 2019. The canister certification results are provided as an addendum.

L1942598-06 : The canister vacuum measured on receipt at the laboratory was > 15 in. Hg. Prior to sample analysis, the canisters were pressurized with UHP Nitrogen in order to facilitate the transfer of sample to the Gas Chromatograph. The addition of Nitrogen resulted in a dilution of the samples. The reporting limits have been elevated accordingly.

The WG1286753-3 LCS recovery for 1,2,4-trichlorobenzene (132%) is above the upper 130% acceptance limit. All samples associated with this LCS do not have reportable amounts of this analyte.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Christopher J. Anderson

Title: Technical Director/Representative

Date: 09/24/19

AIR



Project Name: 1246 DOTHAN RD.
Project Number: 12-414.4-19

Lab Number: L1942598
Report Date: 09/24/19

SAMPLE RESULTS

Lab ID: L1942598-01
 Client ID: A-1
 Sample Location: 1246 DOTHAN RD.

Date Collected: 09/12/19 17:56
 Date Received: 09/17/19
 Field Prep: Not Specified

Sample Depth:
 Matrix: Air
 Analytical Method: 48,TO-15-SIM
 Analytical Date: 09/20/19 20:58
 Analyst: TS

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Benzene	0.200	0.100	--	0.639	0.319	--		1
Toluene	0.713	0.050	--	2.69	0.188	--		1
Ethylbenzene	0.093	0.020	--	0.404	0.087	--		1
p/m-Xylene	0.467	0.040	--	2.03	0.174	--		1
o-Xylene	0.200	0.020	--	0.869	0.087	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	96		60-140
bromochloromethane	97		60-140
chlorobenzene-d5	98		60-140



Project Name: 1246 DOTHAN RD.

Lab Number: L1942598

Project Number: 12-414.4-19

Report Date: 09/24/19

SAMPLE RESULTS

Lab ID: L1942598-02
 Client ID: A-3
 Sample Location: 1246 DOTHAN RD.

Date Collected: 09/12/19 18:04
 Date Received: 09/17/19
 Field Prep: Not Specified

Sample Depth:
 Matrix: Air
 Analytical Method: 48,TO-15-SIM
 Analytical Date: 09/20/19 21:38
 Analyst: TS

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Toluene	0.456	0.050	--	1.72	0.188	--		1
Ethylbenzene	0.078	0.020	--	0.339	0.087	--		1
p/m-Xylene	0.237	0.040	--	1.03	0.174	--		1
o-Xylene	0.102	0.020	--	0.443	0.087	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	95		60-140
bromochloromethane	97		60-140
chlorobenzene-d5	98		60-140



Project Name: 1246 DOTHAN RD.
Project Number: 12-414.4-19

Lab Number: L1942598
Report Date: 09/24/19

SAMPLE RESULTS

Lab ID: L1942598-03
 Client ID: A-4
 Sample Location: 1246 DOTHAN RD.

Date Collected: 09/12/19 18:10
 Date Received: 09/17/19
 Field Prep: Not Specified

Sample Depth:
 Matrix: Air
 Analytical Method: 48,TO-15-SIM
 Analytical Date: 09/20/19 22:58
 Analyst: TS

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Benzene	0.141	0.100	--	0.450	0.319	--		1
Toluene	0.238	0.050	--	0.897	0.188	--		1
Ethylbenzene	0.035	0.020	--	0.152	0.087	--		1
p/m-Xylene	0.105	0.040	--	0.456	0.174	--		1
o-Xylene	0.046	0.020	--	0.200	0.087	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	95		60-140
bromochloromethane	97		60-140
chlorobenzene-d5	96		60-140



Project Name: 1246 DOTHAN RD.**Lab Number:** L1942598**Project Number:** 12-414.4-19**Report Date:** 09/24/19**SAMPLE RESULTS**

Lab ID: L1942598-04
 Client ID: A-5
 Sample Location: 1246 DOTHAN RD.

Date Collected: 09/12/19 18:18
 Date Received: 09/17/19
 Field Prep: Not Specified

Sample Depth:
 Matrix: Air
 Analytical Method: 48,TO-15-SIM
 Analytical Date: 09/20/19 23:37
 Analyst: TS

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Benzene	0.103	0.100	--	0.329	0.319	--		1
Toluene	0.172	0.050	--	0.648	0.188	--		1
Ethylbenzene	0.025	0.020	--	0.109	0.087	--		1
p/m-Xylene	0.084	0.040	--	0.365	0.174	--		1
o-Xylene	0.040	0.020	--	0.174	0.087	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	95		60-140
bromochloromethane	96		60-140
chlorobenzene-d5	96		60-140



Project Name: 1246 DOTHAN RD.
Project Number: 12-414.4-19

Lab Number: L1942598
Report Date: 09/24/19

SAMPLE RESULTS

Lab ID: L1942598-05
 Client ID: A-6
 Sample Location: 1246 DOTHAN RD.

Date Collected: 09/12/19 18:26
 Date Received: 09/17/19
 Field Prep: Not Specified

Sample Depth:
 Matrix: Air
 Analytical Method: 48,TO-15-SIM
 Analytical Date: 09/21/19 00:17
 Analyst: TS

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatiles in Air by SIM - Mansfield Lab								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Benzene	0.100	0.100	--	0.319	0.319	--		1
Toluene	0.244	0.050	--	0.920	0.188	--		1
Ethylbenzene	0.265	0.020	--	1.15	0.087	--		1
p/m-Xylene	0.103	0.040	--	0.447	0.174	--		1
o-Xylene	0.045	0.020	--	0.195	0.087	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	96		60-140
bromochloromethane	98		60-140
chlorobenzene-d5	98		60-140



Project Name: 1246 DOTHAN RD.
Project Number: 12-414.4-19

Lab Number: L1942598
Report Date: 09/24/19

SAMPLE RESULTS

Lab ID: L1942598-06 D
 Client ID: A-7
 Sample Location: 1246 DOTHAN RD.

Date Collected: 09/12/19 18:35
 Date Received: 09/17/19
 Field Prep: Not Specified

Sample Depth:
 Matrix: Air
 Analytical Method: 48,TO-15-SIM
 Analytical Date: 09/21/19 00:57
 Analyst: TS

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatiles Organics in Air by SIM - Mansfield Lab								
Methyl tert butyl ether	ND	0.291	--	ND	1.05	--		1.456
1,2-Dichloroethane	0.045	0.029	--	0.183	0.118	--		1.456
Benzene	ND	0.146	--	ND	0.466	--		1.456
Toluene	0.456	0.073	--	1.72	0.274	--		1.456
Ethylbenzene	0.070	0.029	--	0.304	0.126	--		1.456
p/m-Xylene	0.208	0.058	--	0.903	0.253	--		1.456
o-Xylene	0.079	0.029	--	0.341	0.126	--		1.456
Naphthalene	1.11	0.073	--	5.82	0.382	--		1.456

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	92		60-140
bromochloromethane	94		60-140
chlorobenzene-d5	92		60-140



Project Name: 1246 DOTHAN RD.**Lab Number:** L1942598**Project Number:** 12-414.4-19**Report Date:** 09/24/19**SAMPLE RESULTS**

Lab ID: L1942598-07
 Client ID: SG-1
 Sample Location: 1246 DOTHAN RD.

Date Collected: 09/13/19 09:13
 Date Received: 09/17/19
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil_Vapor
 Analytical Method: 48,TO-15
 Analytical Date: 09/21/19 01:37
 Analyst: TS

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Toluene	0.795	0.200	--	3.00	0.754	--		1
Ethylbenzene	0.218	0.200	--	0.947	0.869	--		1
p/m-Xylene	0.717	0.400	--	3.11	1.74	--		1
o-Xylene	0.269	0.200	--	1.17	0.869	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	97		60-140
Bromochloromethane	98		60-140
chlorobenzene-d5	97		60-140



Project Name: 1246 DOTHAN RD.**Lab Number:** L1942598**Project Number:** 12-414.4-19**Report Date:** 09/24/19**SAMPLE RESULTS**

Lab ID: L1942598-08
 Client ID: SG-2
 Sample Location: 1246 DOTHAN RD.

Date Collected: 09/13/19 09:42
 Date Received: 09/17/19
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil_Vapor
 Analytical Method: 48,TO-15
 Analytical Date: 09/21/19 02:56
 Analyst: TS

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Toluene	1.02	0.200	--	3.84	0.754	--		1
Ethylbenzene	0.259	0.200	--	1.12	0.869	--		1
p/m-Xylene	0.862	0.400	--	3.74	1.74	--		1
o-Xylene	0.309	0.200	--	1.34	0.869	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	99		60-140
Bromochloromethane	99		60-140
chlorobenzene-d5	98		60-140



Project Name: 1246 DOTHAN RD.

Lab Number: L1942598

Project Number: 12-414.4-19

Report Date: 09/24/19

SAMPLE RESULTS

Lab ID: L1942598-09
 Client ID: SG-3
 Sample Location: 1246 DOTHAN RD.

Date Collected: 09/13/19 10:12
 Date Received: 09/17/19
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil_Vapor
 Analytical Method: 48,TO-15
 Analytical Date: 09/21/19 03:36
 Analyst: TS

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatiles Organics in Air - Mansfield Lab								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Toluene	1.11	0.200	--	4.18	0.754	--		1
Ethylbenzene	0.275	0.200	--	1.19	0.869	--		1
p/m-Xylene	0.915	0.400	--	3.97	1.74	--		1
o-Xylene	0.326	0.200	--	1.42	0.869	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	100		60-140
Bromochloromethane	100		60-140
chlorobenzene-d5	101		60-140



Project Name: 1246 DOTHAN RD.
Project Number: 12-414.4-19

Lab Number: L1942598
Report Date: 09/24/19

SAMPLE RESULTS

Lab ID: L1942598-10
Client ID: SG-4
Sample Location: 1246 DOTHAN RD.

Date Collected: 09/13/19 10:39
Date Received: 09/17/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil_Vapor
Analytical Method: 48,TO-15
Analytical Date: 09/21/19 04:16
Analyst: TS

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatiles Organics in Air - Mansfield Lab								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Toluene	0.831	0.200	--	3.13	0.754	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	0.659	0.400	--	2.86	1.74	--		1
o-Xylene	0.218	0.200	--	0.947	0.869	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	100		60-140
Bromochloromethane	100		60-140
chlorobenzene-d5	100		60-140



Project Name: 1246 DOTHAN RD.

Lab Number: L1942598

Project Number: 12-414.4-19

Report Date: 09/24/19

SAMPLE RESULTS

Lab ID: L1942598-11
 Client ID: SG-5
 Sample Location: 1246 DOTHAN RD.

Date Collected: 09/13/19 11:19
 Date Received: 09/17/19
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil_Vapor
 Analytical Method: 48,TO-15
 Analytical Date: 09/21/19 04:56
 Analyst: TS

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Toluene	0.493	0.200	--	1.86	0.754	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	0.463	0.400	--	2.01	1.74	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	100		60-140
Bromochloromethane	100		60-140
chlorobenzene-d5	99		60-140



Project Name: 1246 DOTHAN RD.**Lab Number:** L1942598**Project Number:** 12-414.4-19**Report Date:** 09/24/19**SAMPLE RESULTS**

Lab ID: L1942598-12
 Client ID: SG-6
 Sample Location: 1246 DOTHAN RD.

Date Collected: 09/13/19 11:45
 Date Received: 09/17/19
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil_Vapor
 Analytical Method: 48,TO-15
 Analytical Date: 09/21/19 05:36
 Analyst: TS

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Toluene	0.686	0.200	--	2.59	0.754	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	0.627	0.400	--	2.72	1.74	--		1
o-Xylene	0.228	0.200	--	0.990	0.869	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	100		60-140
Bromochloromethane	100		60-140
chlorobenzene-d5	96		60-140



Project Name: 1246 DOTHAN RD.

Lab Number: L1942598

Project Number: 12-414.4-19

Report Date: 09/24/19

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 48,TO-15

Analytical Date: 09/20/19 15:21

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab for sample(s): 07-12 Batch: WG1286751-4								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1



Project Name: 1246 DOTHAN RD.

Lab Number: L1942598

Project Number: 12-414.4-19

Report Date: 09/24/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM

Analytical Date: 09/20/19 16:00

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01-06 Batch: WG1286753-4								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1



Serial_No:09241916:14

Lab Control Sample Analysis
Batch Quality Control

Project Name: 1246 DOTHAN RD.
Project Number: 12-414.4-19

Lab Number: L1942598
Report Date: 09/24/19

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics in Air - Mansfield Lab Associated sample(s): 07-12 Batch: WG1286751-3								
Methyl tert butyl ether	92		-		70-130	-		
1,2-Dichloroethane	103		-		70-130	-		
Benzene	75		-		70-130	-		
Toluene	92		-		70-130	-		
Ethylbenzene	92		-		70-130	-		
p/m-Xylene	91		-		70-130	-		
o-Xylene	92		-		70-130	-		
Naphthalene	107		-		70-130	-		



Serial_No:09241916:14

Lab Control Sample Analysis
Batch Quality Control

Project Name: 1246 DOTHAN RD.
Project Number: 12-414.4-19

Lab Number: L1942598
Report Date: 09/24/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-06 Batch: WG1286753-3								
Methyl tert butyl ether	95		-		70-130	-		25
1,2-Dichloroethane	99		-		70-130	-		25
Benzene	74		-		70-130	-		25
Toluene	91		-		70-130	-		25
Ethylbenzene	92		-		70-130	-		25
p/m-Xylene	86		-		70-130	-		25
o-Xylene	90		-		70-130	-		25
Naphthalene	104		-		70-130	-		25



Serial_No:09241916:14

Project Name: 1246 DOTHAN RD.
Project Number: 12-414.4-19

Lab Duplicate Analysis
Batch Quality Control

Lab Number: L1942598
Report Date: 09/24/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 07-12 QC Batch ID: WG1286751-5 QC Sample: L1942598-07 Client ID: SG-1						
Methyl tert butyl ether	ND	ND	ppbV	NC		25
1,2-Dichloroethane	ND	ND	ppbV	NC		25
Benzene	ND	ND	ppbV	NC		25
Toluene	0.795	0.818	ppbV	3		25
Ethylbenzene	0.218	0.212	ppbV	3		25
p/m-Xylene	0.717	0.712	ppbV	1		25
o-Xylene	0.269	0.264	ppbV	2		25
Naphthalene	ND	ND	ppbV	NC		25
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1286753-5 QC Sample: L1942598-02 Client ID: A-3						
Methyl tert butyl ether	ND	ND	ppbV	NC		25
1,2-Dichloroethane	ND	ND	ppbV	NC		25
Benzene	ND	0.102	ppbV	NC		25
Toluene	0.456	0.472	ppbV	3		25
Ethylbenzene	0.078	0.081	ppbV	4		25
p/m-Xylene	0.237	0.243	ppbV	3		25
o-Xylene	0.102	0.103	ppbV	1		25
Naphthalene	ND	ND	ppbV	NC		25



Project Name: 1246 DOTHAN RD.

Project Number: 12-414.4-19

Serial_No:09241916:14
Lab Number: L1942598

Report Date: 09/24/19

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controller Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1942598-01	A-1	0758	Flow 3	09/04/19	301014		-	-	-	Pass	10.0	9.4	6
L1942598-01	A-1	1904	6.0L Can	09/04/19	301014	L1938543-03	Pass	-29.6	-7.5	-	-	-	-
L1942598-02	A-3	0490	Flow 3	09/04/19	301014		-	-	-	Pass	10.0	9.3	7
L1942598-02	A-3	2715	6.0L Can	09/04/19	301014	L1938543-04	Pass	-29.1	-5.8	-	-	-	-
L1942598-03	A-4	0038	Flow 4	09/04/19	301014		-	-	-	Pass	10.0	8.3	19
L1942598-03	A-4	2286	6.0L Can	09/04/19	301014	L1938543-03	Pass	-29.2	-5.8	-	-	-	-
L1942598-04	A-5	0018	Flow 4	09/04/19	301014		-	-	-	Pass	10.0	9.9	1
L1942598-04	A-5	2326	6.0L Can	09/04/19	301014	L1938543-03	Pass	-2.96	-6.3	-	-	-	-
L1942598-05	A-6	0076	Flow 3	09/04/19	301014		-	-	-	Pass	10.0	12.3	21
L1942598-05	A-6	1710	6.0L Can	09/04/19	301014	L1938543-03	Pass	-29.6	-4.9	-	-	-	-
L1942598-06	A-7	0010	Flow 4	09/04/19	301014		-	-	-	Pass	10.0	11.1	10
L1942598-06	A-7	1667	6.0L Can	09/04/19	301014	L1938543-03	Pass	-29.6	-15.6	-	-	-	-
L1942598-07	SG-1	01196	SV200	09/04/19	301014		-	-	-	Pass	217	190	13
L1942598-07	SG-1	2362	2.7L Can	09/04/19	301014	L1938709-01	Pass	-29.6	0.0	-	-	-	-
L1942598-08	SG-2	0535	SV200	09/04/19	301014		-	-	-	Pass	216	193	11



Project Name: 1246 DOTHAN RD.

Project Number: 12-414.4-19

Serial_No:09241916:14
Lab Number: L1942598

Report Date: 09/24/19

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controller Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1942598-08	SG-2	2867	2.7L Can	09/04/19	301014	L1938709-01	Pass	-29.6	0.0	-	-	-	-
L1942598-09	SG-3	0540	SV200	09/04/19	301014		-	-	-	Pass	216	194	11
L1942598-09	SG-3	474	2.7L Can	09/04/19	301014	L1938709-01	Pass	-29.6	0.0	-	-	-	-
L1942598-10	SG-4	01182	SV200	09/04/19	301014		-	-	-	Pass	214	195	9
L1942598-10	SG-4	2213	2.7L Can	09/04/19	301014	L1938709-01	Pass	-29.6	0.0	-	-	-	-
L1942598-11	SG-5	0995	SV200	09/04/19	301014		-	-	-	Pass	215	188	13
L1942598-11	SG-5	450	2.7L Can	09/04/19	301014	L1938709-01	Pass	-29.6	0.0	-	-	-	-
L1942598-12	SG-6	01052	SV200	09/04/19	301014		-	-	-	Pass	215	190	12
L1942598-12	SG-6	535	2.7L Can	09/04/19	301014	L1938709-01	Pass	-29.6	0.0	-	-	-	-
L1942598-13	UNUSED CAN #1850	01029	Flow 4	09/04/19	301014		-	-	-	Pass	10.0	11.5	14
L1942598-13	UNUSED CAN #1850	1850	6.0L Can	09/04/19	301014	L1938543-05	Pass	-28.6	-29.4	-	-	-	-
L1942598-14	UNUSED CAN #1863	0733	Flow 4	09/04/19	301014		-	-	-	Pass	10.0	11.8	17
L1942598-14	UNUSED CAN #1863	1863	6.0L Can	09/04/19	301014	L1938543-03	Pass	-29.5	-29.4	-	-	-	-
L1942598-15	UNUSED CAN #2866	01194	SV200	09/04/19	301014		-	-	-	Pass	219	196	11
L1942598-15	UNUSED CAN #2866	2866	2.7L Can	09/04/19	301014	L1938709-01	Pass	-29.6	-11.6	-	-	-	-



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-03
 Client ID: CAN 983 SHELF 37
 Sample Location:

Date Collected: 08/24/19 12:00
 Date Received: 08/26/19
 Field Prep: Not Specified

Sample Depth:
 Matrix: Air
 Analytical Method: 48,TO-15
 Analytical Date: 08/26/19 18:45
 Analyst: TS

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-03
Client ID: CAN 983 SHELF 37
Sample Location:

Date Collected: 08/24/19 12:00
Date Received: 08/26/19
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
Xylenes, total	ND	0.600	--	ND	0.869	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,2-Dichloroethene (total)	ND	1.00	--	ND	1.00	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-03
Client ID: CAN 983 SHELF 37
Sample Location:

Date Collected: 08/24/19 12:00
Date Received: 08/26/19
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-03
Client ID: CAN 983 SHELF 37
Sample Location:

Date Collected: 08/24/19 12:00
Date Received: 08/26/19
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-03
 Client ID: CAN 983 SHELF 37
 Sample Location:

Date Collected: 08/24/19 12:00
 Date Received: 08/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								

Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds				

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	92		60-140
Bromochloromethane	95		60-140
chlorobenzene-d5	88		60-140



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-03
Client ID: CAN 983 SHELF 37
Sample Location:

Date Collected: 08/24/19 12:00
Date Received: 08/26/19
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Analytical Method: 48,TO-15-SIM
Analytical Date: 08/26/19 18:45
Analyst: TS

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-03
Client ID: CAN 983 SHELF 37
Sample Location:

Date Collected: 08/24/19 12:00
Date Received: 08/26/19
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-03
 Client ID: CAN 983 SHELF 37
 Sample Location:

Date Collected: 08/24/19 12:00
 Date Received: 08/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab								
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	92		60-140
bromochloromethane	94		60-140
chlorobenzene-d5	92		60-140



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-04
Client ID: CAN 694 SHELF 38
Sample Location:

Date Collected: 08/24/19 12:00
Date Received: 08/26/19
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Analytical Method: 48,TO-15
Analytical Date: 08/26/19 19:24
Analyst: TS

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-04
 Client ID: CAN 694 SHELF 38
 Sample Location:

Date Collected: 08/24/19 12:00
 Date Received: 08/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
Xylenes, total	ND	0.600	--	ND	0.869	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,2-Dichloroethene (total)	ND	1.00	--	ND	1.00	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-04
Client ID: CAN 694 SHELF 38
Sample Location:

Date Collected: 08/24/19 12:00
Date Received: 08/26/19
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-04
 Client ID: CAN 694 SHELF 38
 Sample Location:

Date Collected: 08/24/19 12:00
 Date Received: 08/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-04
 Client ID: CAN 694 SHELF 38
 Sample Location:

Date Collected: 08/24/19 12:00
 Date Received: 08/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								

Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds				

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	91		60-140
Bromochloromethane	93		60-140
chlorobenzene-d5	87		60-140



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-04
Client ID: CAN 694 SHELF 38
Sample Location:

Date Collected: 08/24/19 12:00
Date Received: 08/26/19
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Analytical Method: 48,TO-15-SIM
Analytical Date: 08/26/19 19:24
Analyst: TS

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-04
Client ID: CAN 694 SHELF 38
Sample Location:

Date Collected: 08/24/19 12:00
Date Received: 08/26/19
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatiles Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-04
 Client ID: CAN 694 SHELF 38
 Sample Location:

Date Collected: 08/24/19 12:00
 Date Received: 08/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab								
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	91		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	91		60-140



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-05
Client ID: CAN 1809 SHELF 39
Sample Location:

Date Collected: 08/24/19 12:00
Date Received: 08/26/19
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Analytical Method: 48,TO-15
Analytical Date: 08/26/19 20:04
Analyst: TS

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
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Air Canister Certification Results

Lab ID: L1938543-05
Client ID: CAN 1809 SHELF 39
Sample Location:

Date Collected: 08/24/19 12:00
Date Received: 08/26/19
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
Xylenes, total	ND	0.600	--	ND	0.869	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,2-Dichloroethene (total)	ND	1.00	--	ND	1.00	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-05
 Client ID: CAN 1809 SHELF 39
 Sample Location:

Date Collected: 08/24/19 12:00
 Date Received: 08/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-05
Client ID: CAN 1809 SHELF 39
Sample Location:

Date Collected: 08/24/19 12:00
Date Received: 08/26/19
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-05
 Client ID: CAN 1809 SHELF 39
 Sample Location:

Date Collected: 08/24/19 12:00
 Date Received: 08/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								

Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds				

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	90		60-140
Bromochloromethane	92		60-140
chlorobenzene-d5	88		60-140



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-05
Client ID: CAN 1809 SHELF 39
Sample Location:

Date Collected: 08/24/19 12:00
Date Received: 08/26/19
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Analytical Method: 48,TO-15-SIM
Analytical Date: 08/26/19 20:04
Analyst: TS

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-05
Client ID: CAN 1809 SHELF 39
Sample Location:

Date Collected: 08/24/19 12:00
Date Received: 08/26/19
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938543
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938543-05
Client ID: CAN 1809 SHELF 39
Sample Location:

Date Collected: 08/24/19 12:00
Date Received: 08/26/19
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab								
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	90		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	92		60-140



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938709
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938709-01
 Client ID: CAN 482 SHELF 7
 Sample Location:

Date Collected: 08/26/19 16:00
 Date Received: 08/27/19
 Field Prep: Not Specified

Sample Depth:
 Matrix: Air
 Analytical Method: 48,TO-15
 Analytical Date: 08/27/19 07:59
 Analyst: TS

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938709
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938709-01
 Client ID: CAN 482 SHELF 7
 Sample Location:

Date Collected: 08/26/19 16:00
 Date Received: 08/27/19
 Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
Xylenes, total	ND	0.600	--	ND	0.869	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,2-Dichloroethene (total)	ND	1.00	--	ND	1.00	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938709
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938709-01
Client ID: CAN 482 SHELF 7
Sample Location:

Date Collected: 08/26/19 16:00
Date Received: 08/27/19
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938709
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938709-01
 Client ID: CAN 482 SHELF 7
 Sample Location:

Date Collected: 08/26/19 16:00
 Date Received: 08/27/19
 Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938709
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938709-01
 Client ID: CAN 482 SHELF 7
 Sample Location:

Date Collected: 08/26/19 16:00
 Date Received: 08/27/19
 Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								

Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds				

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	86		60-140
Bromochloromethane	88		60-140
chlorobenzene-d5	81		60-140



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938709
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938709-01
Client ID: CAN 482 SHELF 7
Sample Location:

Date Collected: 08/26/19 16:00
Date Received: 08/27/19
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Analytical Method: 48,TO-15-SIM
Analytical Date: 08/27/19 07:59
Analyst: TS

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatiles Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938709
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938709-01
Client ID: CAN 482 SHELF 7
Sample Location:

Date Collected: 08/26/19 16:00
Date Received: 08/27/19
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab								
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1938709
Report Date: 09/24/19

Air Canister Certification Results

Lab ID: L1938709-01
 Client ID: CAN 482 SHELF 7
 Sample Location:

Date Collected: 08/26/19 16:00
 Date Received: 08/27/19
 Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab								

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	86		60-140
bromochloromethane	88		60-140
chlorobenzene-d5	83		60-140



Project Name: 1246 DOTHAN RD.
Project Number: 12-414.4-19

Serial_No:09241916:14
Lab Number: L1942598
Report Date: 09/24/19

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler **Custody Seal**
 NA Present/Intact

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(**)
L1942598-01A	Canister - 6 Liter	NA	NA			Y	Present/Intact		TO15-SIM(30)
L1942598-02A	Canister - 6 Liter	NA	NA			Y	Present/Intact		TO15-SIM(30)
L1942598-03A	Canister - 6 Liter	NA	NA			Y	Present/Intact		TO15-SIM(30)
L1942598-04A	Canister - 6 Liter	NA	NA			Y	Present/Intact		TO15-SIM(30)
L1942598-05A	Canister - 6 Liter	NA	NA			Y	Present/Intact		TO15-SIM(30)
L1942598-06A	Canister - 6 Liter	NA	NA			Y	Present/Intact		TO15-SIM(30)
L1942598-07A	Canister - 2.7 Liter	NA	NA			Y	Present/Intact		TO15-LL(30)
L1942598-08A	Canister - 2.7 Liter	NA	NA			Y	Present/Intact		TO15-LL(30)
L1942598-09A	Canister - 2.7 Liter	NA	NA			Y	Present/Intact		TO15-LL(30)
L1942598-10A	Canister - 2.7 Liter	NA	NA			Y	Present/Intact		TO15-LL(30)
L1942598-11A	Canister - 2.7 Liter	NA	NA			Y	Present/Intact		TO15-LL(30)
L1942598-12A	Canister - 2.7 Liter	NA	NA			Y	Present/Intact		TO15-LL(30)
L1942598-13A	Canister - 6 Liter	NA	NA			Y	Present/Intact		CLEAN-FEE()
L1942598-14A	Canister - 6 Liter	NA	NA			Y	Present/Intact		CLEAN-FEE()
L1942598-15A	Canister - 2.7 Liter	NA	NA			Y	Present/Intact		CLEAN-FEE()

*Values in parentheses indicate holding time in days



Project Name: 1246 DOTHAN RD.

Lab Number: L1942598

Project Number: 12-414.4-19

Report Date: 09/24/19

GLOSSARY

Acronyms

- DL** - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
- EDL** - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
- EMPC** - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCSD** - Laboratory Control Sample Duplicate: Refer to LCS.
- LFB** - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LOD** - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
- LOQ** - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
- MDL** - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
- MSD** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- NDPA/DPA** - N-Nitrosodiphenylamine/Diphenylamine.
- NI** - Not Ignitable.
- NP** - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
- RL** - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
- SRM** - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
- STLP** - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
- TEF** - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
- TEQ** - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
- TIC** - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: Data Usability Report



Project Name: 1246 DOTHAN RD.**Lab Number:** L1942598**Project Number:** 12-414.4-19**Report Date:** 09/24/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: Data Usability Report



Project Name: 1246 DOTHAN RD.
Project Number: 12-414.4-19

Lab Number: L1942598
Report Date: 09/24/19

REFERENCES

- 48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522.

Non-Potable Water


EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.


 ALPHA CHAIN OF CUSTODY 320 Forbes Blvd, Mansfield, MA 02048 TEL: 508-822-9300 FAX: 508-822-3288	AIR ANALYSIS PAGE <u>1</u> OF <u>2</u>	Date Rec'd in Lab: <u>9/12/19</u>	ALPHA Job #: <u>L1942598</u>
	Project Information Project Name: <u>1246 DOTHAN RD</u> Project Location: <u>1246 DOTHAN RD</u> Project #: <u>R-414.4-19</u> Project Manager: <u>RICHARD CICOLELLA</u> ALPHA Quote #: _____ Turn-Around Time <input checked="" type="checkbox"/> Standard <input type="checkbox"/> RUSH (only confirmed if pre-approved) Date Due: _____ Time: _____	Report Information - Data Deliverables <input type="checkbox"/> FAX <input checked="" type="checkbox"/> ADEX Criteria Checker: (Default based on Regulatory Criteria Indicated) Other Formats: <input checked="" type="checkbox"/> EMAIL (standard pdf report) <input type="checkbox"/> Additional Deliverables: Report to: (if other than Project Manager)	Billing Information <input checked="" type="checkbox"/> Same as Client Info PO #: <u>R-414.4-19</u>

Client Information Client: <u>ARM ENVIRONMENTAL SVCS</u> Address: <u>1210 FIRST STREET SOUTH</u> <u>COLUMBIA SC 29209</u> Phone: <u>803 783 3314</u> Fax: <u>803 783 2587</u> Email: <u>RCICOLELLA@ARMSAV.COM</u> <input type="checkbox"/> These samples have been previously analyzed by Alpha	Regulatory Requirements/Report Limits <table border="1"> <tr> <th>State/Fed</th> <th>Program</th> <th>Reg/Comm</th> </tr> <tr> <td><u>EPA/OSWER</u></td> <td><u>VISL</u></td> <td></td> </tr> </table>	State/Fed	Program	Reg/Comm	<u>EPA/OSWER</u>	<u>VISL</u>	
State/Fed	Program	Reg/Comm					
<u>EPA/OSWER</u>	<u>VISL</u>						

Other Project Specific Requirements/Comments:
 Project-Specific Target Compound List: PLEASE LIMIT REPORTING TO ATTACHED LIST

All Columns Below Must Be Filled Out																	
ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION			Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	ID Can	ID - Flow Controller	ANALYSIS				Sample Comments (i.e. PID)	
		End Date	Start Time	End Time								TO-15	TO-15 SIM	APH	Fixed Gases		Sulfides & Mercaptans by TO-15
<u>42598</u>	<u>.01</u>	<u>A-1</u>	<u>9/12/19</u>	<u>0956</u>	<u>1756</u>	<u>29.90</u>	<u>6.41</u>	<u>AA</u>	<u>AD</u>	<u>6</u>	<u>1904</u>	<u>0758</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SEE TARGET COMPOUND LIST ATTACHED
		A-2															
	<u>.02</u>	<u>A-3</u>	<u>9/12/19</u>	<u>1004</u>	<u>1804</u>	<u>29.98</u>	<u>5.64</u>	<u>AA</u>	<u>AD</u>	<u>6</u>	<u>2315</u>	<u>0490</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<u>.03</u>	<u>A-4</u>	<u>9/12/19</u>	<u>1610</u>	<u>1810</u>	<u>29.89</u>	<u>5.66</u>	<u>AA</u>	<u>AD</u>	<u>6</u>	<u>2286</u>	<u>0038</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<u>.04</u>	<u>A-5</u>	<u>9/12/19</u>	<u>1618</u>	<u>1818</u>	<u>30.06</u>	<u>6.14</u>	<u>AA</u>	<u>AD</u>	<u>6</u>	<u>2326</u>	<u>0018</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<u>.05</u>	<u>A-6</u>	<u>9/12/19</u>	<u>1026</u>	<u>1826</u>	<u>30.03</u>	<u>4.56</u>	<u>AA</u>	<u>AD</u>	<u>6</u>	<u>1710</u>	<u>0076</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<u>.06</u>	<u>A-7</u>	<u>9/12/19</u>	<u>1035</u>	<u>1835</u>	<u>29.46</u>	<u>5.66</u>	<u>AA</u>	<u>AD</u>	<u>6</u>	<u>1667</u>	<u>0010</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

*SAMPLE MATRIX CODES AA = Ambient Air (Indoor/Outdoor) SV = Soil Vapor/Landfill Gas/SVE Other = Please Specify	Container Type	Relinquished By: <u>RICHARD CICOLELLA</u> Date/Time: <u>9/12/19 (1300)</u>	Received By: <u>Feder...</u> Date/Time: <u>9/12/19 12:45</u>
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 AIR ANALYSIS CHAIN OF CUSTODY 320 Forbes Blvd, Mansfield, MA 02048 TEL: 508-822-9300 FAX: 508-822-3288		PAGE <u>1</u> OF <u>2</u>	Date Rec'd in Lab: <u>9/17/19</u>	ALPHA Job #: <u>11942598</u>
Project Information Project Name: <u>1246 DOTHAN RD</u> Project Location: <u>1246 DOTHAN RD</u> Project #: <u>R-414.4-19</u> Project Manager: <u>RICHARD CICCOLELLA</u> ALPHA Quote #: _____ Turn-Around Time: _____ <input checked="" type="checkbox"/> Standard <input type="checkbox"/> RUSH (only confirmed if pre-approved)		Report Information - Data Deliverables <input type="checkbox"/> FAX <input checked="" type="checkbox"/> ADEx Criteria Checker: _____ (Default based on Regulatory Criteria Indicated) Other Formats: _____ <input checked="" type="checkbox"/> EMAIL (standard pdf report) <input type="checkbox"/> Additional Deliverables: _____ Report to: (if different than Project Manager) _____		Billing Information <input checked="" type="checkbox"/> Same as Client Info PO #: <u>R-414.4-19</u>
Client Information Client: <u>ARM ENVIRONMENTAL SVCS</u> Address: <u>1210 FIRST STREET SOUTH</u> <u>COLUMBIA SC 29209</u> Phone: <u>803 783 3314</u> Fax: <u>803 783 2587</u> Email: <u>RICCOCLELLA@ARMENV.COM</u>		Regulatory Requirements/Report Limits State/Fed: _____ Program: _____ Res/Comm: _____ <u>FDA/OSWER V15L</u>		
<input type="checkbox"/> These samples have been previously analyzed by Alpha Other Project Specific Requirements/Comments: _____ Project-Specific Target Compound List: <input checked="" type="checkbox"/> <u>PLEASE LIMIT REPORTING TO ATTACHED LIST</u>		ANALYSIS TO-15 SIM <input type="checkbox"/> APH <input type="checkbox"/> Fixed Gases <input type="checkbox"/> Solides & Micrograms by TO-15 <input type="checkbox"/>		

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION					Sample Matrix*	Sampler's Initials	Can Size	ID Can	ID - Flow Controller	TO-15	TO-15 SIM	APH	Fixed Gases	Solides & Micrograms by TO-15	Sample Comments (i.e. PID)
		End Date	Start Time	End Time	Initial Vacuum	Final Vacuum											
<u>42598</u>	<u>07</u>	<u>9/13/19</u>	<u>0858</u>	<u>0913</u>	<u>29.61</u>	<u>0</u>	<u>SV</u>	<u>AD</u>	<u>2.7</u>	<u>2362</u>	<u>01196</u>	<u>X</u>					<u>SEE TARGET COMPOUND LIST ATTACHED</u>
	<u>08</u>	<u>9/13/19</u>	<u>0926</u>	<u>0942</u>	<u>29.56</u>	<u>0</u>	<u>SV</u>	<u>AD</u>	<u>2.7</u>	<u>2867</u>	<u>0535</u>	<u>X</u>					
	<u>09</u>	<u>9/13/19</u>	<u>0956</u>	<u>1012</u>	<u>29.62</u>	<u>0</u>	<u>SV</u>	<u>AD</u>	<u>2.7</u>	<u>474</u>	<u>0540</u>	<u>X</u>					
	<u>10</u>	<u>9/13/19</u>	<u>1023</u>	<u>1039</u>	<u>29.80</u>	<u>0</u>	<u>SV</u>	<u>AD</u>	<u>2.7</u>	<u>223</u>	<u>0182</u>	<u>X</u>					
	<u>11</u>	<u>9/13/19</u>	<u>1102</u>	<u>1119</u>	<u>30.03</u>	<u>0</u>	<u>SV</u>	<u>AD</u>	<u>2.7</u>	<u>450</u>	<u>0998</u>	<u>X</u>					
	<u>12</u>	<u>9/13/19</u>	<u>1130</u>	<u>1145</u>	<u>29.7</u>	<u>0</u>	<u>SV</u>	<u>AD</u>	<u>2.7</u>	<u>535</u>	<u>01052</u>	<u>X</u>					

***SAMPLE MATRIX CODES**

AA = Ambient Air (Indoor/Outdoor)
 SV = Soil Vapor/Landfill Gas/SVE
 Other = Please Specify

Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By: <u>Richard Ciccolella / RICHARD CICCOCLELLA</u>	Date/Time: <u>9/13/19 (2:25)</u>	Received By: <u>[Signature]</u>	Date/Time: <u>9/17/19 12:45</u>
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ARM ENVIRONMENTAL SERVICES

For Play Pals site, 1246 Dothan Road, Columbia, SC

*Please limit reporting to the following list:

- Methyl Tert Butyl Ether
- 1,2-Dichloroethane
- Benzene
- Toluene
- Ethylbenzene
- p/m Xylene
- o-Xylene
- Naphthalene

LIMIT TO THESE

September 2019

1246 Dothan Road
Columbia, SC

Please Note: The attached chain of custody may cover samples in multiple boxes. If so, a copy of the appropriate chain of custody is included in each box.

Also returned in the boxes may be unlabeled canisters and flow controllers that were not used.

Please make sure to limit reporting to the list attached to the chain.

Thanks,

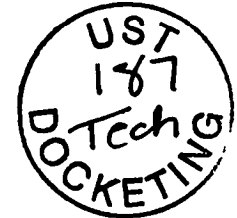
Richard Ciccolella
ARM Environmental Services, Inc.
1210 First Street South
Columbia, SC 29209
rciccolella@armenv.com
ph: 803 783-3314
fax: 803 783-2587

November 7, 2019



ENVIRO-TEST SERVICES

Mr. Bradly Baldwin, Hydrogeologist
Corrective Action & Quality Assurance Section
UST Program
Bureau of Land and Waste management



RE: October 2019 Summary Report for Emergency Free Product Abatement
Broad River Amoco and Play Pals Day Care
Permit # 11946; CA # 60595
4335 Broad River Rd Columbia, SC
Richland County

Dear Mr. Baldwin

Enviro-Test Services is continuing the removal of Free Product and petroleum contaminated water at the Play Pals Day Care.

A total of (6) Free Product Vacuum Recovery Events were performed through out the month of October. They began on October 1st and then October 7th, October 11th, October 20th October 23rd and October 31st. The Free Product Recovery events performed increased by one in October. There was very little rain the first 2 weeks of the month but there were several heavy rain storms at the end of the month. The groundwater level continues to stay low at 5.90 ft. in Recovery Trench A. And GWL of 4.63 in Trench B from TOC.

On October 23, 2019 is the first time there was No measurable Free Product in Recovery Trench A since the Release last year in November ,2018, although if you shine a flash light in Vacuum point 2 you can see globs of free product go by as you vacuum from Vacuum point 3. Trench B pit groundwater level continues to stay low at 3.40 ft. and still has no free product or sheen on top of the recovery well. Trench E and the over fill pit, Trench C and Trench D also have no sheen on top of the water. There has been an increase of standing water in the sumps under the Play Pals Day Care due to the heavy rains at the end of the month.

There was a total of 2,619 gallons of contact water recovered and 2 gallons of free product recovered which was a decrease of 172 gallons of contact water and 24 gallons less of Free Product than last month.

These Events produced 2,619 gallons of contaminated petroleum water and 2 gallons of thick very dark brown-black free product.
See Disposal Manifest Attachment A:

Environmental Laboratory & Drilling

P. O. Box 2237 Irmo, South Carolina 29063 (803) 413-4936

These Task include vacuuming petroleum contact water from 5 Recovery wells in 2 Recovery trenches, and 2 open Pits, Storm drains and under the building of Play Pals Day Care. There was one hour of maintenance of absorbent booms and barrier nets for safety protection this month

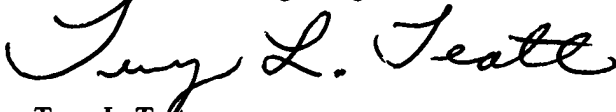
The Absorbent booms are replaced when they no longer absorb the free product. They are located against the fence between the BP station and the day care where the free product flows out of the embankment. The other Absorbent Booms are located in the ditch at the rear of the Day Care which leads to the storm drain that has one in it and there is another one in the ditch by the apartments. There was no replacement of absorbent booms this month.

See Site Map : Figure 1

ARM Environmental performed an air sample event on September 13, 2019 in side and around Play Pals day care the report has been turned in to DHEC along with a Receptor Survey.

Enviro-Test will continue Emergency Free Product Abatement until the Corrective Action begins at the above facilities as directed.

Thank You, for Recognizing our commitment to continue working on this site.

A handwritten signature in black ink that reads "Terry L. Teate". The signature is written in a cursive, flowing style.

Terry L. Teate
Project Manager
Enviro-Test Services Inc.

FIGURE 1
Site Map

ATTACHMENT 1

DISPOSAL MANAFEST

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on 8 1/2" (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1 Generator's US EPA ID No		Manifest Document No 3471	2. Page 1 of
3 Generator's Name and Mailing Address		Broad River BP / Fred 4335 Broad River Rd Columbia, S.C		12-414.2-18	
4 Generator's Phone ()	5. Transporter 1 Company Name ARM		6. US EPA ID Number	A. State Transporter's ID	
	7. Transporter 2 Company Name		8. US EPA ID Number	B. Transporter 1 Phone	
9. Designated Facility Name and Site Address		10. US EPA ID Number		C. State Transporter's ID	
Tk Tank Services 425 Boulevard Rd Sumter, S.C				D. Transporter 2 Phone	
				E. State Facility's ID	
				F. Facility's Phone	
11 WASTE DESCRIPTION			12 Containers No.	13 Total Quantity	14. Unit Wt./Vol
a. NON-HAZARDOUS PETROLUUM CONTAMINATED SOIL					
b. NON-HAZARDOUS PETROLUUM CONTAMINATED WATER			1	TT	2621 Gal
c.					
d.					
G. Additional Descriptions for Materials Listed Above			H. Handling Codes for Wastes Listed Above		
2 gallons - fuel					
15 Special Handling Instructions and Additional Information					
ARM ENVIRONMENTAL SERVICES, INC P.O. BOX 50285 COLUMBIA, SC 29250					
16 GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.					
Printed/Typed Name		Signature		Date	
Broad River BP Billy Pitterenger Agent for Fred Cochran		Billy Pitterenger		Month Day Year 10 30 19	
17 Transporter 1 Acknowledgement of Receipt of Materials					
Printed/Typed Name		Signature		Date	
Billy Pitterenger		Billy Pitterenger		Month Day Year 10 30 19	
18. Transporter 2 Acknowledgement of Receipt of Materials					
Printed/Typed Name		Signature		Date	
				Month Day Year	
19. Discrepancy Indication Space					
20. Facility Owner or Operator Certification of receipt of the waste materials covered by this manifest, except as noted in item 19					
Printed/Typed Name		Signature		Date	
Casey Newman		Casey Newman		Month Day Year 10 30 19	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY

CERTIFICATE OF DISPOSAL

T K TANK SERVICES, INC.

Certifies to all that

2,623 GALLONS

Of Nonhazardous, Petroleum Contaminated Water / Product

Have been disposed of in accordance with EPA regulations on petroleum contaminated water.

This product was generated at

BROAD RIVER BP

10/30/2019

DATE

Corey Hester

SIGNATURE

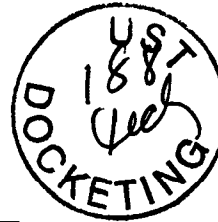


Underground Storage Tank Management Division
Field Activity Request Form

Date of Request: 11/19/19

Type of Request (Check one): Emergency (<2 Working Days)
 Specific (1-5 Working Days)
 Routine (10 Working Days)

Please specify type of work to be completed:



Site ID #: 11946
Site Name: Broad River Amoco
Site Address: 3445 Broad River Road, Columbia, SC
County: Richland
Project Manager: B. Baldwin

Remember to Establish Cost Proposals

PACE CA#: _____ PACE PO#: _____

Field Staff Information:

Date Field Activity Completed: 11/19/19
Completed By: C. White
Date Field Notes Entered into EFIS: 11/21/19

Notes: Gauge all the wells.



**Underground Storage Tank Management Division
Field Data Information Sheet – Monitoring Well Gauging**

Site Information

Date: 11/19/19 Site ID #: 11946 Site Name: Broad River Amoco
 County: Richland Project Manager: B. Baldwin Field Personnel: C. White

Well Gauging Information

Well ID:	Total Well Depth (ft.)	Screened Interval (ft.)	Depth to Free Product (ft.)	Depth to Ground water (ft.)	Free Product Thickness (ft.)	Confirmed with Bailer?	Photos Taken ?	Well Pad OK?	Bolts in Well Cover?	Water in Well Vault?
MW-VA	25.5	15.5-25.5	—	16.58	—			Y	2/2	Y
MW-VB	38.5	28.5-38.5	—	16.67	—			Y	2/2	Y
MW-R2-9	18	8-18	—	16.47	—			Y	2/2	Y
MW-R2-16	19	9-19	—	16.58	—			Y	2/2	N
MW-R2-11	18	8-18	—	16.47	—			Y	2/2	Y
RW-9	40	10-40	—	16.32	—			Cracked	2/2	Y
MW-3			14.69	19.80	5.11			N/A	4	N
R2-8	12.5	2.5-12.5	—	7.78	—			Y	2/2	Y
RW-C	13	3-13	10.58	11.58	1.00			Y	2/2	Y
R2-12	18	8-18	10.08	10.44	0.36			Y	2/2	Y
RW-8	32	2-32	—	11.04	—			Y	2/2	Y
RW-7	40	10-40	—	10.94	—			Y	2/2	Y
MW-4			—	11.01	—			Y	2/2	Y

Notes: MW-3 cap busted.

Signature: C. White

-UST Field Data Information Sheet – Monitoring Well Gauging

- Purpose of the form is to record information gathered during a monitoring well gauging event
- DHEC UST Project Managers and Field Staff
- Item-by-item instructions for completing the form:
 - Fill in all Site Information boxes
 - Record Well Gauging Information for all necessary wells
 - Record any applicable notes
 - Sign the form
- Form is scanned and saved electronically; Record Group Number 169, Retention Schedule 10304



**Underground Storage Tank Management Division
Field Data Information Sheet – Monitoring Well Gauging**

Site Information

Date: 11/19/19	Site ID #: 11946	Site Name: Broad River Amoco
County: Richland	Project Manager: B. Baldwin	Field Personnel: C. White

Well Gauging Information

Well ID:	Total Well Depth (ft.)	Screened Interval (ft.)	Depth to Free Product (ft.)	Depth to Ground water (ft.)	Free Product Thickness (ft.)	Confirmed with Bailer?	Photos Taken ?	Well Pad OK?	Bolts in Well Cover?	Water in Well Vault?
R2-14			—	10.86	—			Y	2/2	Y
R2-6	15	5-15	9.71	9.74	0.03'			Y	2/2	Y
R2-7	15	5-15	8.35	14.80	6.45'			Y	2/2	Y
RW-D			—	9.89	—			Cracked	2/2	Y
RW-6	35	5-35	+	12.13	—			Y	1/2	Y
RW-1			—	12.13	—			Y	1/2	Y
MW-14A	20	10-20	—	11.38	—			Y	1/2	Y
MW-14B	38.5	28.5-38.5	—	14.45	—			Y	1/2	Y
MW-15A	17	7-17	—	16.90	—			Y	2/2	N
MW-15B	40	30-40	—	15.89	—			Y	2/2	N
MW-D2	65	60-65	—	8.39	—			Y	2/2	N
MW-17B	39.5	29.5-39.5	—	8.64	—			Y	2/2	Y
MIN-19B	34	24-34	—	8.40	—			None	No	Y

Notes: MW-19B: casing @ X

Signature: _____

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Underground Storage Tank Management Division
Field Data Information Sheet - Monitoring Well Gauging

Site Information

Date:	Site ID #:	Site Name:
County:	Project Manager:	Field Personnel:

Well Gauging Information

Well ID:	Total Well Depth (ft.)	Screened Interval (ft.)	Depth to Free Product (ft.)	Depth to Ground water (ft.)	Free Product Thickness (ft.)	Confirmed with Bailer?	Photos Taken ?	Well Pad OK?	Bolts in Well Cover?	Water in Well Vault?
MW20A	15	5-15	—	2.25	—			Y	2/2	Y
MW20B	35	25-35	—	4.09	—			Y	1/2	Y
DW-3	65	60-65	—	2.21	—			Y	2/2	Y
22B	35	25-35	—	2.24	—			Y	2/2	Y
22A	8	1-8	—	less than 1 ft	—			Y	2/2	Y
21A	12	2-12	—	TOC	—			Y	2/2	Y
21B	35	25-35	—	2.23	—			Y	2/2	Y
18A	13	3-13	—	0.95	—			Y	2/2	Y
19B	35	25-35	—	1.58	—			Y	2/2	Y

Notes: Total FP = 21.64'

Signature: _____

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**Underground Storage Tank Management Division
Field Data Information Sheet – Monitoring Well Gauging**

Site Information

Date: 11/19/19	Site ID #: 11946	Site Name: Broad River Amoco
County: Richland	Project Manager: B. Baldwin	Field Personnel: C. White

Well Gauging Information

Well ID:	Total Well Depth (ft.)	Screened Interval (ft.)	Depth to Free Product (ft.)	Depth to Ground water (ft.)	Free Product Thickness (ft.)	Confirmed with Bailer?	Photos Taken ?	Well Pad OK?	Bolts in Well Cover?	Water in Well Vault?
MW-9B			-	16.06	-	-	N	Crack	Y	Y
MW-9A			-	16.08	-	-	N	Crack	Y	Y
MW-8B			-	15.06	-	-	N	Y	Y	N
MW-8A			-	15.34	-	-	N	Y	Y	Y
MWR-2-1			-	12.75	-	-	N	Y	Y	Y
MWR-2-4			-	14.32	-	-	N	Y	-1	Y
MWR-2-5				14.05					Y	Y
RW-A			7.21	7.24	0.03'				Y	Y
RW-2			-	14.69	-				Y	Y
RW-1			-	14.59	-				N	Y
RW-3			-	15.01	-				N	Y
RW-5		18-38	13.62	13.65	0.03'			Crack		
MW-5	14.52		13.02	14.18						

odor
odor

Notes: _____

Signature: *C. White*

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**Underground Storage Tank Management Division
Field Data Information Sheet – Monitoring Well Gauging**

Site Information

Date: 11/19/19	Site ID #: 11946	Site Name: Broad River Amoco
County: Richland	Project Manager: B. Baldwin	Field Personnel: C. White

Well Gauging Information

Well ID:	Total Well Depth (ft.)	Screened Interval (ft.)	Depth to Free Product (ft.)	Depth to Ground water (ft.)	Free Product Thickness (ft.)	Confirmed with Bailer?	Photos Taken ?	Well Pad OK?	Bolts in Well Cover?	Water in Well Vault?
MWL-7-15		8-18	—	16.24	—	—	N	Y	Y	Y
RW-10		10-40	13.66	22.30	8.64	—	N	Y	Y	Y
RW-10			13.69	22.31	8.62	—	N	Crack	Y	Y
RW-4		20.5-40.5	—	19.93	—	—	N	Crack	N	Y
MWL-2-10		7-17	—	13.79	—	—	N	Y	Y	Y
RW-12			15.94	15.94	0.02	—	N	Y	Y	Y
MWL-7-2		8-18		13.01		—	N	Y	-1	Y
RW-11		10-40		16.54			N	Y	Y	Y
MWL-2-3		9-19		10.78			N	Y	Y	Y
MW-10A		7.5-12.5		4.87				Y	Y	Y
MW-10B		21-39		12.32				Y	Y	N
MW-7-13		1-11		9.49				Y	Y	Y
MW-11A				6.13				Y	-1	N
MW-11B				5.83				Y	-1	N

Notes:

Signature: *C. White*

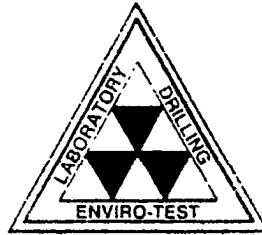
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November 13, 2019



ENVIRO-TEST SERVICES

Mr. Bradly Baldwin, Hydrogeologist
Corrective Action & Quality Assurance Section
UST Program
Bureau of Land and Waste management



RE: November 2019 Summary Report for Emergency Free Product Abatement
Broad River Amoco and Play Pals Day Care
Permit # 11946; CA # 60772
4335 Broad River Rd Columbia, SC
Richland County

Dear Mr. Baldwin,

Enviro-Test Services was terminate from the Free Product Abatement project on November 21, 2019 and told to remove all equipment at the Play Pals Day Care.

A total of (6) Free Product Vacuum Recovery Events were performed through out the month of November. They began on November 1st and then November 8th, November 11th November 15th November 19th and November 20th. The Free Product Recovery events were the same number as the month of October. There were several heavy rain storms this month. The groundwater level has increased to 3.75 ft. in Recovery Trench (A). And GWL of 1.47 ft. in Recovery Trench (B). On November there was 0.15 ft of free product in Trench A. on November 20th there was no measurable free product in trench A. Trench B pit groundwater level has risen to 1.47 ft. and still has no free product or sheen on top of the recovery well. Trench E and the over fill pit, Trench C and Trench D also have no sheen on top of the water. There has been a decrease of standing water under the Play Pals Day Care due to the automatic electric sump pumps are back on. There still need to be explosion proof electric Sump and ventilation motors installed as part of the Corrective Action.

(NOTE): ARM informed us the Air Sampling event showed there were petroleum vapors present in the family residence next to the day care.

There was a total of 2,684 gallons of contact water recovered and 100 gallons of free product recovered which was an increase of 64 gallons of contact water and 98 gallons more of Free Product than last month.

These Events produced 2,684 gallons of contaminated petroleum water and 100 gallons of thick very dark brown-black free product.

See Disposal Manifest Attachment A:

Environmental Laboratory & Drilling

P. O. Box 2227 Irmo, South Carolina 29063 (803) 413-4936

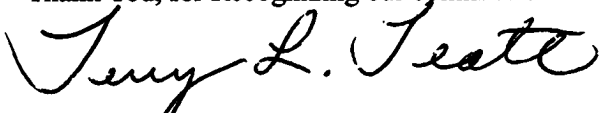
These Task include vacuuming petroleum contact water from 5 Recovery wells in 2 Recovery trenches, and 2 open Pits, Storm drains and under the building of Play Pals Day Care.
The Absorbent booms are replaced when they no longer absorb the free product. They are located against the fence between the BP station and the day care where the free product flows out of the embankment.
And the drainage path to the storm drain at rear of the day care.

See Site Map: Figure 1

Enviro-Test Services will not continue Emergency Free Product Abatement until the Corrective Action begins at the above facilities as directed on November 21, 2019.

Enviro-Test Services has demobilized and removed the AFVR equipment and the tanks from the site and installed safety barriers around the open pits. The fence around the day care remains in place until the Corrective Action contractor takes over the project per the request from DHEC project manager Brad Baldwin.

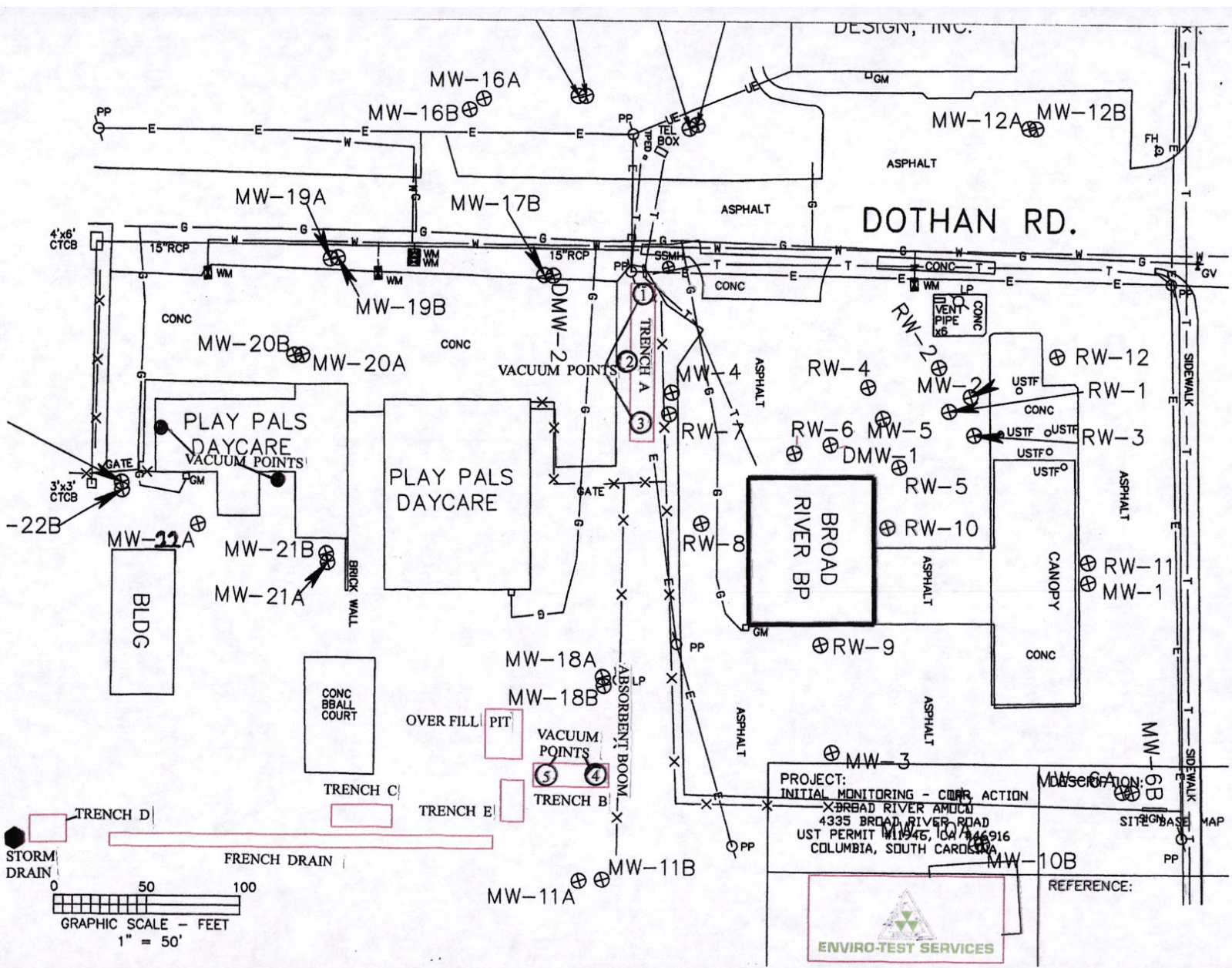
Thank You, for Recognizing our commitment to work on this project.



Terry L. Teate
Project Manager,
Enviro-Test Services Inc.

FIGURE 1

SITE MAP



ATTACHMENT A

DISPOSAL MANAFEST

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No.		Manifest Document No. 2475	2. Page 1 of
3. Generator's Name and Mailing Address Broad River Rd BP 4335 Broad River Rd Columbia, S.C.		12-414.2-18			
4. Generator's Phone ()	5. Transporter 1 Company Name ARM		6. US EPA ID Number	A. State Transporter's ID	
7. Transporter 2 Company Name		8. US EPA ID Number		B. Transporter 1 Phone	
9. Designated Facility Name and Site Address Tk Tank Services 425 Boulevard Rd Spartanburg S.C.		10. US EPA ID Number		C. State Transporter's ID	
				D. Transporter 2 Phone	
				E. State Facility's ID	
				F. Facility's Phone	
11. WASTE DESCRIPTION		12. Containers		13. Total Quantity	14. Unit Wt./Vol.
a. NON-HAZARDOUS PETROLUEM CONTAMINATED SOIL		No.	Type		
b. NON-HAZARDOUS PETROLUEM CONTAMINATED WATER		1	TT	2684 2784	Gal
c.					
d.					
G. Additional Descriptions for Materials Listed Above 100 Gallon fuel			H. Handling Codes for Wastes Listed Above		
15. Special Handling instructions and Additional Information ARM ENVIRONMENTAL SERVICES, INC P.O. BOX 50285 COLUMBIA, SC 29250					
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.					
Printed/Typed Name Billy Pittenger Agent for Fred Cochran		Signature <i>Billy Pittenger</i>		Date 11/20/19	
17. Transporter 1 Acknowledgment of Receipt of Materials					
Printed/Typed Name Billy Pittenger		Signature <i>Billy Pittenger</i>		Date 11/20/19	
18. Transporter 2 Acknowledgment of Receipt of Materials					
Printed/Typed Name		Signature		Date	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.					
Printed/Typed Name Casey Neuman		Signature <i>Casey Neuman</i>		Date 11/20/19	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY

CERTIFICATE OF DISPOSAL

T K TANK SERVICES, INC.

Certifies to all that

2,784 GALLONS

Of Nonhazardous, Petroleum Contaminated Water / Product

Have been disposed of in accordance with EPA regulations on petroleum contaminated water.

This product was generated at

BROAD RIVER RD BP

11/20/2019

DATE

Cecily Hester Newman

SIGNATURE



**Underground Storage Tank Management Division
Field Data Information Sheet – Monitoring Well Gauging**



Site Information

Date: 7/7/20	Site ID #: 11946	Site Name: BR Road Amoco
County: Richland	Project Manager: B. Baldwin	Field Personnel: C. White

Well Gauging Information

Well ID:	Total Well Depth (ft.)	Screened Interval (ft.)	Depth to Free Product (ft.)	Depth to Ground water (ft.)	Free Product Thickness (ft.)	Confirmed with Bailer?	Photos Taken ?	Well Pad OK?	Bolts in Well Cover?	Water in Well Vault?
MWR-2-9	18	8-18	—	11.28	—	—	—	Y	Y	N
MWR-2-11			—	11.36	—	—	—	Y	Y	Y
RW-9			—	11.19	—	—	—	cracked	Y	Y
MW-3			10.01	13.75	3.74	—	—	N/A	Y	N
RW-C			8.81	9.66	0.85	—	—	Y	Y	Y
MWR-2-6			—	7.65	—	—	—	Y	Y	Y
MWR-2-12			8.65	8.68	0.03	—	—	Y	Y	Y
MWR-2-14			8.45	8.46	0.01 ^{screen}	—	—	OK any	Y	Y
RW-8		2-32	—	8.59	—	—	—	OK	Y	Y
MWR-2-6			—	10.08	—	—	—	OK	Y	Y
MWR-2-7			5.13	5.29	0.16	—	—	crack	Y	Y
RW-D			—	6.57	—	—	—	cracked	Y	Y
RW-6			—	9.88	sheen	—	—	OK	1/2	Y

Notes: _____

Signature: *Am*



**Underground Storage Tank Management Division
Field Data Information Sheet – Monitoring Well Gauging**

Site Information

Date: 7/7/20	Site ID #: 11946	Site Name: Broad River Road Arms Co
County: Richland	Project Manager: B. Baldwin	Field Personnel:

Well Gauging Information

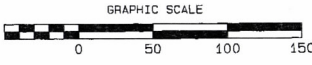
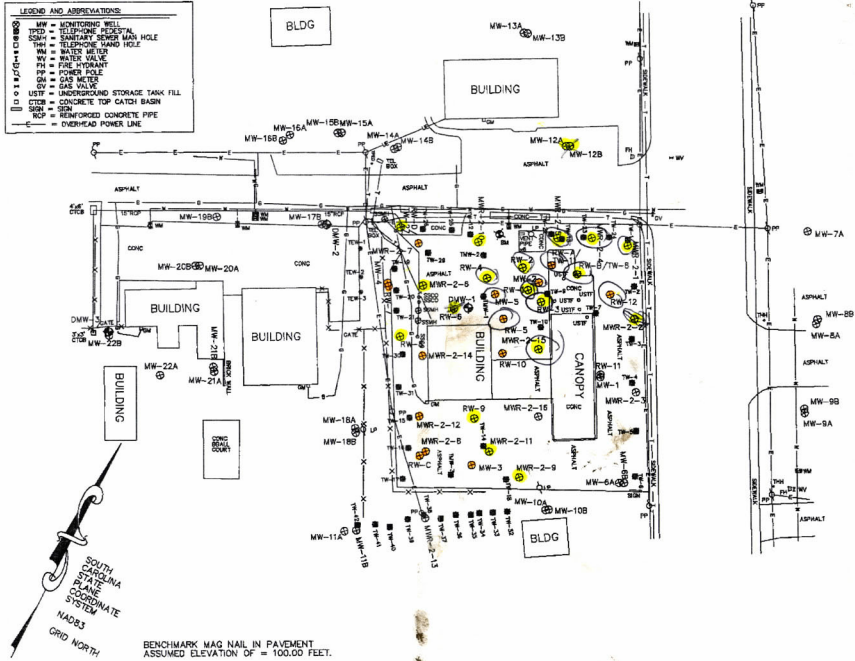
Well ID:	Total Well Depth (ft.)	Screened Interval (ft.)	Depth to Free Product (ft.)	Depth to Ground water (ft.)	Free Product Thickness (ft.)	Confirmed with Bailer?	Photos Taken ?	Well Pad OK?	Bolts in Well Cover?	Water in Well Vault?
MWR-2-1	17.3	8-18	—	7.35	—	N	N	Y	Y	Y
MWR-2-2		6-16	—	9.59	—	N	N	Y	Y	N
MWR-2-4		8-18	—	9.10	—	N	N	Y	1/2	Y
RW-12			10.67	11.18	0.51'	N	N	Y	Y	N
RW-B		4-14	6.57	6.65	0.08'		N	Y	1/2	Y
MWR-2-5		6-18		7.35		N	N	Y	Y	Y
RW-A		9-14	6.05	6.05	0.02'			Y	Y	Y
RW-3										
MW-2										
RW-2		20-40'	—	10.64'	—		N	Cracks	N	N
RW-3				9.79'		N	N	Crack	N	Y
RW-4				10.15'				Cracks	N	N
MW-5			7.81'	10.01'	2.2'	N	N	Y	Y	Y

Notes: RW-A heavy odor, bacteria in well

Signature: 

LEGEND AND ABBREVIATIONS:

MW = MONITORING WELL
 TSD = TELEPHONE TOWER
 SSMH = SANITARY SEWER MAIN HOLE
 TSH = TELEPHONE HAND HOLE
 MW = WATER METER
 WV = WATER VALVE
 FH = FUEL HOSE/VALVE
 PV = POWER POLE
 GM = GAS METER
 GV = GAS VALVE
 USTF = UNDERGROUND STORAGE TANK FILL
 COTB = CONCRETE TOP CATCH BASIN
 RCP = REINFORCED CONCRETE PIPE
 OHP = OVERHEAD POWER LINE




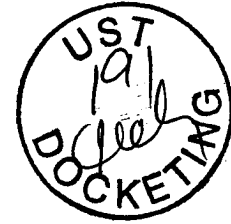
 CTS Geotechnical Engineering and Environmental Services IRMO, SOUTH CAROLINA		
Date: 4/19/19	SCALE: SEE GRAPHIC	Dwg: BASEMAP

FIGURE 2A
 BROAD RIVER AMOCO
 UST ID#11946
 CTS' PROJ. 18-6580
 COLUMBIA
 SOUTH CAROLINA



FREDERICK CECCHINI
429 PRESS LINDLER RD
COLUMBIA SC 29212

AUG 05 2020



PAUL DESAI
BROAD RIVER C STORE LLC
41 CROMWELL CRT
IRMO SC 29063

RE: Corrective Action Solicitation

Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit #11946
Release #1 reported January 1, 2011
Release #2 reported November 16, 2018
Richland County

Dear Mr. Cecchini & Mr. Desai:

The South Carolina Department of Health and Environmental Control (DHEC) has determined that due to both pending litigation associated with the above mentioned property and potential access issues, the Underground Storage Tank (UST) Management Division is unable to proceed under the State Lead Option to procure an environmental remediation contractor to conduct corrective action at the site on your behalf. However, active corrective action is necessary at the site to mitigate petroleum impact and ensure that there is no detrimental exposure to human health or the environment.

The South Carolina Underground Storage Tank Control Regulations R.61-92 and the State Underground Petroleum Environmental Response Bank (SUPERB) Site Rehabilitation and Fund Access Regulations R.61-98 require the UST owner/operator to develop and implement a reasonable, cost-effective corrective action to be performed by a DHEC-certified site rehabilitation contractor. To assist you in determining the clean-up technology, time frame, clean-up levels, and associated costs, DHEC has developed a Corrective Action Specifications Package to send to DHEC-certified contractors you may wish to utilize for this corrective action. The selected technology must meet the goals and specifications as set forth in the Corrective Action Specifications Package. All site rehabilitation activities associated with a release from an UST system must be performed by a SCDHEC Certified Site Rehabilitation Contractor as required by R.61-98 and in accordance with the most recent revision of the approved UST Quality Assurance Program Plan (QAPP), your contractor's Annual Contractor Quality Assurance Plan (ACQAP), and in compliance with all applicable statutes and regulations. A copy of the UST QAPP is available at <https://scdhec.gov/environment/land-waste/underground-storage-tanks/release-assessment-clean/quality-assurance>.

While you, as the UST owner/operator, are ultimately responsible for cleanup actions taken in response to this release, funds from the SUPERB Account and SUPERB Financial Responsibility Fund (SFRF) shall provide combined coverage for site rehabilitation and third party claims not to exceed one million dollars per release.

The maximum amount of allowable costs for the active correction action work that may be reimbursed by the SUPERB account will be determined through a solicitation process and by soliciting bids from DHEC certified

contractors to conduct the work by publishing a notice in the South Carolina Business Opportunities, a bi-weekly state government publication.

In addition to the three solicitation responses you personally obtain (as outlined below), DHEC will that will announce the Corrective Action Specifications Package on the South Carolina Business Opportunities and the DHEC website (<http://www.scdhec.gov/Environment/LW/UST/ReleaseAssessmentCleanup/CorrectiveActionSection/>). This process is intended to ensure an adequate solicitation response is obtained so that a fair and competitive price for the work can be established. The lowest corrective action cost submitted in response to the solicitation will determine the reasonable or SUPERB allowable cost. Except for the limitations specified in the solicitation, the reasonable or SUPERB allowable cost is the maximum amount the SUPERB Account will pay for this active corrective action.

The following steps should be followed as you secure responses to the Corrective Action Solicitation.

- Step 1. Select a minimum of three (3) certified site rehabilitation contractors to complete the enclosed Financial Approval Form. A list of currently certified contractors is enclosed.
- Step 2. Please provide each of the proposed site rehabilitation contractors a copy of this letter. The Corrective Action Solicitation package is available at <https://scdhec.gov/corrective-action-section-solicitations>.
- Step 3. Direct each of your proposed site rehabilitation contractors to submit their Financial Approval Form, addressed to the attention of Debra L. Thoma by the date specified in the table in Section I.C of the attached solicitation. The form may be hand delivered or mailed in a sealed envelope to SCDHEC, UST Management Division, 2600 Bull St., Columbia, SC 29201. The envelope must be marked as Financial Approval Form for UST Permit #11946.

You will be provided copies of all the solicitation response forms submitted. Upon review of the responses, you will be required to complete a Corrective Action Solicitation Response Summary Form that designates which site rehabilitation contractor you wish to use. If desired, you may jointly select a contractor. You may also consider entering a written contract with your selected contractor following completion of the solicitation process to address any costs more than the reasonable or SUPERB allowable costs and not approved by DHEC for reimbursement from the SUPERB Account. DHEC would not be a party to the contract; however, we will monitor and ensure you are making progress with corrective action activities. If the selected contractor is not able to complete the required activities, you, as the UST tank owner and party responsible, will be required to find another certified contractor to complete the required activities.

On all correspondence concerning this site, please reference UST Permit #11946. If there are any questions concerning this project, feel free to contact me by telephone at (803) 898-0605, by fax at (803) 898-0673, or by e-mail at baldwiba@dhec.sc.gov.

Sincerely,



Bradly Baldwin, Hydrogeologist
Corrective Action & Quality Assurance Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Corrective Action Solicitation Package
List of Certified Site Rehabilitation Contractors

cc: Adam Looper, UST Management Division
Technical file (w/ cover letter & solicitation package)

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Contractor Certification Permit Details (Short Version)

<u>Permit No.</u>	<u>Company</u>	<u>Address</u>	<u>City</u>	<u>ST</u>	<u>Zip</u>	<u>Phone No.</u>	<u>Cls</u>
ICC-0003	ROGERS & CALLCOTT ENGINEERS IN	426 FAIRFOREST WAY	GREENVILLE	SC	29607	864-232-1556	I
ICC-0004	ARM ENVIRONMENTAL SERVICES INC	1210 1ST ST S EXT	COLUMBIA	SC	29209	803-783-3314	I
ICC-0007	HRP ASSOCIATES INC	1327 MILLER RD STE D	GREENVILLE	SC	29607	864-289-0311	I
ICC-0008	KLEEN SITES GEOSERVICES INC	2047 INDUSTRIAL BLVD	LEXINGTON	SC	29072	803-996-0637	I
ICC-0009	MIDLANDS ENVIROMENTAL CONSULT	PO BOX 854	LEXINGTON	SC	29071	803-808-2043	I
ICC-0010	BUNNELL-LAMMONS ENGINEERING IN	6004 PONDERS CT	GREENVILLE	SC	29615	864-288-1265	I
ICC-0012	EMS ENVIRONMENTAL (ENVIRONMEN	117 S HOOVER RD	DURHAM	NC	27703	919-596-0470	II
ICC-0014	ENVIRO TEST SERVICES INC	PO BOX 2237	IRMO	SC	29063	803-413-4936	I
ICC-0017	FORCE & ASSOCIATES	147 VERA RD	LEXINGTON	SC	29072	803-359-3200	I
ICC-0018	KATAWBA ENVIRONMENTAL INC	4278 DYE RD	EDGEMOOR	SC	29712	803-417-4568	I
ICC-0019	SHIELD ENGINEERING INC	4301 TAGGART CREEK RD	CHARLOTTE	NC	28208	800-395-5220	I
ICC-0020	SAEDACCO INC	9088 NORTHFIELD DR	FORT MILL	SC	29707	803-548-2180	II
ICC-0022	WPC A TERRACON COMPANY	1450 FIFTH ST W	NORTH CHARLESTON	SC	29405	843-884-1234	I
ICC-0023	TETRA TECH STONE MOUNTAIN	2046 W PARK PL BLVD STE A	STONE MOUNTAIN	GA	30087	770-413-0965	I
ICC-0024	TETRA TECH OAKRIDGE	800 OAK RIDGE TURNPIKE STE A	OAKRIDGE	TN	37830	865-483-9900	II
ICC-0025	TETRA TECH AIKEN	900 TRAIL RIDGE RD	AIKEN	SC	29803	803-649-7963	I
ICC-0030	CLARK ENVIRONMENTAL	PO BOX 10136	WILMINGTON	NC	28404	910-602-3900	I
ICC-0035	AECOM	4016 SALT POINTE PKWY	NORTH CHARLESTON	SC	29405-8419	843-767-4602	I
ICC-0037	ALPHA ENVIRONMENTAL SCIENCES	PO BOX 2155	ASHEVILLE	NC	28801	828-398-2040	II
ICC-0038	ATC GROUP SERVICES LLC	2725 E MILLBROOK RD STE 121	RALEIGH	NC	27604	919-871-0999	I
ICC-0044	ATC GROUP SERVICES LLC	1841 W OAK PKWY STE F	MARIETTA	GA	30062	770-427-9456	I
ICC-0047	GHD SERVICES INC - CHARLESTON	1023 WAPOO RD STE A-6	CHARLESTON	SC	29407	843-769-7609	I
ICC-0048	GEL LABORATORIES LLC	2040 SAVAGE RD	CHARLESTON	SC	29407	843-556-8171	I
ICC-0050	CARDNO MM&A	PO BOX 848	BLUEFIELD	VA	24605	540-322-5467	I
ICC-0056	PARSONS ENVIRONMENT & INFRAS	4701 HEDGEMORE DR	CHARLOTTE	NC	28209	216-912-2912	I
ICC-0057	S&ME INC SPARTANBURG	301 ZIMA PK DR	SPARTANBURG	SC	29301	864-574-2360	I
ICC-0058	S&ME INC COLUMBIA	134 SUBER RD	COLUMBIA	SC	29210	803-561-9024	I
ICC-0059	S&ME INC	620 WANDO PARK BLVD	MOUNT PLEASANT	SC	29464-7936	843-884-0005	I
ICC-0060	S&ME INC CHARLOTTE	9751 SOUTHERN PINE BLVD	CHARLOTTE	NC	28273	704-523-4726	I
ICC-0063	CYPRESS BAY GEOLOGICAL SERVIC	262 GEOLOGY LN	WALTERBORO	SC	29488	843-217-4037	I
ICC-0067	EMERALD INC	PO BOX 3050	SUMTER	SC	29151	803-469-5454	I
ICC-0068	ERM SOUTHEAST INC CHARLESTON	235 MAGRATH DARBY BLVD STE	MOUNT PLEASANT	SC	29464	843-856-4270	I
ICC-0071	FROEHLING & ROBERTSON INC	3300 INTERNATIONAL AIRPORT DF	CHARLOTTE	NC	28208	704-596-2889	I
ICC-0072	FROEHLING & ROBERTSON INC	18 WOODS LAKE RD	GREENVILLE	SC	29607	864-271-2840	I
ICC-0074	GEOLOGICAL RESOURCES INC	3502 HAYES RD	MONROE	NC	28110	704-845-4010	I
ICC-0076	HEPACO LLC	PO BOX 26308	CHARLOTTE	NC	28221-6308	704-598-9782	II
ICC-0078	MID ATLANTIC ASSOCIATES PA	409 ROGERS VIEW CT	RALEIGH	NC	27610	919-250-9918	I
ICC-0079	DAVIS & BROWN INC	124 W MCIVER RD	FLORENCE	SC	29501-1515	843-665-6746	I
ICC-0081	SANTEE COOPER	1 RIVERWOOD DR	MONCK'S CORNER	SC	29461-2998	843-761-8000	II
ICC-0085	GANNETT FLEMING INC	9119 CORPORATE LAKE DR STE	TAMPA	FL	33624	813-882-4366	I
ICC-0086	ERM SOUTHEAST INC CHARLOTTE	300 W SUMMIT AVE STE 3300	CHARLOTTE	NC	28203	704-409-3438	I
ICC-0088	CATLIN ENGINEERS & SCIENTISTS	PO BOX 10279	WILMINGTON	NC	28404	910-452-5861	I
ICC-0089	CATLIN ENGINEERS & SCIENTISTS	160 CLAIREMONT AVE STE 200	DECATUR	GA	30030-2546	770-466-5525	II
ICC-0090	EXCALIBUR ENVIRONMENTAL	PO BOX 1751	SIMPSONVILLE	SC	29681	864-967-9744	I
ICC-0094	PPM CONSULTANTS INC	30704 SERGEANT E I BOOTS THO	SPANISH FORT	AL	36527	251-990-9000	I
ICC-0095	BLUE RIDGE ENVIRONMENTAL SERVI	2315 KINGS RD EXT	SHELBY	NC	28152-6233	704-482-2111	I
ICC-0099	ENVIRONMENTAL HYDROGEOLOGICAL	PO BOX 902	RED SPRINGS	NC	28377	910-843-4456	I
ICC-0100	SYNTERRA CORPORATION	148 RIVER ST STE 220	GREENVILLE	SC	29601	864-909-1790	I
ICC-0101	ARCADIS	10 PATEWOOD DR STE 375	GREENVILLE	SC	29615-6809	706-828-4421	I
ICC-0105	WOOD ENVIRONMENT & INFRASTRUC	2801 YORKMONT RD STE 100	CHARLOTTE	NC	28208	704-357-5530	I
ICC-0106	WOOD ENVIRONMENT & INFRASTRUC	400 EXECUTIVE CENTER DR STE	GREENVILLE	SC	29615	864-458-3600	I
ICC-0111	KLEINFELDER SOUTHEAST INC	3500 GATEWAY CENTRE BLVD S1	MORRISVILLE	NC	27560	919-755-5011	I
ICC-0112	HART & HICKMAN	2923 S TRYON ST STE 100	CHARLOTTE	NC	28203	704-586-0007	I
ICC-0116	SC DHEC UST PROGRAM	2600 BULL ST	COLUMBIA	SC	29201-1708	803-898-2544	I
ICC-0117	ADVANCED REMEDIATION TECHNOLC	144 WINGED ELM CIR	AIKEN	SC	29803	803-643-0985	I
ICC-0118	EXCEL ENVIRONMENTAL ASSOCIATE	625 HUNTSMAN CT	GASTONIA	NC	28054-6060	704-853-0800	I
ICC-0120	SPERO CORPORATION	119 SE MAIN ST	SIMPSONVILLE	SC	29681	864-963-5500	I

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Permit No.	Company	Address	City	ST	Zip	Phone No.	Cls
ICC-0122	AECOM TECHNICAL SERVICES INC	6000 FAIRVIEW RD STE 200	CHARLOTTE	NC	28210	704-522-0330	I
ICC-0124	SAVANNAH RIVER NUCLEAR SOLUTIC	SAVANNAH RIVER SITE	AIKEN	SC	29808	803-208-1130	I
ICC-0126	ARCADIS US INC	6723 TOWPATH RD	SYRACUSE	NY	13214-0066	315-671-9132	II
ICC-0127	WOOD ENVIRONMENT & INFRASTRUC	2030 FALLING WATER AVE STE 3	KNOXVILLE	TN	37922	865-671-6774	I
ICC-0140	F&ME CONSULTANTS COLUMBIA	1825 BLANDING ST	COLUMBIA	SC	29201	803-254-4540	I
ICC-0146	ENVIRONMENTAL MONITORING	PO BOX 901	HARTWELL	GA	30643	706-376-5000	I
ICC-0159	US GEOLOGICAL SURVEY	720 GRACERN RD STE 129	COLUMBIA	SC	29210	803-750-6100	I
ICC-0163	REDOX TECH LLC	200 QUADE DR	CARY	NC	27513	803-643-0907	I
ICC-0169	COASTAL ENGINEERING & TESTING C	1279 REMOUNT RD	NORTH CHARLESTON	SC	29406	843-566-1264	I
ICC-0175	WESTON SOLUTIONS - NORCROSS	5405 METRIC PL STE 200	NORCROSS	GA	30092-2550	770-325-7900	I
ICC-0176	WESTON SOLUTIONS - AUBURN	1625 PUMPHREY AVE	AUBURN	AL	36832	334-466-5600	I
ICC-0178	ENSAFE INC	313 WINGO WAY	MOUNT PLEASANT	SC	29464	843-884-0029	I
ICC-0179	ENSAFE INC	5724 SUMMER TREES DR	MEMPHIS	TN	38134	901-372-7962	I
ICC-0182	WOOD ENVIRONMENT & INFRASTRUC	2533 GREER RD STE 6	TALLAHASSEE	FL	32308		II
ICC-0185	PYRAMID ENVIRONMENTAL INC	PO BOX 16265	GREENSBORO	NC	27416	336-335-3174	I
ICC-0186	PETROLEUM ENV CONSULTANTS	4125 FINCLAIR ST	DENVER	NC	28037	704-335-8801	I
ICC-0190	BUREAU VERITAS NORTH AMERICA II	3380 CHASTAIN MEADOWS PKWY	KENNESAW	GA	30144		I
ICC-0194	GOLDER ASSOCIATES INC	3730 CHAMBLEE TUCKER RD	ATLANTA	GA	30341	770-496-1893	I
ICC-0195	SMITH MONITORING & MAINTENANCE	145 MERRILL AVE	DECATUR	GA	30030	404-229-3096	II
ICC-0201	TETRA TECH TALLAHASSEE	1558 VILLAGE SQUARE BLVD	TALLAHASSEE	FL	32309	850-385-9899	II
ICC-0206	US ARMY CORPS OF ENGINEERS SA	100 W OGLETHORPE AVE	SAVANNAH	GA	31401-3604	912-652-5669	I
ICC-0223	TERRY ENVIRONMENTAL SERVICES I	PO BOX 25	SUMMERVILLE	SC	29484	843-873-8200	I
ICC-0236	B A T ASSOCIATES INC	132 JEFFERSON CT	OAK RIDGE	TN	37830	770-242-3908	I
ICC-0238	BARKER FILTRATION INC	4884-B SUNSETBLVD	LEXINGTON	SC	29072	803-796-1802	II
ICC-0243	PROGRESSIVE ENG & CONSTR INC	12402 N 56TH ST	TAMPA	FL	33617	813-930-0669	I
ICC-0246	TERRACON CONSULTANTS INC	521 CLEMSON RD	COLUMBIA	SC	29229-4307	803-741-9000	I
ICC-0248	CRB GEOLOGICAL & ENVIRONMENTA	5000 OLD BUNCOMBE RD #21	GREENVILLE	SC	29617	305-447-9777	I
ICC-0257	ENVIROSOUTH INC	3440 AUGUSTA RD	GREENVILLE	SC	29605		I
ICC-0261	GROUNDWATER & ENVIRONMENTAL	3701 SAUNDERS AVE	RICHMOND	VA	23227	804-343-0700	I
ICC-0263	CAROLINA TECHNICAL SERVICES INC	7130-A BROAD RIVER RD	IRMO	SC	29063	803-407-3336	I
ICC-0265	WOOD ENVIRONMENT & INFRASTRUC	3800 EZELL RD	NASHVILLE	TN	37211	615-333-0630	II
ICC-0271	PHA ENVIRONMENTAL RESTORATION	114 NORRIS ST	EUTAWVILLE	SC	29048	803-261-1301	I
ICC-0275	TERRACON CONSULTANTS INC	2201 ROWLAND AVE	SAVANNAH	GA	31404	912-629-4000	I
ICC-0277	LEAF ENVIRONMENTAL & ENGINEERI	PO BOX 14609	RESEARCH TRIANGLE	NC	27709	919-484-8536	I
ICC-0281	DRAPER ADEN ASSOCIATIATES INC	1101 NOWELL RD	RALEIGH	NC	27607	919-873-1060	I
ICC-0288	MILL CREEK ENVIRONMENTAL SERVI	1818 PERIMEMTER RD	DAWSONVILLE	GA	30534	706-579-1607	I
ICC-0289	ANTEA GROUP	8008 CORPORATE CENTER DR ST	CHARLOTTE	NC	28226	800-477-7411	I
ICC-0294	SIERRA PIEDMONT ENGINEERS	105 WESTERSTONE DR	WOODSTOCK	GA	30188	770-792-6200	I
ICC-0301	SCHNABEL ENGINEERING CONSULTA	104 CORPORATE BLVD STE 420	WEST COLUMBIA	SC	29169	803-796-6240	I
ICC-0304	ATC GROUP SERVICES LLC	7606 WHITEHALL EXECUTIVE CTR	CHARLOTTE	NC	28273	704-529-3200	I
ICC-0306	J N PEASE ENVIRONMENTAL GROUP	1514 MATHIS FERRY RD STE 208	MOUNT PLEASANT	SC	29464	843-345-4765	II
ICC-0307	WOOD ENVIRONMENTA & INFRASTRU	5710 OLEANDER DR STE 110	WILMINGTON	NC	28403		I
ICC-0313	ATC GROUP SERVICES LLC	7499 PARKLANE RD STE 112	COLUMBIA	SC	29223	803-735-0003	I
ICC-0315	ATC GROUP SERVICES LLC	9874 MAIN ST	WOODSTOCK	GA	30188	770-926-8883	I
ICC-0317	AYRES ASSOCIATES INC	915 FOLLY RD STE O	CHARLESTON	SC	29412	843-651-5868	II
ICC-0325	USA ENVIRONMENT	10234 LUCORE ST	HOUSTON	TX	77505	713-425-6912	II
ICC-0326	ARM ENVIRONMENTAL SERVICES CH	11164 DOWNS RD	PINEVILLE	NC	28134	704-369-0621	I
ICC-0327	ENVIRONMENTAL CONSULTING & TEC	6440 SOUTHPOINT PKWY STE 13	JACKSONVILLE	FL	32216-8063	904-296-0544	II
ICC-0330	GROUNDWATER & ENVIRONMENTAL	104 CORPORATE BLVD STE 411	WEST COLUMBIA	SC	29169-4600	803-749-4080	I
ICC-0331	ENVIRONMENTAL INVESTIGATIONS	535 N PLEASANTBURG DR STE 1	GREENVILLE	SC	29607	864-239-6767	II
ICC-0332	PGP SERVICES	1949 CANDLEWICK DR	FORT MILL	SC	29715	803-802-3108	I
ICC-0334	ENVIROTRAC LTD	13109 OVERLOOK PASS	ROSWELL	GA	30075	770-777-1711	I
ICC-0339	TERRACON	72 POINTE CIR	GREENVILLE	SC	29615	864-292-2901	I
ICC-0340	PROGRESS ENVIRONMENTAL INC	PO BOX 5884	WINSTON SALEM	NC	27113-5884	336-722-9999	II
ICC-0342	KEMRON ENVIRONMENTAL SERVICE:	1359-A ELLSWORTH INDUSTRIAL I	ATLANTA	GA	30318	404-636-0928	I
ICC-0345	KLM ENVIRONMENTAL LLC	PO BOX 2704	GOOSE CREEK	SC	29445	843-870-4285	I
ICC-0347	SCS ENGINEERS (STEARNS CONRAD	1400 PIERSIDE ST	N CHARLESTON	SC	29405-2044	843-746-8525	I

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Permit No.	Company	Address	City	ST	Zip	Phone No.	Cts
CC-0349	WPC A TERRACON COMPANY	1246 HOWARD AVE	MYRTLE BEACH	SC	29577	843-286-2500	I
CC-0350	ZEBRA ENVIRONMENTAL & INDUSTRIAL	PO BOX 357	HIGH POINT	NC	27261	336-841-5276	II
CC-0352	MINERAL SPRINGS ENVIRONMENTAL	4600 MINERAL SPRINGS LN	RALEIGH	NC	27616	919-261-8186	I
CC-0355	ENVIRONMENTAL SERVICES INC	524 S NEW HOPE RD	RALEIGH	NC	27610	919-212-1760	I
CC-0358	ATC GROUP SERVICES LLC	7606 WHITEHALL EXECUTIVE CTR	CHARLOTTE	NC	28273	800-627-0493	I
CC-0360	ANTEA GROUP	7818 SHRADER RD	RICHMOND	VA	23294	804-740-4200	I
CC-0362	JOINT BASE CHARLESTON WEAPONS	628 CES/CEAN	GOOSE CREEK	SC	29445	843-764-7658	I
CC-0363	BROWN REMEDIATION INC	227 SANDY SPRINGS PL STE D-12	ATLANTA	GA	30328-5918	404-256-0667	II
CC-0366	PARSONS ENVIRONMENT & INFRASTRUCTURE	851 E I-65 SERVICE RD	MOBILE	AL	36606	251-434-2457	I
CC-0367	CONSULTECH ENVIRONMENTAL LLC	PO BOX 5306	CARY	NC	27512-5306	919-858-5350	I
CC-0368	SWIFT CREEK ENVIRONMENTAL	8201 COUNTY DR	DISPUTANTA	VA	23842	804-991-3213	I
CC-0370	SUMMIT ENGINEERING LABORATORY	3575 CENTRE CIR DR	FORT MILL	SC	29715-9732	803-238-1080	I
CC-0371	RESOLVE ENVIRONMENTAL SERVICE	500 DEVONPORT DR	MATTHEWS	NC	28104	704-617-1730	I
CC-0375	ZAPATA ENGINEERING PA	6302 FAIRVIEW RD STE 600	CHARLOTTE	NC	28210	704-358-8240	I
CC-0376	ECS SOUTHEAST LLP	1812 CENTER PARK DR	CHARLOTTE	NC	28214	704-525-5152	I
CC-0379	EARTH SYSTEMS INC	223 12TH AVE N	JACKSONVILLE BEACH	FL	32250	904-247-0740	I
CC-0381	APTIM ENVIRONMENTAL & INFRASTRUCTURE	3 INDEPENDENCE POINTE STE 10	GREENVILLE	SC	29615	864-254-9285	I
CC-0386	AECOM TECHNICAL SERVICES INC	1600 PERIMETER PARK DR STE 4	MORRISVILLE	NC	27560	919-461-1290	I
CC-0387	AYRES ASSOCIATES INC	5220 SHAD RD STE 200-3	JACKSONVILLE	FL	32257	904-260-6288	I
CC-0388	CRAWFORD ENVIRONMENTAL SERVICES	1701 SHENANDOAH AVE NW	ROANOKE	VA	24017-5550	540-798-4205	I
CC-0389	ADVANCED ENVIRONMENTAL SERVICES	PO BOX 38218	GREENSBORO	NC	27438	336-337-4331	I
CC-0390	ENVIROASSESSMENTS PLLC	9111 MONROE RD STE 175	CHARLOTTE	NC	28270-2462	704-846-8853	I
CC-0391	EDGE SOLUTIONS INC	PO BOX 639	RAVENEL	SC	29470	843-556-5526	I
CC-0397	GROUNDWATER MGT ASSO INC-APEX	2205 A CANDUM DR	APEX	NC	27502	919-363-6310	I
CC-0398	GROUNDWATER MGT ASSO INC-GREENVILLE	4300 SAPPHERE CT STE 100	GREENVILLE	NC	27834	242-758-3310	I
CC-0402	GENESIS PROJECT INC	1258 CONCORD RD STE 200	SMYRNA	GA	30080	770-319-7217	I
CC-0403	TETRA TECH PITTSBURGH PA	661 ANDERSON DR	PITTSBURGH	PA	15220	412-921-7134	I
CC-0404	HENRY NEMARGUT ENGINEERING SERVICES	2211 CHESTNUT ST	WILMINGTON	NC	28405	910-762-5475	I
CC-0405	MID-CAROLINA PROBE LLC	258 TAPP RD	GREER	SC	29651	864-752-5025	I
CC-0407	HYDROGEOLOGIC INC	11107 SUNSET HILLS RD STE 400	RESTON	VA	20190	703-478-5186	I
CC-0408	MID-CAROLINA PROBE LLC	422 WAGNER TRAIL	COLUMBIA	SC	29229	803-497-6563	I
CC-0409	ONEIDA TOTAL INTEGRATED ENTERPRISES	1033 N MAYFAIR RD STE 200	MILWAUKEE	WI	53226	414-257-4200	II
CC-0411	TRC ENVIRONMENTAL CORPORATION	22C NEW LEICESTER HWY STE 2	ASHEVILLE	NC	28806	828-505-0936	I
CC-0412	GEOLOGIC RESTORATION PLLC	10122 INDUSTRIAL DR	PINEVILLE	NC	28134	704-506-2146	I
CC-0415	P M ENVIRONMENTAL INC	3340 RANGER RD	LANSING	MI	48906	877-884-6775	I
CC-0418	HAZMAT EMERGENCY RESPONSE & SERVICES	PO BOX 2345	WHITEVILLE	NC	28472	910-640-2607	II
CC-0420	ENVIRONMENTAL LABORATORIES INC	PO BOX 1729	TRAVELERS REST	SC	29690	864-370-0637	II
CC-0423	HIGHLANDS ENVIRONMENTAL SOLUTIONS	8410-D FALLS OF NEUSE RD	RALEIGH	NC	27615	919-848-3155	I
CC-0426	SR&R ENVIRONMENTAL INC	PO BOX 221	WILMINGTON	NC	28402	910-763-6274	II
CC-0428	ENVIRONMENTAL RISK CONSULTANTS INC	149 LEE BYRD RD	LOGANVILLE	GA	30052-2310	678-635-7360	I
CC-0430	APEX COMPANIES LLC	10610 METROMONT PKWY STE 200	CHARLOTTE	NC	28269	704-799-6390	I
CC-0434	PROFESSIONAL SERVICE INDUSTRIES	95 CHASTAIN RD STE 301	KENNESAW	GA	30144	770-424-6200	I
CC-0435	PORTER SCIENTIFIC INC	PO BOX 1359	PEMBROKE	NC	28372	910-521-0549	II
CC-0436	PETRA-TECH ENVIRONMENTAL LLC	2435 E NORTH ST STE 1108-202	GREENVILLE	SC	29615	864-436-6322	I
CC-0438	T K TANK SERVICES INC	PO BOX 1384	SUMTER	SC	29151-1384	803-418-5314	II
CC-0439	BHATE ENVIRONMENTAL ASSOCIATE	1608 13TH AVE S	BIRMINGHAM	AL	35205	205-918-4000	I
CC-0440	RED OAK ENVIRONMENTAL SOLUTIONS	PO BOX 374	COLUMBIA	SC	29202	803-587-2721	I
CC-0441	BLUE RIDGE GEOLOGICAL SERVICES	7356 BELMONT DR	TRINITY	NC	27370	336-313-6131	I
CC-0443	ELITE TECHNIQUES INC	1817 BISHOPVILLE HWY	CAMDEN	SC	29020-8825	803-425-7324	II
CC-0444	GEORGIA OILMENS SERVICES INC	1775 SPECTRUM DR STE B	LAWRENCEVILLE	GA	30043	678-225-4558	I
CC-0445	CONTOUR ENVIRONMENTAL LLC	1690 STONE VILLAGE LN STE 321	KENNESAW	GA	30152	678-303-2600	I
CC-0446	FPM-REMEDIATIONS INC	181 KENWOOD AVE	ONEIDA	NY	13421	315-336-7721	I
CC-0448	PARTNER ENGINEERING & SCIENCE INC	8720 RED OAK BLVD STE 102	CHARLOTTE	NC	28217-4936	704-893-8761	I
CC-0449	POINT TO POINT ENVIRONMENTAL	1010 PENNSYLVANIA AVE	MC DONOUGH	GA	30253-9101	404-640-9674	I
CC-0453	ENVIRONMENTAL RISK MGT LLC DBA	PO BOX 5119	FLORENCE	SC	29502	843-601-0207	I
CC-0455	GHD SERVICES INC - DULUTH	3075 BRECKINRIDGE BLVD STE 4	DULUTH	GA	30096	770-441-0027	I
CC-0456	AEI CONSULTANTS	6065 ROSWELL RD STE 700	ATLANTA	GA	30328	678-699-0781	I

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ICC-0457	AECOM TECHNICAL SERVICES INC	10 PATEWOOD DR STE 500	GREENVILLE	SC	29615-3549	864-234-3032	I
ICC-0458	AECOM TECHNICAL SERVICES INC - /	1360 PEACHTREE ST NE STE 500	ATLANTA	GA	30309	404-965-7070	II
ICC-0459	CARDNO INC	2000 1ST DR STE 220	MARIETTA	GA	30062	678-699-0781	I
ICC-0460	ENVIROSMART INC	1629 MEETING STREET RD	CHARLESTON	SC	29405	843-722-0062	II
ICC-0461	QUALITY ENVIRONMENTAL SOLUTION	2112 LOBLOLLY LN	JOHNS ISLAND	SC	29455	410-841-5552	I
ICC-0462	PIONEER ENVIRONMENTAL GROUP L	PO BOX 390	EDISTO BEACH	SC	29438	843-631-1274	II
ICC-0463	ATWELL LLC	1800 PKWY PL STE 700	MARIETTA	GA	30067	770-876-8903	I
ICC-0465	FOTH INFRASTRUCTURE AND ENVIRC	101 TRADE ZONE DR STE 16A	WEST COLUMBIA	SC	29170	803-250-4846	I
ICC-0466	CARDNO INC	1812 LINCOLN ST	COLUMBIA	SC	29201	803-929-6065	I
ICC-0467	CIVIL & ENVIRONMENTAL CONSULTAI	530 HOWELL RD STE 203	GREENVILLE	SC	29615	980-237-0373	I
ICC-0468	NAVARRO RESEARCH AND ENGINEE	1020 COMMERCE PARK DR	OAK RIDGE	TN	37830	865-220-9650	I
ICC-0469	HYNES LAND & ENVIRONMENTAL SEI	2411 OAK ST STE 403J	MYRTLE BEACH	SC	29577	843-458-1272	II
ICC-0472	PEAK HYDROGEOLOGIC PLLC	470 HOGBACK MOUNTAIN RD	TRYON	NC	28782	828-817-5209	I
ICC-0473	D E TANK LLC	PO BOX 1096	MOUNT PLEASANT	SC	29464	843-514-2247	II
ICC-0474	GSS ENVIRONMENTAL PLLC	859 PEAR ORCHARD RD	RIDGELAND	MS	39157	770-876-8903	I
ICC-0475	ENVIRONMENTAL RESTORATION LLC	1666 FABICK DR	FENTON	MC	63026	636-227-7477	II
ICC-0476	MORAN ENVIRONMENTAL RECOVER	1044 PIERSIDE ST	CHARLESTON	SC	29405	781-353-5307	I
ICC-0477	SERES ENGINEERING & SERVICES LI	669 MARINA DR	CHARLESTON	SC	29492	843-216-8531	II
ICC-0478	TRIHYDRO CORPORATION	3740 ST JOHNS BLUFF RD	JACKSONVILLE	FL	32224	904-513-9748	I
ICC-0479	LOUREIRO ENGINEERING ASSOCIATE	2025 ENERGY DR	APEX	NC	27502	984-229-7548	I
ICC-0480	M & W DRILLING LLC	8321 OAK RIDGE HWY	KNOXVILLE	TN	37931	865-690-0128	II

Total No. of Permits 192

I. SCOPE OF WORK**A. DEFINITIONS:**

For the purposes of this solicitation the following terms and definitions shall apply:

1. Active Corrective Action: The scope of work to be implemented under this solicitation as defined in the Technical Specification Package (Section I.A.15).
2. Area of Concern: The horizontal and vertical area, identified in the Appendix, in which concentrations of petroleum chemicals of concern have been quantified and/or can be relatively determined by actual data and subsequent interpretation using accepted scientific principles.
3. Area of Excavation: the horizontal and vertical area, identified in the appendix, to be removed.
4. ACQAP: Annual Contractor Quality Assurance Plan
5. Catastrophic Occurrence: An event (e.g., hurricane) that results in a declared state of emergency and directly and substantially affects the Site Rehabilitation Contractor's operations at a site.
6. Chemicals of Concern (CoC): Specific petroleum constituents that are identified for monitoring and corrective action.
7. Corrective Action Completion Time (CACT): The time in months, submitted by the Site Rehabilitation Contractor, and acceptable to the South Carolina Department of Health and Environmental Control (DHEC), necessary to reduce Free Phase Product (FPP) thicknesses to or below 0.01' and verify attainment of all performance requirements as set forth in Section III.B, and remove and/or properly abandon assessment and corrective action components (wells, treatment lines, etc.) as determined by DHEC. All activities must be completed within 5 years of the Financial Approval Date. Any request for an extension beyond the 5-year time frame must be made in writing by the Owner/Operator and the Corrective Action Completion Time may be extended with a written no cost extension granted by DHEC.
8. Corrective Action Cost: The total amount established via the procurement process to complete the scope of work/specifications detailed in the solicitation unless otherwise modified pursuant to the terms of this solicitation. The maximum

allowable corrective action cost DHEC can establish is dependent upon the remaining State Underground Petroleum Environmental Response Bank (SUPERB) account balance for the individual release, less any costs required for verification of performance milestones. All corrective cost above the maximum amount allowable, as established in S.C. Code Ann. § 44-2-40 (2018), are the responsibility of the owner/operator.

9. Corrective Action Plan (CAP): A document submitted by the Site Rehabilitation Contractor that outlines and details proposed corrective action(s) and contains a timetable consistent with the CACT, to include any subsequent CAP addendums or amendments.
10. Corrective Action Plan Implementation Date: The date on which the Contractor initiates corrective action (i.e., physical treatment activities such as excavation, extraction, injection, etc.) under the approved CAP. The date must be within 30 days of receipt of a Notice to Proceed issued by DHEC.
11. Day: For the purpose of this solicitation, any reference to day(s) will be intended as calendar day(s) and not business day(s).
12. Free-Phase Product (FPP): Petroleum lighter than water non-aqueous phase liquid (LNAPL) identified for monitoring and corrective action.
13. Performance milestone: Milestones set forth in Section III.B of this solicitation for which the Site Rehabilitation Contractor will receive payment under the Technical Specifications Package.
14. Quality Assurance Program Plan for the Underground Storage Tank Management Division (UST QAPP): The UST QAPP Revision under implementation at the time this solicitation is posted.
15. Technical Specifications Package: This document, to include the attached Appendix, which provides site-specific information and defines the scope of work to be completed at the site(s) under this solicitation.
16. Oxygen Releasing Compound (ORC): ORC in this solicitation, refers to a generic Oxygen Releasing Compound. The selected ORC compound, regardless of the name brand or vendor, must generate a minimum of 2,700 pounds oxygen over a minimum 6-month time period.

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17. Persulfate Compound: A compound of persulfate with various amendments (e.g. potassium, ammonium, etc.) which will be blended with soil as part of the backfill process.
18. Reporting Period: The time period between submittal of Corrective Action System Evaluation (CASE) Reports.

B. SOLICITATION STATEMENT

Frederick N Cecchini and Broad River C Store LLC, with assistance from the Underground Storage Tank (UST) Management Division of DHEC, are seeking services to perform active corrective action of a petroleum release or petroleum releases at a regulated underground storage tank site in accordance with the performance requirements as set forth in Section III.B. There are three specific components to this solicitation: free-phase product (FPP) removal, FPP migration control, and excavation. All Applicants must be SCDHEC-certified Class I Site Rehabilitation Contractors and must remain in compliance with R.61-98 for the duration of the CACT.

C. SCHEDULE OF DELIVERABLES

The following table summarizes the deadlines for deliverables associated with this solicitation:

Please note that DHEC must be notified 15 calendar days prior to any activities to be conducted at the site.

DELIVERABLE DUE	DEADLINE
Questions	By August 28, 2020
Corrective Action Solicitation Response Form	By September 18, 2020 at 5:00 pm <i>in sealed envelope</i>
CAP and UST QAPP Contractor Addendum or Site-Specific Work Plan for Corrective Action	Within 30 days of receipt of Notice to Proceed from DHEC for CAP Preparation.
CAP Implementation for Migration Prevention of Free Phase Product and Free Phase Product Removal	Within 30 days of receipt of Notice to Proceed from DHEC for CAP Implementation of each component
CAP Implementation Reports for Migration Prevention of Free Phase Product and Free Phase Product Removal	Within 60 days of receipt of Notice to Proceed from DHEC for CAP Implementation of each component
CASE Report	Semi-annually with initial sampling to occur 90 days after CAP Implementation and report due within 30 days of sampling.

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Update UST QAPP Contractor Addendum or Site-Specific Work Plan for Corrective Action	First quarter of each year and as needed until completion of corrective action.
Notify Project Manager of implementation of Corrective Action Activities	At least 15 days prior to initiation.
ECAP Implementation	Immediate upon receipt of Notice to Proceed for Excavation and written approval and verification by DHEC that the Migration Prevention is effective
Completion of Excavation	Within 60 days receipt of Excavation Notice to Proceed from DHEC
Excavation Report	Within 60 days of receipt of Excavation Notice to Proceed from DHEC
Demobilization and Site Restoration	Within 60 days of receipt of Notice to Proceed from DHEC for Demobilization and Site Restoration.

D. SITE SPECIFIC INFORMATION

The scope of work defined in this technical specification package is to be implemented at **Broad River Amoco (UST Permit #11946), 4335 Broad River Road, Columbia, SC** for the release(s) reported on January 4, 2011 and November 16, 2018. A copy of the technical file will be available on-line at <https://scdhec.gov/environment/land-management/underground-storage-tanks/release-assessment-clean/active-corrective-0> until the CAP is approved. The technical file may also be reviewed at the Freedom of Information (FOI) Office located at the Sims/Aycock Building, 2600 Bull Street, Columbia, SC, 29201 (803-898-3882). **Appointment(s) to view the technical file may be scheduled on weekdays between the hours of 8:30 A.M. to 5:00 P.M. by calling the FOI Office at 803-898-3882. A brief technical summary, including maps and data tables, is attached in the Appendix.** UST Site Rehabilitation Contractors are strongly encouraged to review the file(s) to ensure a complete understanding of corrective action requirements. It will be presumed, upon submittal of an offer, that the UST Site Rehabilitation Contractor has reviewed and understands all available information in the technical file.

II. SOLICITATION REQUIREMENTS

A. GENERAL REQUIREMENTS

1. **PAYMENT PERIOD:** The payment period will be effective from the date of financial approval until corrective action is complete as outlined in this solicitation.

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2. **EQUAL OPPORTUNITY EMPLOYMENT:** Site Rehabilitation Contractors must agree to make positive efforts to employ women, minorities, and minority-owned businesses.
3. **AMENDMENTS:** All amendments to this solicitation shall be in writing from DHEC. DHEC shall not be legally bound by any amendment, interpretation or settlement that is not in writing.
4. **RESTRICTION:** the only official contact person at DHEC during the solicitation and financial approval process is Debra Thoma. Site Rehabilitation Contractors are not to contact any other DHEC personnel or other contractors.
5. **FINANCIAL APPROVAL:** The UST Owner/Operator has the right to select a SCDHEC-certified Class I Site Rehabilitation Contractor to perform corrective action in accordance with the SUPERB Act (S.C. Code Ann. §§ 44-2-10 et seq.) and is not limited to Site Rehabilitation Contractors who respond to this solicitation. Therefore, financial approval may be made to a Site Rehabilitation Contractor who has been selected by the Owner/Operator but has not responded to this solicitation. The financial approval will be for the reasonable cost as defined in Section II.A.6. The selected Site Rehabilitation Contractor must agree to make positive efforts to employ women, minorities, and minority-owned businesses. **Pursuant to S.C. Code Ann. § 44-2-120(B), the Owner/Operator is ultimately responsible to DHEC for the actions of their selected Site Rehabilitation Contractor. Therefore, DHEC will pursue enforcement actions against the Owner/Operator if their selected Site Rehabilitation Contractor does not make satisfactory progress towards achieving the performance requirements as outlined in Section III.B.**
6. **REASONABLE COST:** The lowest corrective action cost submitted in response to the solicitation will determine the reasonable or SUPERB-allowable cost to complete corrective action as defined by the solicitation. DHEC reserves the right to reject any and all submitted Corrective Action Solicitation Response Form that propose Corrective Action Costs that are not advantageous to the State of South Carolina, that propose a CACT that is not protective of public health and the environment, and that propose remediation technology(ies) or method(s) that cannot be permitted in the State of South Carolina and/or that are not protective of public health and the environment.
7. **SITE WORK VERIFICATION:** The Site Rehabilitation Contractor will be required to complete all components of the corrective action as defined in Section III. Verification that FPP removal and interim performance milestones have been achieved will be based upon gauging/sampling results from the SSTL wells and

sampling points listed in the Appendix, and extraction wells installed as part of corrective action. Verification that the final performance milestone has been achieved will be based upon sampling results from all wells and gauging points listed in the Appendix and all verification wells to be installed at locations and depths designated by DHEC (see Section III.B for more details). It is understood that seasonal fluctuations in FPP thicknesses will occur. It is the intent of this corrective action to prevent further degradation of the aquifer(s) by continued migration of FPP into areas not previously impacted. If the corrective action allows FPP to migrate into areas not previously impacted, the Site Rehabilitation Contractor will be responsible for completing assessment activities necessary to re-define the impacted areas and for providing amendments to their CAP to address the additional impact. An on-site inspection must be performed and all required documentation submitted in order to verify the completion of the scope of work, as defined in the Technical Specification Package.

8. **REPORTS:** Reports are to be submitted to DHEC on or prior to the established due dates unless otherwise approved in writing by DHEC. Deliver one paper copy and one electronic copy of each plan and report to: SCDHEC, Bureau of Land and Waste Management, UST Management Division 2600 Bull Street, Columbia, SC 29201. The electronic copy should be submitted on compact disk (CD) in Personal Data Format (PDF). All data tables should be in MS Excel or comparable format. One copy of each plan or report must be delivered to each party listed on the Distribution List included in the Appendix. The distribution copies may be electronic or paper as agreed upon by the party and the Site Rehabilitation Contractor. Based on permitting and other requirements, additional copies of plans and reports may be required by DHEC.
9. **INVOICING:** Invoices will be submitted to SCDHEC, Bureau of Land and Waste Management, UST Management Division, ATTN: Financial Section, 2600 Bull Street, Columbia, SC 29201, using the Corrective Action Invoice form. The initial invoice must be received at the above address within 4 months of CAP approval or funds will be uncommitted as required by S.C. Code Ann. § 44-2-40(B). If funds are uncommitted, the invoice will be held until funds become available. Payment will be in accordance with the documented completion of each component of this solicitation as defined in this Technical Specification Package.
10. **LIMITATIONS:** **The approved Corrective Action Cost will be final and will not be increased for any reason (e.g., unanticipated iron fouling of a system, wells clogging because of biological activity or sediments, damage by lightning, increased subcontractor costs, loss of utilities, modification to the system to meet the performance milestones, etc.) with the exception of: 1) unforeseen**

subsurface conditions as determined solely at the discretion of DHEC or 2) identification of additional FPP or CoC from a confirmed release that occurs subsequent to financial approval and that adversely impacts corrective action as determined by DHEC. Payment will only be made for achieving the performance milestones as set forth in Section III.B. No interim or partial payments will be made once corrective action is initiated. Once Active Corrective Action has been initiated, and in the event of a cancellation due to any of the conditions described in this Section, final payment, if appropriate, will be a percentage of the Corrective Action Cost as determined by DHEC.

Contractor-owned items used on-site for the corrective action that are damaged or destroyed by acts of nature, improper maintenance or handling, theft or vandalism will not be replaced or reimbursed by the SUPERB Account. The Site Rehabilitation Contractor cannot delay progress or suspend corrective action activities at the site without written approval from DHEC based upon a claim of a suspected new petroleum release from the UST system. Unless directed otherwise by DHEC, the Contractor must continue to perform corrective action activities during any period of time during which a new petroleum release from the UST system is being investigated. The Contractor must clearly demonstrate sufficient evidence of the release in the form of analytical test results or other demonstrative evidence to DHEC. The determination that a new petroleum release from the UST system has occurred that post-dates the financial approval, and that adversely impacts corrective action at the site, is in the sole discretion of DHEC. **In the event that all performance requirements are not achieved within the CACT stated in Section I this Active Corrective Action may be cancelled, and the Owner/Operator will be held to the requirements in Section II.A.5.**

12. PERIODIC MEETINGS: DHEC may require periodic meetings, as necessary, with the selected Contractor and the Owner/Operator via teleconference, at DHEC, or at the site to verify progress of the Corrective Action.

B. SPECIFIC REQUIREMENTS

1. SCOPE OF SOLICITATION: This technical specification package is for corrective action at one site in South Carolina.
 - a. The CACT for the site shall be entered on the Corrective Action Solicitation Response Form in Section IV.B.
 - 1) Time is of the essence in completing the site work to restore the aquifer and protect human health and the environment.

Therefore, the UST Site Rehabilitation Contractor is encouraged to strive for efficient corrective action methods and to propose the shortest practical completion time for the site.

- 2) The UST Site Rehabilitation Contractor shall enter the number of months in the space provided for the site in Section IV.B

2. INQUIRIES: A copy of the technical file will be available on-line at <https://scdhec.gov/environment/land-management/underground-storage-tanks/release-assessment-clean/active-corrective-0> until the CAP is approved. The technical file may also be reviewed at the FOI Office located at the Sims/Aycock Building, 2600 Bull Street, Columbia, SC 29201 (803-898-3882). All questions or requests for information must be submitted in writing to Debra Thoma, FAX number (803) 898-0673, in accordance with the date specified in Section I.C. After this date, no further questions or requests for information will be addressed. A written response will be provided.

III. SPECIFICATIONS FOR CORRECTIVE ACTION

A. GENERAL SPECIFICATIONS

1. SUBMITTALS: All Offerors must submit a completed Corrective Action Solicitation Response form (Section IV). All submittals must be either hand-delivered or mailed in a sealed envelope to SCDHEC, UST Management Division, 2600 Bull Street, Columbia, SC 29201, ATTN: Debra L. Thoma. The envelope must be marked as a Corrective Action Solicitation Response form for Broad River Amoco, UST Permit 11946. The response outlines in general terms the Offeror's approach to complete the scope of work as defined in this Technical Specification Package.

2. MINIMUM REQUIREMENTS: Corrective action will be considered complete when: 1) all components, as described in Section III.B, of this solicitation have been completed, 2) all assessment and corrective action components (e.g., piping, wells, trenches, etc.) have been removed from the site or are properly abandoned; and 3) the facility and associated adjacent properties have been restored to the condition that existed prior to assessment and corrective action in accordance with Section III.B. Per R.61-98, all site rehabilitation activities associated with a UST release must be performed by a DHEC-certified Class I Site Rehabilitation Contractor. The Contractor will be required to adhere to all applicable portions of the UST QAPP. A copy of UST QAPP is available at <https://scdhec.gov/environment/land-waste/underground-storage-tanks/release-assessment-clean/quality-assurance>. All

CAPs and reports must be sealed by a Professional Engineer or Professional Geologist registered in the State of South Carolina. All engineering reports, drawings and plans must be sealed by a Professional Engineer registered in the State of South Carolina. All laboratory analysis for CoCs must be performed by an SC-certified laboratory. All monitoring, verification, injection, and extraction wells must be installed and abandoned by an SC-certified well driller. All applicable certification, training, permits, applications, and fees associated with well installation; injection, discharge, treatment, or transportation of groundwater, air, or soil; construction or operation of a corrective action system; and any other action requiring a permit are the responsibility of the Contractor. Any required business or occupation licenses and occupational safety and health training (e.g. OSHA) as defined by the laws and regulations of the United States of America, the State of South Carolina, the county, or city are also the responsibility of the Contractor. The terms and conditions of all applicable permits will be met. Any contaminated soil and construction debris, contaminated water, and FPP must be properly transported and disposed of, or treated at, an approved facility with prior approval from DHEC. Any costs for utilities construction and service (electric, telephone, sewer, etc.) required by the corrective action are the responsibility of the Contractor.

B. PERFORMANCE REQUIREMENTS

1. **IMPLEMENTATION SCHEDULE:** There are three specific components to this solicitation: FPP removal, FPP migration control, and excavation. The free product migration control must be implemented first. The verification and/or monitoring methods proposed by the contractor, must be installed and tested immediately upon completion of the migration prevention control. Other items may be initiated as the contractor deems appropriate as stated in the CAP. The CAP may be one document detailing all required aspects detailed below or separate CAPs detailing each required component listed above, whichever the selected contractor determines to be most effective and efficient for the overall remediation strategy to be implemented at the site.
 - a. Remedy must be such that the barrier is effective until the time that Free Product Removal is completed. Remedy must be such that the migration prevention is deemed, and can be verified, effective prior to the implementation of excavation activities on the adjacent PlayPals property.
2. **MIGRATION PREVENTION OF FREE PRODUCT ONTO PLAYPALS AND ADJACENT PROPERTIES**

a. CORRECTIVE ACTION PLAN: The Contractor must complete and submit a detailed CAP and UST QAPP Contractor Addendum or Site-Specific Work Plan for corrective action within 30 days from receipt of a Notice to Proceed for CAP Preparation from DHEC from date of Award. Copies of the CAP must be distributed in accordance with Section II.A.8. **The corrective action method(s) or technology (ies) for FPP Removal must be installed on the Broad River Amoco Property.** It must be shown, by use of scientific models, computations, or discussion, how the migration of FPP will be prevented from moving off the Broad River Road Amoco Property onto the Playpals and adjacent properties and how the contractor plans to verify migration is not occurring. The intent of the migration prevention is to act as a permanent barrier to any current and future migration. Any assumptions used in a model will be listed or shown, as well as appropriate references. The contractor must provide detailed information on the two forms of verification and/or monitoring criteria ensuring that the proposed method is effectively providing hydraulic and migratory control of the free phase product. Specific construction details will be included in the CAP as well as details of assessment and corrective action component abandonment and removal.

The CAP must include a detailed description of the specific scope of work to be completed for CAP Implementation. Additionally, a detailed corrective action timetable that outlines the corrective action activities to be completed and includes demobilization and site restoration will be provided by the Contractor in the CAP. **The designated activities are required to be completed within 90 days of Notice to Proceed; therefore, the submitted timetable for this component shall not exceed that time frame.** Any extension request or submittal of a revised timetable should include an updated Corrective Action Completion Time (CACT).

DHEC will review the CAP or CAP addendum, as appropriate, and initiate a public notice period for a maximum of 30 days. The names and addresses of the owners of all impacted properties and all properties located adjacent to the impacted properties are provided in the Appendix. The Contractor may be required to attend and provide input at one or more public meetings upon request by DHEC. Any CAP amendments and modifications resulting from the public notice must be submitted within 15 days of notification by DHEC. The CAP and any amendments or modifications must be sealed by a qualified Professional Geologist or Engineer registered in the State of South Carolina. The Contractor shall consult with the UST Owner/Operator and any other

affected property owners regarding the location of the corrective action system and obtain written approval from them prior to implementation. Copies of the approval(s) should be included in the CAP Implementation Report. Any aboveground part of the system that is to remain on-site for longer than 30 contiguous days must be secured within a fenced area or building.

- b. PAYMENT:** Payment of 35% will be paid upon completion of installation of free phase product migration prevention barrier, as verified by DHEC. Payment of 30% will be paid upon verification that selected remedy is effective in mitigating the migration of free phase product, and the final 35% will be paid upon completion of final site inspection by DHEC to verify site restoration (See Section III.B.2.i for method of verification/inspection). Invoices will be submitted to: SCDHEC, Bureau of Land and Waste Management, UST Management Division, ATTN: Financial Section, 2600 Bull Street, Columbia, SC 29201, using the Corrective Action (CA) Invoice form. A separate invoice for the site must be delivered with the final reports. The final invoice must be received at the above address within 4 months of approval or funds will be uncommitted as required by the Section 44-2-40(B) of the SUPERB Act. If funds are uncommitted, the submitted invoice will be held until funding is available.
- c. PERMIT APPLICATIONS:** The Contractor must complete and submit all applications for permits (injection, NPDES, BAQC modeling form, thermal treatment, construction, etc.) with the CAP. All submitted applications must comply with the requirements of the respective permitting program. Any required permit changes or corrections will be submitted within 15 days of notification by DHEC.
- d. CAP IMPLEMENTATION:** After the CAP is reviewed and approved in accordance with R.61-92, Section 280.66, the DHEC UST Management Division will issue a Notice to Proceed with CAP implementation. **CAP Implementation must not proceed until a written Notice to Proceed is received from the UST Management Division.** The Contractor will implement the CAP within 30 days of receipt of the Notice to Proceed. If the CAP is not implemented in 30 days, a penalty of \$100 per day will be assessed for each calendar day late unless the Contractor obtains written approval from DHEC regarding a change in the implementation schedule. Any assessed penalty amounts will be deducted from the payment. If any problem with CAP implementation occurs, the Contractor will notify DHEC within 24 hours of problem identification and

will submit written documentation within 5 days of notification.

Disruption to the normal business at the site will be kept to a minimum. Any modification, relocation, disturbance, or destruction of physical structures or features as a result of CAP implementation must be approved in writing by the affected property owner prior to CAP implementation. The Contractor will return the site to the condition that existed prior to installation of the corrective action system (e.g., asphalt paved areas will be repaved with asphalt, concrete areas replaced with concrete, grass area will have soil replaced to the original grade and sod with grass, chain link fence replaced with chain link fence, etc.) or to a preferred condition as determined by the affected property owner. Any deviation in returning the site to the condition that existed prior to the implementation activity must be documented in writing by the Contractor and signed by the affected property owner. The Contractor will, at all times, keep the site free from waste materials and rubbish related to the corrective action. Until completion of the corrective action, the Contractor will keep the premises in a clean, neat and workmanlike condition satisfactory to DHEC. All soil and wastewater generated on-site will be removed from the site promptly. Manifests documenting the proper disposal of the soil, wastewater, or FPP must be included in the CAP Implementation Report. **If the CAP has been implemented and physical treatment activities performed, the Contractor will be required to complete the contract unless conditions outlined in Sections II.A.10 are encountered.**

- e. **UTILITY SURVEY:** After the UST Division issues a Notice to Proceed with CAP implementation and before CAP implementation occurs, the Contractor will conduct a utility survey of the site. The Contractor is responsible for identifying all surface and subsurface utilities.
- f. **PROPERTY ACCESS:** The Contractor will secure access from each affected property owner to complete the corrective action activities. The Contractor will be responsible for any equipment used for corrective action activities.
- g. **REPORTING:** Complete and submit an implementation report. Deliver one paper and one electronic (pdf) copy of each report to: SCDHEC, Bureau of Land and Waste Management, UST Division, 2600 Bull Street, Columbia, SC 29201. A copy of the report must be delivered to the parties listed on the Distribution List included in the Appendix for the site. The report for each site is due within 90 days from the Notice to Proceed.

All rehabilitation activities associated with the UST releases must be performed by a SCDHEC Certified Class I UST Site Rehabilitation Contractor. All air, soil, and groundwater analyses must be performed by a South Carolina certified laboratory.

Monitoring and verification of the effectiveness of the selected migration prevention method should be conducted on a quarterly basis throughout the course of the active corrective action contract period. The monitoring and verification reports should be included with the semi-annual CASE Reports.

- h. **DISPOSAL:** The Contractor must properly dispose of all contaminated water, contaminated soil, and FPP generated during the corrective action. The Owner/Operator of the UST facility is considered to be the generator. Treatment and disposal must be conducted at an SCDHEC-approved facility, and must be documented in the semi-annual CASE reports.
- i. **QUALITY ASSURANCE & VERIFICATION:** DHEC personnel may be on-site during implementation activities. DHEC personnel will complete an inspection of the site at the completion of implementation activities to ensure that the selected remedy is effectively performing as required. In addition to the two forms of verification and monitoring methods proposed by the contractor, the installation of verification monitoring wells will be required by DHEC for long term monitoring and verification of the effectiveness of the selected remedy. The costs for the installation of any required monitoring wells or pits should be considered part of the corrective action cost.
- j. **DEMOBILIZATION:** The Contractor will disassemble and remove any non-permanent components of the corrective action system within 60 days of a written Notice to Proceed received from the UST Management Division confirming that the free product migration prevention has been achieved and maintained as described in this solicitation. **Abandonment of any corrective action system, monitoring well, recovery well, remediation well, etc., may not proceed until a written Abandonment Directive is issued by the UST Management Division.** Disruption to the UST Owner/Operator's or property owner's business must be kept to a minimum.
- k. **SITE RESTORATION:** The Contractor must remove or properly abandon all pre-existing assessment and corrective action components (piping, monitoring wells, injection and/or extraction wells, trenches, etc.) within 60 days of

notification by DHEC that the performance milestone has been achieved and maintained as described this contract. Abandonment will be in accordance with South Carolina Well Standards and Regulations R. 61-71, the UST QAPP, and accepted industry standards for abandonment of trenches and piping/utility runs. Abandonment of any corrective action system, monitoring well, recovery well, remediation well, etc., may not proceed until a written Abandonment Directive is issued by the UST Management Division. Disruption to the Owner/Operator's or property owner's business must be kept to a minimum. The Contractor must provide DHEC with documentation of the abandonment and disposal of any remaining contaminated soil, contaminated groundwater, and FPP. Unless otherwise directed by DHEC, the Contractor will restore the site and adjacent properties to the condition that existed prior to assessment and corrective action (e.g., repaving, reseeding, etc.) as documented by the photographs included in the Initial Monitoring Report or other written documentation detailing a variance from the conditions documented by the photographs. Neither DHEC nor the SUPERB Account will be liable for any damages caused by the Contractor. As required by Section IV.A.4c of the SUPERB Site Rehabilitation and Fund Access Regulations R.61-98, the Contractor shall be required to indemnify the property owner, UST Owner/Operator and the State of South Carolina from and against all claims, damages, losses and expenses arising out of or resulting from activity conducted by the Contractor, its agents, employees or subcontractors. Under no circumstances will final payment exceed 35% of the Corrective Action Cost for this component.

3. **FREE PRODUCT REMOVAL AT BROAD RIVER AMOCO PROPERTY**

- a. **CORRECTIVE ACTION PLAN:** The Contractor must complete and submit a detailed CAP and UST QAPP Contractor Addendum or Site-Specific Work Plan for corrective action within 30 days from receipt of a Notice to Proceed for CAP Preparation from DHEC. Copies of the CAP must be distributed in accordance with the Solicitation. **The corrective action method(s) or technology(ies) will be designed to prevent vapors from entering onsite or adjacent structures for the duration of this contract.** It must be shown, by use of scientific models, computations, or discussion, how FPP will be removed by each method and technology proposed. Any assumptions used in a model will be listed or shown, as well as appropriate references. **The use of existing monitoring well(s) for injection, extraction, or FPP recovery purposes is not allowed.** Accordingly, the CAP may propose installation of additional injection, extraction, or compliance wells. Engineering and construction details will be included in the CAP as well as details of assessment and corrective

action component abandonment and removal.

The CAP must include a detailed description of the specific scope of work to be completed for CAP Implementation. Additionally, a detailed corrective action timetable that is consistent with the CACT submitted by the contractor, must outline the corrective action activities to be completed to achieve each interim performance milestone, outlines when each performance milestone will be achieved, and includes demobilization and site restoration will be provided by the Contractor in the CAP. Corrective action is required to be completed within 5 years from the effective date. The timetable shall itemize when the Contractor expects to meet the FPP removal, 60%, 90%, and 100% interim performance milestones. During corrective action, this timetable may be adjusted (as approved in writing by DHEC) if circumstances beyond the control of the Contractor arise. If the timetable is adjusted, or corrective action activities to be conducted deviate from the original proposed CAP, a CAP addendum must be submitted. Any request for an extension beyond the five year time frame must be made in writing by the awarded contractor and the contract may be extended with a written no cost extension granted by DHEC. Any extension request or submittal of a revised timetable should include an updated CACT. If the Contractor fails to meet the interim performance milestones in the proposed time frames, a remedy will be sought through the procedures outlined in this Solicitation.

DHEC will review the CAP or CAP addendum, as appropriate, and initiate a public notice period for a maximum of 30 days. The names and addresses of the owners of all impacted properties and all properties located adjacent to the impacted properties are provided in the Appendix. The Contractor may be required to attend and provide input at one or more public meetings upon request by DHEC. Any CAP amendments and modifications resulting from the public notice must be submitted within 15 days of notification by DHEC. The CAP and any amendments or modifications must be sealed by a qualified Professional Geologist or Engineer registered in the State of South Carolina. The Contractor shall consult with the UST Owner/Operator and any other affected property owners regarding the location of the corrective action system and obtain written approval from them prior to implementation. Copies of the approval(s) should be included in the CAP Implementation Report. Any aboveground part of the system that is to remain on-site for longer than 30 contiguous days must be secured within a fenced area or building.

b. PAYMENT:

- 1) Payment of 20% of the Corrective Action Cost will be made within 90 days following receipt of an invoice and documentation that the Contractor has completed CAP implementation for Free Product Removal activities. All corrective action activities must be as described in the CAP and are subject to the limitations of Section 44-2-40 of the SUPERB Act. The implementation should be documented in the CAP Implementation Report. The CAP Implementation Report must include the construction logs for all injection and/or extraction wells installed in accordance with the CAP.
- 2) Payment of 80% of the Corrective Action Cost will be made based on achieving interim and final FPP thickness reduction goals as verified in the SSTL wells and gauging points listed in the Appendix, in all injection and/or extraction wells, and in all verification wells. Payments will be made upon receipt of invoices and documentation that the Contractor has achieved interim and final goals of 60, 90 and 100% reduction of total FPP thickness above 0.01' by the implementation of corrective action. The FPP thicknesses are listed in the Appendix.
 - a. The first interim thickness reduction goal will be achieved when 60% of the total FPP thickness above .01' in the SSTL wells and gauging points listed in the Appendix is removed. The following formula will be used to calculate the percent total thickness reduction:
$$\frac{\text{sum of FPP thicknesses above 0.01' from initial gauging} - \text{sum of FPP thicknesses above 0.01' from subsequent gauging}}{\text{sum of FPP thicknesses above 0.01' from initial gauging}}$$
 Payment of 15% of the Corrective Action Cost will be made upon confirmation by CASE report or upon verification (see Section III.B.3.j for the method of verification) that at least 60% of the total FPP thickness above 0.01' has been removed.
 - b. The second interim thickness reduction goal will be achieved when 90% of the total FPP thickness above 0.01' in the SSTL wells and gauging points listed in the Appendix is removed. The formula listed in the site rehabilitation section of the UST QAPP will be used to calculate the percent total reduction. Payment of 20% of the Corrective Action Cost will be made upon verification (see Section III.B.3.j for the method of verification) that at least 90% of the total FPP thickness above 0.01' has been removed. Prior to payment, DHEC will verify achievement of the second (90%) interim thickness reduction goal by gauging.
 - c. The final performance milestone will be achieved when 100% of the total FPP thickness above the SSTLs (at the time the bid is posted) in the SSTL wells and sampling points listed in the Appendix, has been verified as removed in accordance with Section III.B.3.j and Site Restoration has been

completed in accordance with Specifications of this solicitation. **Payment for the 100% removal of FPP above SSTLs and for Site Restoration will be made concurrently, ONLY when both have been achieved, and in accordance with the following conditions:**

- i. 40% of the Corrective Action Cost is allocated for achievement of 100% FPP removal above SSTLs. 100% removal of FPP above SSTLs must be verified in accordance with Section III.B.3.j following two consecutive quarters with all corrective action activities completely ceased in order for DHEC to issue a written Notice to Proceed for site restoration. FPP thickness must not exceed SSTLs in all wells and sampling points listed in the Appendix, in all verification wells, and at any point in the area of concern.
 - ii. 5% of Corrective Action Cost is allocated for site restoration. 5% of the total contract cost will be paid upon DHEC's receipt of an invoice, verification in accordance with Section III.B.3.j that 100% of FPP thickness above SSTLs have been removed (30% of Corrective Action Cost), and verification, with a final inspection by DHEC, that all assessment and corrective action components (e.g., piping, wells, trenches, etc.) have been removed from the site or properly abandoned, and the facility and associated adjacent properties have been restored to the condition that existed prior to assessment and corrective action (5% of Corrective Action Cost). Site restoration must be completed within 60 days from receipt of a Notice to Proceed from DHEC confirming that 100% FPP thickness above the SSTLs is verified to have been removed and site restoration may proceed.
- c. **PERMIT APPLICATIONS:** The Contractor must complete and submit all applications for permits (injection, NPDES, BAQC modeling form, thermal treatment, construction, etc.) with the CAP. All submitted applications must comply with the requirements of the respective permitting program. Any required permit changes or corrections will be submitted within 15 days of notification by DHEC.
- d. **FREE PRODUCT REMOVAL CORRECTIVE ACTION PLAN IMPLEMENTATION:** After the CAP, QAPP Contractor Addendum or Site-Specific Work Plan, and all permit applications are reviewed and approved in accordance with the most current QAPP revision and R.61-92, Section 280.66, DHEC will issue a Notice to

Proceed with CAP implementation. The Contractor will implement the CAP within 30 days of receipt of the notice to proceed and any required permit to construct. A penalty of \$100 per day will be assessed for each calendar day late if the CAP is not implemented in 30 days unless the Contractor obtains written approval from DHEC regarding a change in the implementation schedule. Any assessed penalty amounts will be deducted from the initial payment. If any problem with CAP implementation occurs, the Contractor will notify DHEC within 24 hours of problem identification and will submit written documentation within 5 days of notification. Disruption to the normal business at the site will be kept to a minimum. Any modification, relocation, disturbance, or destruction of physical structures or features as a result of CAP implementation must be approved in writing by the affected property owner prior to CAP implementation. Upon completion of any required construction, DHEC will inspect the corrective action system and issue a permit to operate. The Contractor will, at all times, keep the site free from waste materials and rubbish related to the corrective action and maintain the site in a neat and workmanlike condition for the duration of the corrective action. All contaminated soil and construction debris, contaminated water, and FPP generated will be removed from the site promptly. Manifests documenting the proper disposal of contaminated soil and construction debris, contaminated water, and FPP must be included in the appropriate report. The Contractor will repair and/or restore the site/facility to the condition that existed prior to corrective action activities and as documented by the photographs included in the CAP Implementation Report in accordance with this Solicitation. Any deviation in returning the site/facility to the condition that existed prior to CAP implementation must be documented in writing by the Contractor and signed by the Owner/Operator and property owner.

Implementation of the CAP is not authorized until the Contractor receives a Notice to Proceed from DHEC. If unauthorized implementation occurs, DHEC will not reimburse related costs incurred by the Contractor from the SUPERB Account, and the Corrective Action Cost will be reduced by the amount of the incurred costs. If DHEC agrees with early implementation to better protect human health in an emergency and provides approval in writing, early implementation without any reduction to the Corrective Action Cost will be authorized.

A Corrective Action Plan Implementation Report will be due 60 days from the Notice to Proceed and shall include a description of work sufficient to document CAP implementation activities and the associated dates of work.

- e. **PROPERTY ACCESS:** The Contractor will secure access to the site and adjacent properties to sample wells and sampling points, and to install any corrective action components, as required. The Contractor will be responsible for corrective action components installed on adjacent properties. Costs to repair or replace components of the corrective action system damaged due to the actions of adjacent property owners cannot be paid by the SUPERB Account.
- f. **START-UP:** The Contractor will initiate corrective action within 15 days of receipt of the permit to operate, if required. Corrective action as defined by the CAP will begin upon start-up. NOTE: The application of corrective action technologies or natural fluctuations in the water table can mobilize FPP and cause possible appearance of FPP in non-SSTL wells and gauging points.
- g. **REPORTING:** The Contractor must complete and submit a CAP Implementation Report within 60 days of the Notice to Proceed. The Contractor must also complete and submit a Corrective Action System Evaluation (CASE) report on a quarterly schedule. The CAP Implementation Report and CASE reports will be distributed in accordance with Section II.A.8. The first CASE report is due within 90 days of the FPRCAP Implementation Report. CASE reports must be submitted regardless of the status of corrective action activities.

All wells and gauging points listed in the Appendix will be gauged on a quarterly schedule and sampled on a semi-annual schedule in accordance with the most current QAPP Revision. Following submittal of the CAP Implementation Report. The Contractor must submit a written request for a change in the protocol to DHEC. Approval for any reduction in the number of wells and gauging points to be gauged/sampled, or for any lengthening of the reporting interval, is at the sole discretion of DHEC.

CASE reports must include, at a minimum, all items stipulated in the Documents and Records section and Active Site Rehabilitation Procedures section of the most current QAPP Revision. CASE reports must also include any additional data required by permits (e.g., air analyses, wastewater effluent analyses, etc.). The Contractor will be provided with the proper report forms and reporting format prior to Corrective Action Plan implementation. DHEC will notify the Contractor regarding any revisions to the forms or format 60 days prior to the due date for the next CASE report.

h. **SAMPLING:** The Contractor must collect water samples from all wells and gauging points listed in the Appendix on a semi-annual schedule. Do not sample wells and sampling points containing measurable ($>0.01'$) FPP. If measurable FPP is present, the thickness of product and depth to groundwater must be recorded to the nearest $0.01'$. The sampling will be conducted in accordance with applicable portions of the most current QAPP Revision. Additional samples (air, groundwater, effluent, soil) required by permits must be collected in accordance with established QA/QC protocol and submitted to an SC-certified laboratory for analysis. The samples will be analyzed for parameters stipulated in the permits. Sampling and analytical data for each sample (e.g., field sampling logs, chain of custody forms, certificates of analysis, lab certification number) will be included in the CASE report.

The Contractor must submit a written request to DHEC for a change in the gauging protocol. Approval for any reduction in the number of wells and gauging points to be gauged is at the sole discretion of DHEC. The Contractor may choose to conduct gauging more frequently in order to document that a performance milestone has been achieved.

i. **DISPOSAL:** The Contractor must properly dispose of all contaminated water, contaminated soil, and FPP generated during the corrective action. The Owner/Operator of the UST facility is considered to be the generator. Treatment and disposal must be conducted at an SCDHEC-approved facility, and must be documented in the CASE reports.

j. **QUALITY ASSURANCE & VERIFICATION:** If the Contractor anticipates that a performance milestone has been achieved, the Contractor must conduct a gauging event and submit the finalized gauging data electronically and via mail to DHEC for review. If the gauging event shows that the performance milestone has been achieved, the contractor must completely suspend corrective action and provide notification to DHEC. After 30 days, the contractor will conduct another gauging event. DHEC will schedule verification gauging to coincide with the contractor's gauging event. DHEC must be allowed at least 15 calendar days in order to schedule a time to conduct verification of the gauging event. Furthermore, the Contractor will be allowed one verification attempt during each reporting period for each of the performance milestones.

Once gauging data indicate 100% FPP thickness reduction, the Contractor must completely suspend corrective action and provide notification to DHEC. After 30 days, the Contractor will gauge all wells and gauging points listed in the Appendix and all injection and/or extraction wells to verify that the final (100%) FPP thickness reduction goal has been achieved and maintained. If the goal is maintained, the date of the 30-day gauging event will be considered the start of the four-quarter, post-corrective action verification period. During the verification period, the Contractor will conduct quarterly gauging and semi-annual sampling of all wells and gauging points listed in the Appendix and all verification wells, and quarterly gauging of all injection and /or extraction wells. Do not sample wells and gauging points containing measurable ($>0.01'$) FPP. If measurable FPP is present, the thickness of product and depth to groundwater must be recorded to the nearest 0.01'. The samples should be analyzed for the parameters listed in the Appendix, and for dissolved oxygen, ferrous iron, methane, nitrate, and sulfate using the analytical methods and reporting limits detailed in the most recent QAPP Revision.

If gauging results show that the final (100%) FPP thickness reduction goal has not been maintained, and/or the FPP thickness exceeds 0.01' in any injection, extraction, or verification well, corrective action must be resumed. DHEC may require the Contractor to propose a revised corrective action strategy and timetable to achieve and maintain the goal. The strategy may require modification of the existing corrective action system. The post-corrective verification period will be suspended and corrective action will continue until the final (100%) FPP thickness reduction goal is again achieved. The Contractor will again suspend corrective action and gauge all wells and gauging points, and all injection and/or extraction points after 30 days. If the goal is maintained, a new verification period will begin. The aforementioned cycle of activity must be repeated until FPP thicknesses remain at or below 0.01' in all wells and gauging points listed in the Appendix, in all injection and/or extraction wells, and in all verification wells for 4 consecutive quarters.

DHEC may require installation of four (4) verification well(s) during the post-corrective action verification period at designated locations and depths. Costs for the verification wells will be considered part of the Corrective Action Cost. The SSTL for any verification well will be an FPP thickness of 0.01'.

DHEC will conduct gauging to verify achievement of the second (90%) interim FPP thickness reduction goal, to confirm the start of the four-quarter, post-corrective action verification period, and to confirm that corrective action goals

have been maintained at the end of the verification period. DHEC may also conduct gauging to verify achievement of the first (60%) interim FPP thickness reduction goal.

If the Contractor anticipates that gauging by DHEC is warranted, and desires to participate or is required to participate in the gauging, DHEC must be allowed at least 2 weeks to schedule a mutually agreeable time for the gauging event.

- k. **DEMOBILIZATION:** The Contractor will disassemble and remove the corrective action system and associated components installed as part of this corrective action including piping, injection or extraction wells, or utilities within 60 days of a written Notice to Proceed received from the UST Management Division confirming that the 100% performance milestone has been achieved and maintained for 2 consecutive quarters as described in Section III.B.3.j. of this solicitation. Abandonment will be in accordance with the South Carolina Well Standards and Regulations R. 61-71, the UST QAPP, and the Contractor's ACQAP, and accepted industry standards for abandonment of trenches and piping/utility runs. **Abandonment of any corrective action system, monitoring well, recovery well, remediation well, etc., may not proceed until a written Abandonment Directive is issued by the UST Management Division.** Disruption to the UST Owner/Operator's or property owner's business must be kept to a minimum.
- l. **SITE RESTORATION:** The Contractor must remove or properly abandon all pre-existing assessment and corrective action components (piping, monitoring wells, injection and/or extraction wells, trenches, etc.) within 60 days of notification by DHEC that the 100% performance milestone has been achieved and maintained for 2 consecutive quarters as described in Section III.B.3.j. of this solicitation. Abandonment will be in accordance with South Carolina Well Standards and Regulations R. 61-71, the UST QAPP, and accepted industry standards for abandonment of trenches and piping/utility runs. Abandonment of any corrective action system, monitoring well, recovery well, remediation well, etc., may not proceed until a written Abandonment Directive is issued by the UST Management Division. Disruption to the Owner/Operator's or property owner's business must be kept to a minimum. The Contractor must provide DHEC with documentation of the abandonment and disposal of any remaining contaminated soil, contaminated groundwater, and FPP. Unless otherwise directed by DHEC, the Contractor will restore the site and adjacent properties to the condition that existed prior to assessment and corrective action (e.g., repaving, reseeding, etc.) as documented by the photographs

included in the Initial Monitoring Report or other written documentation detailing a variance from the conditions documented by the photographs. Neither DHEC nor the SUPERB Account will be liable for any damages caused by the Contractor. As required by Section IV.A.4c of the SUPERB Site Rehabilitation and Fund Access Regulations R.61-98, the Contractor shall be required to indemnify the property owner, UST Owner/Operator and the State of South Carolina from and against all claims, damages, losses and expenses arising out of or resulting from activity conducted by the Contractor, its agents, employees or subcontractors. Under no circumstances will payment for Site Restoration exceed 5% of the Corrective Action Cost for this component.

4. EXCAVATION OF PLAYPALS PROPERTY AND REPLACEMENT OF FRENCH DRAIN SYSTEM

- a. **EXCAVATION CORRECTIVE ACTION PLAN (ECAP):** The Contractor must submit a detailed ECAP within 30 days from the Notice to Proceed issued from DHEC. A site map depicting the area to be excavated is provided in the Appendix (Figure C). The ECAP must also identify any possible obstacles to excavating the designated area (e.g. utilities, etc.), type of equipment to be used for the excavation, size and number of trucks that will be used for hauling the contaminated soil, dewatering requirements, the disposal destination, excavation shoring information, and safety protocol to meet OSHA requirements.

The ECAP should include color photographs with date stamp of the site and surrounding properties to provide documentation of the condition of the site prior to implementation of any corrective action. The ECAP should include a UST QAPP Addendum/Site Specific Work Plan detailing the installation of up to four (4) monitoring wells in the area of concern after the excavation is complete.

A corrective action timetable including demobilization and site restoration will be provided by the Contractor. **The designated activities are required to be completed within 60 days of Notice to Proceed; therefore, the submitted timetable shall not exceed that date. The excavation activities are not to be initiated until installation of the free product migration barrier remedy is installed and has been verified as effective.** If the Contractor fails to complete the designated activities in the required time frame, a remedy will be sought by DHEC.

DHEC will complete a public notice period. The Contractor may be required to attend and provide input at one or more public meetings upon request by DHEC. Any ECAP amendments and modifications resulting from the public notice must be submitted within 15 days of notification by DHEC. The ECAP and any amendments or modifications must be sealed by a qualified Professional Geologist or Engineer registered in the state of South Carolina. The Contractor shall consult with affected property owners regarding the location of the excavation and obtain written approval from them prior to implementation. Copies of the approval should be included in the ECAP Implementation Report.

Implementation of the ECAP is not authorized until the Contractor receives correspondence from the UST Division indicating that the required public notice period has been successfully completed. If premature implementation occurs, the UST Division will not reimburse those costs from the SUPERB Account, and the bid award will be reduced by that amount. If SCDHEC agrees with early implementation to better protect human health in an emergency and provides approval in writing, early implementation without any reduction to the corrective action amount will be authorized.

- b. **PAYMENT:** Upon completion of final site inspection by DHEC to verify site restoration for the excavation component (See Solicitation Section III.B.4.p for method of verification/inspection), an invoice for this remedial action may be submitted. Invoices will be submitted to: SCDHEC, Bureau of Land and Waste Management, UST Management Division, ATTN: Financial Section, 2600 Bull Street, Columbia, SC 29201, using the Corrective Action (CA) Invoice form. A separate invoice for the site must be delivered with the final reports. The final invoice must be received at the above address within 4 months of CAP approval or funds will be uncommitted as required by the Section 44-2-40(B) of the SUPERB Act. If funds are uncommitted, the submitted invoice will be held until funding is available.
- c. **CAP IMPLEMENTATION:** After the CAP is reviewed and approved in accordance with R.61-92, Section 280.66, the DHEC UST Management Division will issue a Notice to Proceed with ECAP implementation. **CAP Implementation must not proceed until a written Notice to Proceed is received from the UST Management Division.** The Contractor will implement the CAP within 15 days of receipt of the Notice to Proceed. If the CAP is not implemented within 15 days, a penalty of \$100 per day will be

assessed for each calendar day late unless the Contractor obtains written approval from DHEC regarding a change in the implementation schedule. Any assess penalty amounts will be deducted from the payment. If any problem with ECAP implementation occurs, the Contractor will notify DHEC within 24 hours of problem identification and will submit written documentation within 5 days of notification.

Disruption to the normal business at the site will be kept to a minimum. The Contractor shall schedule activities such that the excavation, dewatering, backfilling, and site restoration activities are completed as one continuous operation without any significant delays or lag time. Any modification, relocation, disturbance, or destruction of physical structures or features as a result of CAP implementation must be approved in writing by the affected property owners prior to CAP implementation. The Contractor will return the site to the condition that existed prior to installation of the corrective action system (e.g., asphalt paved areas will be repaved with asphalt, concrete areas replaced with concrete, grass area will have soil replaced to the original grade and sod with grass, etc.) or to a preferred condition as determined by the affected property owner. Any deviation to returning the site to the condition that existed prior to the implementation activity must be documented in writing by the Contractor and signed by the affected property owner. The Contractor will, at all times, keep the site free from waste materials and rubbish related to the corrective action. Until completion of the corrective action, the Contractor will keep the premises in a clean, neat and workmanlike condition satisfactory to DHEC. All soil and wastewater generated on-site will be removed from the site promptly. Manifests documenting the proper disposal of the soil, wastewater, or FPP must be included in the Excavation report. **If the CAP has been implemented and physical treatment activities performed, the Contractor will be required to complete the contract unless conditions outlined in Solicitation Section II.A.10 are encountered.**

- d. **UTILITY SURVEY:** After the UST Division issues a Notice to Proceed with ECAP implementation and before excavation occurs, the Contractor will conduct a utility survey of the site. The Contractor is responsible for identifying all surface and subsurface utilities. In the event that the results of the utility survey indicate that it is not possible to proceed with excavation, the contract will be cancelled, and the Contractor will be reimbursed \$1,000.00 for personnel mobilization, utility survey, and survey report preparation and associated costs.

- e. **PROPERTY ACCESS:** The Contractor will secure access from each affected property owner to complete the excavation activities. The Contractor will be responsible for any equipment used for corrective action activities.
- f. **SAFETY OFFICER:** A person designated as a safety officer shall be on-site during all activities. This person shall ensure all individuals have appropriate OSHA training, coordinate and oversee excavation, ingress and egress from the excavation (if necessary). Access to the area being excavated/treated is restricted to only those individuals involved in the project, and is responsible for the general safety of all on-site personnel.
- g. **START-UP:** The Contractor will initiate corrective action immediately upon receipt of the Notice to Proceed. Corrective action as defined by the CAP will begin upon start-up. **NOTE: FPP may be present at this site. The application of corrective action technologies or natural fluctuations in the water table can mobilize FPP and cause possible appearance of FPP and/or elevated CoC concentrations in non-SSTL wells and sampling points.**
- h. **REPORTING:** Complete and submit an excavation report. Deliver one paper and one electronic (pdf) copy of each report to: SCDHEC, Bureau of Land and Waste Management, UST Division, 2600 Bull Street, Columbia, SC 29201. A copy of the report must be delivered to the parties listed on the Distribution List included in the Appendix for the site. The excavation report for each site is due within 90 days from the Notice to Proceed. The excavation report must include:
- 1) A narrative portion describing excavation, disposal activities and photographs of field work.
 - 2) A scaled site map showing the locations of buildings, roads, monitoring wells, the former UST system, utilities, and the excavation area superimposed.
 - 3) Pre-excavation and post-excavation compaction test results.
 - 4) A copy of the SCDHEC approval letter and manifests/ weight tickets for all contaminated soil, groundwater, or FPP removed from the site for treatment and/or disposal.
 - 5) 1903 Well Install Forms for any required replacement wells.
 - 6) Signature and seal by a Professional Engineer or Professional Geologist registered in the State of South Carolina.

All rehabilitation activities associated with the UST releases must be performed by a SC Certified Class I UST Site Rehabilitation Contractor. All air, soil, and groundwater analyses must be performed by a South Carolina certified laboratory.

- i. **REPLACEMENT OF FRENCH DRAIN:** The Contractor must include details for the replacement of the French drain in the CAP; detailing the methods by which the French drain will be removed and replaced. The French drain should be designed by a licensed engineer with experience in French drain design and construction, The French drain must be designed to provide sufficient drainage of the Playpals property, taking into account runoff from adjacent properties and decreased infiltration due to the impermeable barrier installation. General construction details must be included in the CAP (e.g., excavate 3,000 cubic yards of impacted soils, etc.). The Contractor will be required to remove and excavate the entire French drain that currently exists on the PlayPals Property, including all contaminated aggregate, fill, and soils surrounding the French drain.
- j. **EXCAVATION:** DHEC will be notified of the proposed excavation dates at least two weeks in advance of the excavation event. The area to be excavated and the estimated excavation depth are detailed in the Appendix of this Solicitation (Figure C). The contractor should be prepared to dewater the area and be able to handle saturated soils. The excavation must be backfilled with properly compacted clean soil, a persulfate compound, an oxygen releasing compound (ORC), an impermeable barrier compatible with the ORC installed at 3 feet below grade, and then leveled to the existing grade. All excavation activities must be conducted in strict accordance with 29 CFR 1926. See Section III.B.4.m for specifications.
- k. **DEWATERING:** Excavation will extend below the water table interface. An approved method to address dewatering, containment, and disposal of petroleum impacted water shall be on-site to remove any FPP and petroleum impacted groundwater that may enter the open excavation. The proposed method for dewatering should meet all QAPP requirement, state and federal regulations, and be detailed in the selected contractor's CAP.
- l. **EQUIPMENT:** The Contractor is responsible for selecting the appropriate type and size of excavation equipment. The Contractor selected shall consider at a minimum:

- 1) The excavation will take place on tax parcels R06108-04-67 and R06108-04-68. The northwest side is bounded by State Road S-40-929 and the northeast side by the Broad River Amoco site. The southeast and southwest sides are each bounded by an adjacent property and a fence. An aerial photograph is provided in the Appendix (Figure C).
 - 2) Excavation is anticipated to continue below the water table. Appropriate equipment to maintain dewatering during excavation activities will be the responsibility of the selected Contractor and should be considered in the price of the bid.
 - 3) The area to be excavated varies in width and length but will extend to a depth of 7 feet.
 - 4) There are 4 monitoring wells in the excavation area that will need to be abandoned prior to excavation (MW-11A, MW-11B, MW-18A & MW-18B).
 - 5) Up to 4 monitoring wells will be installed, in locations to be determined by the project manager in consultation with the property owner, after the excavation and backfill is complete. A UST QAPP Addendum/Site Specific Work Plan is to be submitted detailing the installation of the monitoring wells.
 - 6) Sheet piling may be necessary for this excavation.
 - 7) Sampling: Upon completion of excavation activities and prior to backfilling, one soil sample should be collected from every sidewall of each excavation area (Conceptual ORC Distribution Zones) at a depth of 4-5 feet and one from the center of the bottom of the excavation, for a total of up to 5 for each excavation area. The samples should be analyzed for the parameters as shown in the Appendix. The location of the samples should be depicted on a site map included in the CAP implementation report and the results should be provided as an Appendix to the report.
- m. **BACKFILL & COMPLETION:** The open excavation pit shall be 7 feet deep. A total of 15,000 pounds of a selected Persulfate compound and 15,000 pounds of an appropriate ORC shall be mixed with clean soil and placed in the bottom of the open excavation pit from 7 to 3 feet below grade. The mixture of soil and chemicals should meet the compaction requirements as stated in ASTM D698. The selected ORC compound, regardless of the name brand or vendor, must generate a minimum of 2,700 pounds oxygen over a minimum 6-month time period. The distribution of the Persulfate compound and ORC vary by depth interval (7'-5', 5'-4', 4'-3'), and zone (1-7), and should be added in accordance with the approximate values and locations found in the three (3) Conceptual Persulfate & ORC Distribution Figures located in the Appendix.

Addition of the amendment shall be completed in accordance with the manufacturer's instructions.

The excavation shall be backfilled in compacted lifts with subsoil type S-1 structural fill material. Thickness of the lifts should be determined based on the compaction method to be utilized. No amendments to the structural fill shall be added shallower than 3 feet below grade. Each lift shall be compacted to 95% of the Standard Proctor maximum dry density as determined by ASTM D698. The contractor shall perform a minimum of one set of density tests for each vertical foot required. Density tests must be evenly distributed throughout the excavation area. Locations and results of the post excavation tests will be submitted in the excavation report. An impermeable liner will be placed at 3 feet below grade and then extended to the top edge of the pit. Above the impermeable liner, from 3 feet below grade to grade, will be the French Drain replacement.

- n. **SECURITY:** During excavation activities, the contractor is responsible for securing the excavation (e.g. flagging, cones, barriers, etc.) in order to prevent unauthorized persons or traffic from entering the area. A security fence surrounding the excavation may be necessary. In the event that excavation is not completed at the end of the workday, the contractor must ensure that the excavation area remains secured overnight.
- o. **DISPOSAL:** The Contractor must properly dispose of all contaminated water, contaminated soil, free phase product, and construction debris generated during the corrective action. In the case of an orphan site, the Contractor will be considered the generator. Treatment and disposal must be conducted at a SCDHEC-approved facility, and must be documented in the Excavation Report.
- p. **QUALITY ASSURANCE & VERIFICATION:** DHEC personnel may be on-site during excavation and French drain replacement activities. DHEC personnel will complete a final inspection of the site to verify that the site has been restored to a condition as good as or better than the condition that existed prior to excavation and French drain removal.
- q. **SITE RESTORATION:** Disruption to the site's normal business will be kept to a minimum. All disturbed ground surfaces shall be leveled. Ground covering should be replaced with same material that existed prior to excavation. Photographs of the site before, during and after excavation shall be included in the final Excavation Report.

IV. CORRECTIVE ACTION SOLICITATION RESPONSE FORM

A. ACCEPTANCE and DELIVERY STATEMENT

In compliance with the solicitation and subject to all conditions thereof, the UST Site Rehabilitation Contractor agrees, if selected by the UST Owner/Operator within _____ days from the date of financial approval form submittal, to complete the corrective action as specified at the price set forth for the site as stated below. For the purpose of this submittal and possible acceptance of financial approval, I certify that this company understands the nature of the release(s) and the geologic conditions at the site as documented in the technical file and this solicitation. **Any quantities listed in the corrective action method(s) below are estimates and changes to those quantities or to the listed method(s) will not affect the financial approval amount.** Additionally, I certify that this company understands that acceptance is based on total cost to treat the area of concern.

UST Site Rehabilitation Contractor (Print)

UST Site Rehabilitation Contractor Certification #

Registered Professional Name (Print)

Registered Professional Signature (required)

P.G. P.E. (check appropriate box) Professional Certification # _____

B. CORRECTIVE ACTION SOLICITATION RESPONSE

Please respond to the following questions for Broad River Amoco, UST Permit #11946, 4355 Broad River Rd., Columbia, SC:

1. PREVENT MIGRATION OF FREE PRODUCT ONTO PLAYPALS AND ADJACENT PROPERTIES
 - a. State and describe the corrective action method(s) or technology(ies) that will be discussed in detail in the CAP to effectively prevent migration of FPP onto Playpals and adjacent properties and achieve all reduction milestones in 90 days, should financial approval occur. Only method(s) and/or technology(ies) that will be implemented on site should be included. Attach an additional sheet if necessary.

b. Please provide the two method(s), which will be discussed in detail in the CAP, used to verify that both the short term and long term migration prevention system meets the design objective and monitor the physical and/or chemical effectiveness of method(s) or technology(ies) listed in Section III.B.2.

c. The Corrective Action Cost for this component is _____, in whole dollars, regardless of the type, quantity, or duration of the permitted technology applied, to prevent the migration of the free phase product onto Playpals and adjacent properties; complete all associated monitoring and post-corrective action verification; prepare all plans, reports, and correspondence; obtain and meet all terms and conditions of all required permits and licenses; design, install, monitor, operate, maintain, and when completed, properly abandon and/or remove all assessment and corrective action components, if necessary; and complete other items outlined in this solicitation

- d. Please provide a cost breakdown and estimated timetable (as shown in Solicitation Section VIII.4.A) for implementation as well as attainment of contractual remediation goals pertaining to this specific component.

2. FREE PRODUCT REMOVAL AT BROAD RIVER AMOCO PROPERTY

- a. Please provide detailed information as to how the active corrective action treatment techniques that will be discussed in the CAP will, in accordance with this solicitation, effectively remove free phase product to reach target SSTL values and achieve all performance milestones within the 5 year contract period. Please include the number of proposed injection points, proposed number of extraction points, proposed volume of excavated material, proposed volume of injected material, etc. Only method(s) and/or technology(ies) that will be implemented on site should be included. Attach an additional sheet if necessary.

b. The Corrective Action Cost, pertaining to this specific component, in whole dollars is _____, regardless of the type, quantity, or duration of the permitted technology applied, to treat the area of concern shown in the Appendix such that FPP thickness does not exceed SSTLs at any point in the area of concern; complete all associated monitoring and post-corrective action verification; prepare all plans, reports, and correspondence; obtain and meet all terms and conditions of all required permits and licenses; design, install, monitor, operate, maintain, and when completed, properly abandon and/or remove all assessment and corrective action components; and complete other items outlined in this solicitation.

c. Please provide how the corrective action costs stated in item #1b will be allocated for the corrective action activities listed in item #2a to include, but not limited to, sampling/analyses over the entire duration of the contract, corrective action system installation, site restoration, etc. Attach an additional sheet if necessary.

d. The CACT, in months, to achieve all performance milestones from the date of CAP implementation until the final corrective action performance milestone have been achieved and maintained for 2 consecutive quarters is ____ months. All activities must be completed within 5 years of the effective date. Any request for an extension beyond the 5 year time frame must be made in writing by the Owner/Operator and the CACT may be extended with a written no cost extension granted by DHEC.

e. Please provide a cost breakdown and estimated timetable (as shown in Solicitation Section VIII.4.A) for implementation as well as attainment of contractual remediation goals pertaining to this specific component.

3. EXCAVATION OF PLAYPALS PROPERTY AND REPLACEMENT OF FRENCH DRAIN SYSTEM

a. The Corrective Action cost is _____, in whole dollars, to complete all component tasks as described in this solicitation including, but not limited to, excavation of the impacted soil, sheet piling, dewatering, addition of the amendments (Persulfate Compound & Oxygen Releasing Compound), backfilling and compaction of clean fill, installation of up to 6 replacement monitoring wells, preparation of all documentation/reports, and replacement of the French drain.

b. Please provide the manufacturer and name of the proposed Persulfate Compound & Oxygen Releasing Compound (ORC) to be used in backfill of the excavation area.

4. TOTAL CORRECTIVE ACTION COST FOR ALL COMPONENTS:

- a. Please provide an estimated timetable for implementation of all proposed techniques discussed in Item 1, 2, and 3 as well as attainment of all performance milestones (i.e. Free Product Removal, 60% reduction, 90% reduction, 100% reduction, etc.) **Please note, the table is for example purposes only and not inclusive, actual line items to be included may vary depending on the technology and costs that will actually be incurred. All anticipated costs should be accounted for in the table along with the appropriate time for completion.**

Item	Cost	Time (date)
Preconstruction Cost		
Baseline Sampling	\$9,500	July 2020
Surfactant Selection	\$15,000	August 2020
CAP Design	\$10,000	August 2020
Construction Cost		
Site Preparation	\$8,000	September 2020
Well Installation/Drilling Services	\$25,000	October 2020
Drill Cuttings/Disposal	\$3,000	October 2020
Surfactant Cost	\$40,000	September 2020
Chemical Injection Cost	\$25,000	September 2020
Installation of Air Sparging/Vapor Extraction	\$35,000	October 2020
Soil Excavation	\$45,000	November 2020
Soil amendments & Backfill costs	\$20,000	November 2020
AFVR w/ off gas (10 events/96 hours)	\$85,000	July 2023
Wastewater/Product Disposal (200,000 gallons)	\$95,000	July 2023

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

Skimmers/Socks	\$6,500	July 2023
Operations & Maintenance Costs		
Labor Costs	\$85,000	August 2025
Utilities/Indirect Misc Cost	\$23,000	August 2025
Analytical/Groundwater Sampling (# events & frequency)	\$65,250	August 2025
Total	\$595,250	

Appendix

Distribution List for Plans and Reports

	Contact Name	Contact Address	Tax Map #
1.	Frederick Cecchini	429 Press Lindler Road, Columbia, SC 29212	R06108-04-69
2.	Broad River C Store LLC	41 Cromwell Court, Irmo, SC 29063	R06108-04-69
3.	William R & Bonnie B Saville Trust	4209 Wade Street, Columbia, SC 29210	R06108-04-68 R06108-04-67
4.	Wesley E Gray	141 Turnberry Lane, Lexington, SC 29210	R06108-04-66
5.	Todd W Mielke	133 Timmons Road, Chapin, SC 29036	R06108-04-65 R06108-04-30 R06108-04-29
6.	W & G Investments LLC	141 Turnberry Lane, Lexington, SC 29072	R06108-04-64
7.	Betty Barry	1231 Dothan Road, Columbia, SC 29210	R06108-04-31
8.	Janice Bernice Lucke	1251 Dothan Road, Columbia, SC 29210	R06108-04-28
9.	James R & Wendy S Rice	22 Caddis Creek Court, Irmo, SC 29063	R06108-04-27
10.	MDC Associates	4403 Broad River Road, Columbia, SC 29210	R06108-04-26 R06108-04-25
11.	David G Noto Trust	4417 Broad River Road, Columbia, SC 29210	R06108-04-24
12.	Herteline Lowman	4315 Broad River Road, Columbia, SC 29210	R06108-04-70
13.	Rolling Pines Horizontal	PO BOX 290189, Columbia, SC 29229	R06108-04-74
14.	State of South Carolina	Wade Hampton Building, Columbia, SC 29201	R06108-05-01
15.	State of South Carolina	General Services, 300 Gervais Street, Columbia, SC 29201	R06200-03-02
16.	State of SC State Law Enforcement Division	4400 Broad River Road, Columbia, SC 29221	R06200-03-04

*Information is subject to change due to sale or other exchange of property

Adjacent Facilities

	Facility Name	Facility Address	UST Permit #
1.	Sam's Food Mart 4	4140 Broad River Road, Columbia, SC 29210	07891
2.	Broad River Fueling Facility	4424 Broad River Road, Columbia, SC 29210	18391
3.	SLED	4400 Broad River Road, Columbia, SC 29210	13776
4.	SC Computer Data Center	4430 Broad River Road, Columbia, SC 29210	18422
5.			

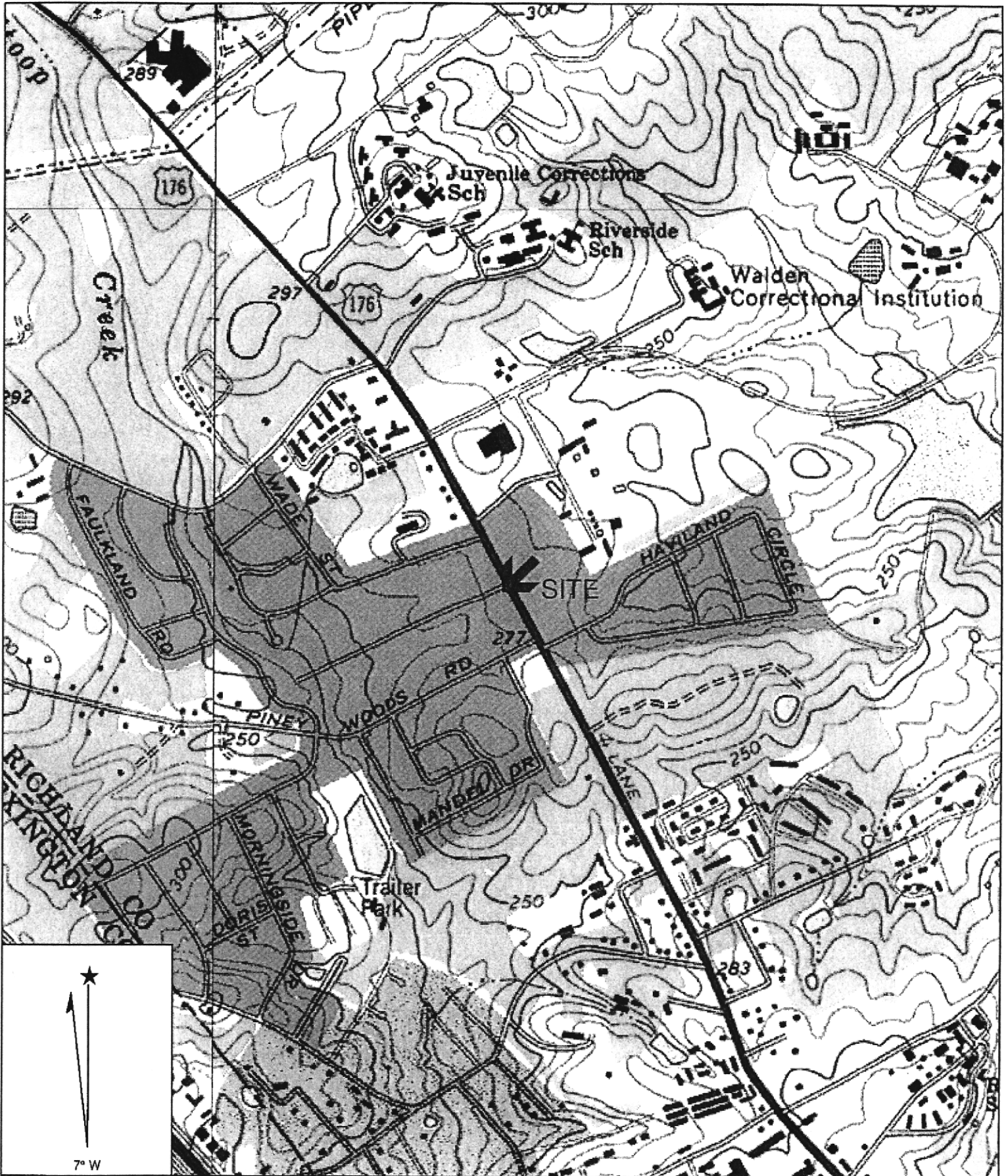
Analytical Parameters

Analyte	Analytical Method	Reporting Limit
BTEX	8260B	5 µg/L
MTBE	8260B	5 µg/L
Napthalene	8260B	5 µg/L
1,2-DCA	8260B	5 µg/L
EDB	8011	0.02 µg/L
TAA	8260B	100 µg/L
TAME	8260B	10 µg/L
ETBA	8260B	100 µg/L
TBA	8260B	100 µg/L
TBF	8260B	50 µg/L
DIPE	8260B	5 µg/L
Ethanol	8260B	200 µg/L
ETBE	8260B	10 µg/L

Verification Wells

Number (4) verification well(s) may be installed during the post-corrective action verification period at locations designated by the UST Program. Costs for the well installation(s) are considered part of the approved Corrective Action Cost. The UST Program will calculate SSTLs for the verification well(s) and provide data to the contractor in writing. During the verification period, all wells must be sampled for the parameters listed in the Analytical Parameters Table as well as the following parameters:

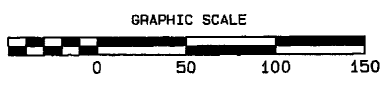
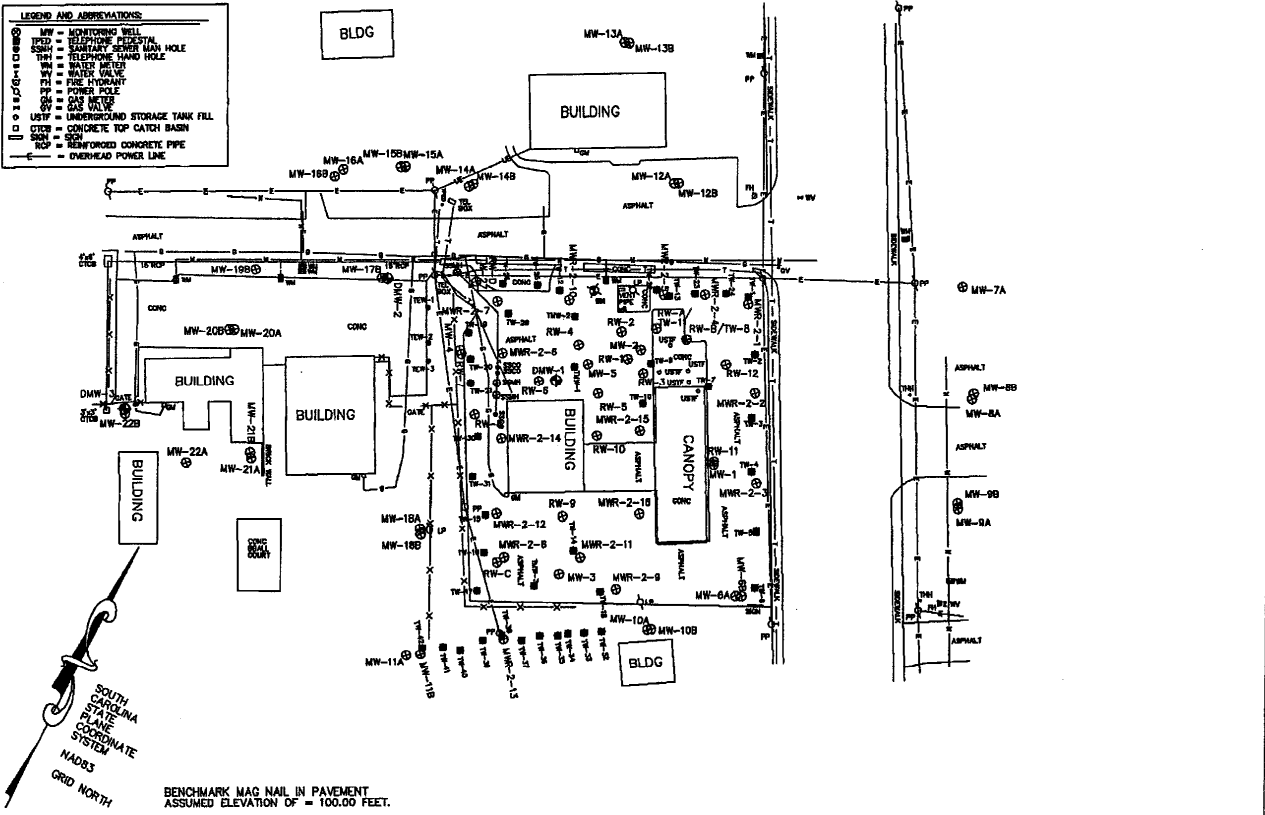
Analyte	Analytical Method	Reporting Limit
Dissolved Oxygen	SM4500-O G	500 µg/L
Ferrous Iron	SM3500-Fe D	30 µg/L
Methane	Kerr Method	1000 µg/L
Nitrate	9056/9210	100 µg/L
Sulfate	9038/9056	1000 µg/L



Name: COLUMBIA NORTH
 Date: 5/8/2019
 Scale: 1 inch equals 1000 feet

Location: 034° 03' 54.9" N 081° 07' 01.6" W
 Caption: Figure 1
 Broad River Amoco, Site 11946
 CTSI Proj. No. 18-6580

- LEGEND AND ABBREVIATIONS**
- MW = MONITORING WELL
 - PTD = TELEPHONE PEDESTAL
 - SSSH = SANITARY SEWER MAN HOLE
 - TSWH = TELEPHONE HAND HOLE
 - TH = WATER TOWER
 - TH = WATER TOWER
 - TH = FIRE HYDRANT
 - PP = POWER POLE
 - GV = GAS VALVE
 - USVF = UNDERGROUND STORAGE TANK FILL
 - CTCB = CONCRETE TOP CATCH BASIN
 - SM = SIGN
 - PCP = REINFORCED CONCRETE PIPE
 - OP = OVERHEAD POWER LINE




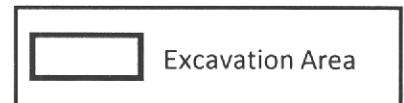
 CTS I Geotechnical Engineering and Environmental Services BLDG, SOUTH CAROLINA		
Date: 4/19/19	SCALE: SEE GRAPHIC	Dwg: BASEMAP

FIGURE 2A
 BROAD RIVER AMOCO
 UST ID#11946
 CTSI PROJ. 18-6580
 COLUMBIA
 SOUTH CAROLINA

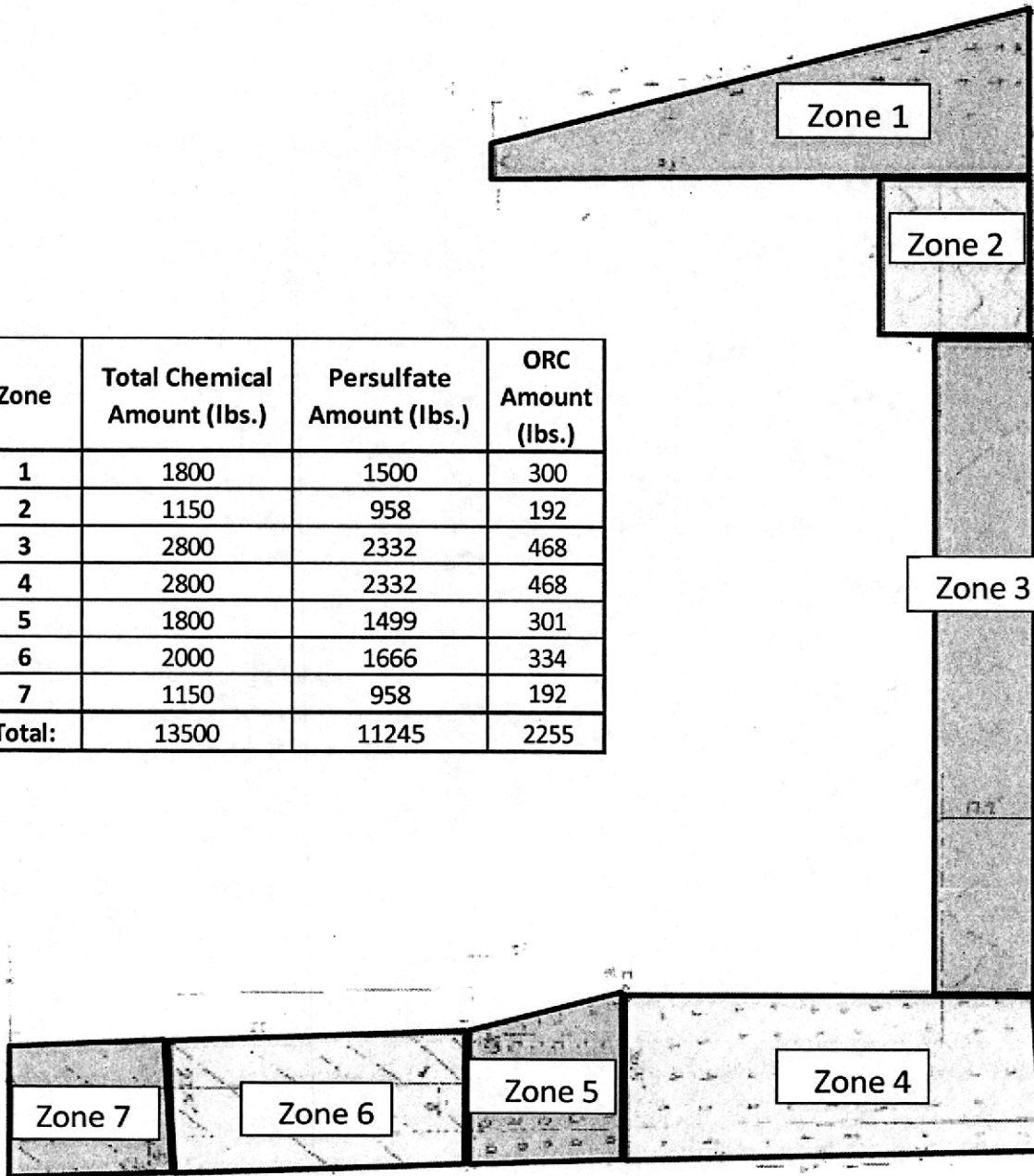
FIGURE C
Approximate Excavation Area



Total Approximate Area: 9,255 ft²
Total Approximate Volume: 1,376 yd³

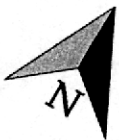
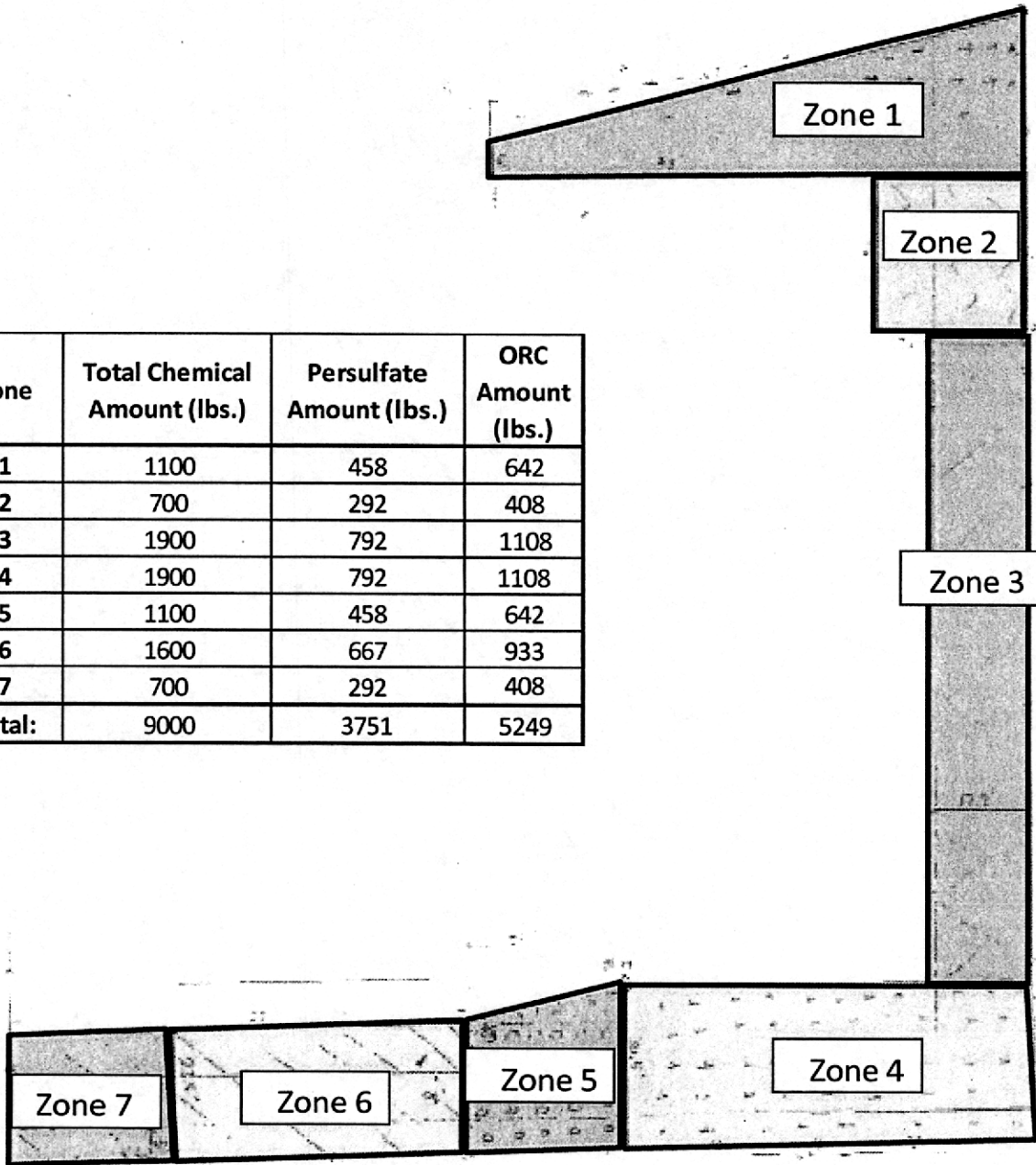
Conceptual Persulfate & ORC Distribution – 7-5 ft Vertical Treatment Interval

Zone	Total Chemical Amount (lbs.)	Persulfate Amount (lbs.)	ORC Amount (lbs.)
1	1800	1500	300
2	1150	958	192
3	2800	2332	468
4	2800	2332	468
5	1800	1499	301
6	2000	1666	334
7	1150	958	192
Total:	13500	11245	2255

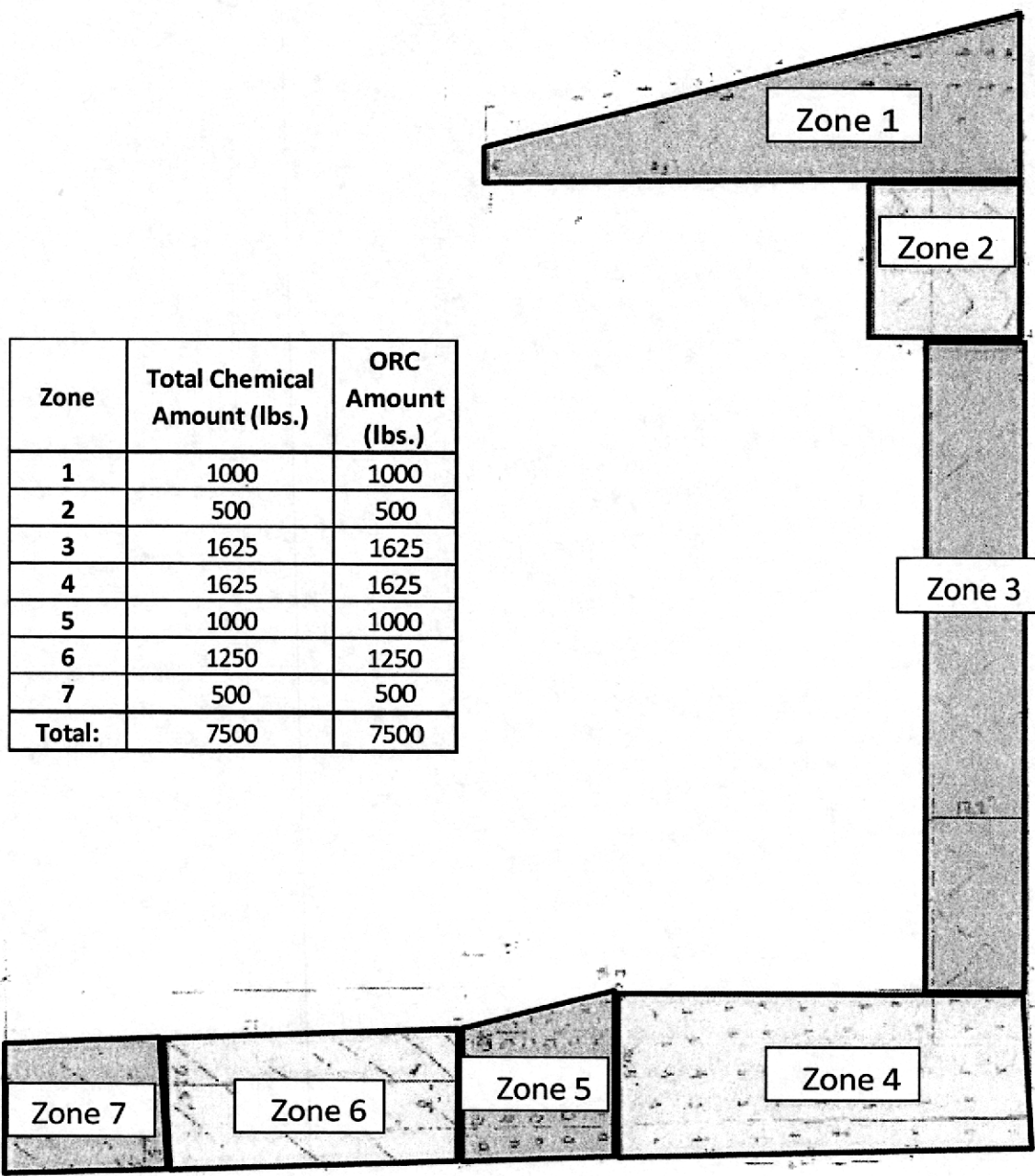


Conceptual Persulfate & ORC Distribution – 5-4 ft Vertical Treatment Interval

Zone	Total Chemical Amount (lbs.)	Persulfate Amount (lbs.)	ORC Amount (lbs.)
1	1100	458	642
2	700	292	408
3	1900	792	1108
4	1900	792	1108
5	1100	458	642
6	1600	667	933
7	700	292	408
Total:	9000	3751	5249



Conceptual Persulfate & ORC Distribution – 4-3 ft Vertical Treatment Interval



Zone	Total Chemical Amount (lbs.)	ORC Amount (lbs.)
1	1000	1000
2	500	500
3	1625	1625
4	1625	1625
5	1000	1000
6	1250	1250
7	500	500
Total:	7500	7500



Broad River Amoco, UST Permit #11946
Richland County

Dissolved CoC Groundwater Concentrations collected during Sampling/Gauging event conducted in April 2019.

Monitoring Well ID#	FPP Thickness 3/2019	FPP Thickness 7/2019	FPP Thickness 11/2019	FPP Thickness 07/2020	Benzene	Toluene	Ethylbenzene	Xylenes	MtBE	Naphthalene	1,2 DCA	EDB	TAA	TAME	ETBA	TBA	TBF	DIPE	Ethanol	ETBE
MW-1					2100	8900	2600	9800	62	600	<40	<0.019	3200	<42	<800	<800	<200	<40	<5200	<40
MW-2	0.49				12000	17000	1300	7000	15000	350	<80	0.12	33000	240	<1600	11000	<400	<80	680000	<80
MW-3		1.77	5.11	3.74	340	56	21	250	6.2	36	<2	<0.022	98	<2.1	<40	<40	<10	<2	<260	<2
MW-4		0.01			7200	720	3300	5200	5800	930	<40	<0.020	3200	150	<800	4100	<200	<40	<5200	<40
MW-5	0.19	0.01		2.2	20000	38000	3300	17000	5900	630	<80	<0.019	7200	200	<1600	2400	<400	<80	3000000	<80
MW-6A					<0.40	0.52	<0.40	0.61	<0.40	<0.40	<0.40	<0.021	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-6B					<0.40	2.6	<0.40	2.8	<0.40	<0.40	<0.40	<0.019	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-7A					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.021	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-8A					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW08B					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-9A					2	13	2.8	24	1.7	1.5	<0.40	<0.020	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-9B					<0.40	<0.40	<0.40	<0.45	1.7	<0.40	<0.40	<0.019	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-10A					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-10B					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-11A					2.2	<0.40	<0.40	<0.45	0.77	0.47	<0.40	<0.021	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-11B					<0.40	<0.40	<0.40	<0.45	0.56	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-12A					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW012B					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-13A					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-13B					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-14A					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.021	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-14B					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.021	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-15A					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-15B					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.022	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-16A					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-16B					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-17B					62	0.51	0.74	11	270	6	2	<0.020	520	0.95	<8.0	1600	<2.0	5.6	<52	1.7
MW-18A					2700	5400	530	2400	96	65	<20	<0.020	530	<21	<400	<400	<100	<20	<2600	<20
MW-18B					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-19B					1.1	0.82	<0.40	<0.45	<0.40	<0.40	<0.40	<0.021	20	<0.42	<8.0	20	<2.0	<0.40	<52	<0.40
MW-20A					22	88	41	240	0.44	17	<0.40	<0.021	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-20B					<0.40	<0.40	<0.40	<0.45	11	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40

Dissolved CoC Groundwater Concentrations collected during Sampling/Gauging event conducted in April 2019.

Monitoring Well ID#	FPP Thickness 3/2019	FPP Thickness 7/2019	FPP Thickness 11/2019		Benzene	Toluene	Ethylbenzene	Xylenes	MtBE	Naphthalene	1,2 DCA	EDB	TAA	TAME	ETBA	TBA	TBF	DIPE	Ethanol	ETBE
MW-21A					4.9	<0.40	<0.40	0.77	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-21B					<0.40	<0.40	<0.40	<0.45	3.6	<0.40	<0.40	<0.019	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-22A					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.019	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MW-22B					<0.40	<0.40	<0.40	<0.45	6.7	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	9.5	<2.0	<0.40	<52	<0.40
MWR2-1					16	0.76	4.3	3.9	120	<0.40	<0.40	<0.020	430	1.5	<8	72	<2.0	2.2	<52	2.2
MWR2-2					3000	17000	830	11000	1200	330	<40	3.9	2800	<42	<800	<800	<200	<40	<5200	<40

Broad River Amoco, UST Permit #11946
Richland County

MWR2-3					15	11	1.6	19	44	0.63	<0.40	<0.020	290	<0.42	<8.0	53	<2.0	0.4	<52	0.4
MWR2-4					6600	14000	1200	12000	8300	490	<40	0.42	8300	54	<800	3200	<200	<40	<5200	<40
MWR2-5					9100	21000	1700	12000	2500	600	<80	<0.020	3100	<84	<1600	<1600	<400	<80	<10000	<80
MWR2-6	0.18				9200	18000	1400	7400	180	160	<40	<0.020	2500	<42	<800	950	<200	<40	<5200	<40
MWR2-7	0.06		6.45	0.16	24000	40000	2600	14000	1100	390	<80	<0.020	6400	<84	<1600	2200	<400	<80	<10000	<80
MWR2-8	12.5				NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MWR2-9	10				1.2	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	25	<0.42	<8.0	<8.0	<2.0	0.63	<52	<0.40
MWR2-10					6700	7500	1500	8900	1200	540	<40	<0.020	3200	<42	<800	840	<200	<40	<5200	<40
MWR2-11					2200	4400	180	2900	<20	27	<20	<0.020	<400	<21	<400	<400	<100	<20	<2600	<20
MWR2-12			0.36	0.03	13000	33000	2400	13000	<80	330	<80	<0.020	<1600	<84	<1600	<1600	<400	<80	<10000	<80
MWR2-13					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40
MWR2-14			0.03	0.01	550	640	700	3600	130	220	15	<0.020	520	<8.4	<160	<160	<40	<8.0	<1000	<8
MWR2-15					6600	11000	1500	8800	150	330	<40	<0.020	2600	<42	<800	<800	<200	<40	<5200	<40
MWR2-16					1100	1900	220	1500	13	27	<4	<0.020	380	<4.2	<80	<80	<20	<4.0	<520	<4.0
DMW-1					3.2	<0.40	<0.40	<0.45	62	<0.40	<0.40	<0.021	52	<0.42	<8.0	12	<2.0	<0.40	<52	<0.40
DMW-2					4.6	<0.40	<0.40	<0.45	130	<0.40	<0.40	<0.020	130	<0.42	<8.0	430	<2.0	<0.40	<52	<0.40
DMW-3					<0.40	<0.40	<0.40	<0.45	0.88	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<8.0	<2.0	<0.40	<52	<0.40

*CoC concentrations in µg/L based on April 2019 sampling event. CoC concentrations may vary due to seasonal fluctuations in the groundwater.

*Free Product Thicknesses are in feet

Recovery Well ID#	FPP Thickness 3/2019	FPP Thickness 7/2019	FPP Thickness 11/2019	FPP Thickness 07/2020
RW-1				
RW-2				
RW-3				
RW-4				
RW-5		0.01	0.03	0.02
RW-6				
RW-7				
RW-8				
RW-9				
RW-10	0.37	0.03	8.64	0.03
RW-11				
RW-12			0.02	0.51
RW-A			0.03	0.02
RW-B	0.02	0.05		0.08
RW-C	10	2.22	1	0.85
RW-D	0.07	0.12		

Vapor CoC Concentrations (ug/m3) for event conducted December 5, 2018

	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MtBE	MtBE
A-1	2.6	9.91	2.03	10.36	<1.05	<0.721	<0.721
A-2	NA	NA	NA	NA	NA	NA	NA
A-3	183	1790	530	2956	12.9	<0.721	<0.721
A-4	19	120	29.4	199	2.43	<0.721	<0.721
SG-1	28.6	23.5	<23.6	<47.3	<28.5	<19.6	<19.6
SG-2	<6.39	30.4	<8.69	47.1	10.5	<0.721	<0.721
SG-3	5.69	43.3	11.2	64.5	2.69	<0.721	<0.721
SG-4	3.45	32.8	9.16	55.6	1.64	<0.721	<0.721
SG-5	4.54	40.3	12.2	73.9	2.63	<0.721	<0.721
SG-6	22.8	52.4	12.6	73.8	<10.5	<0.721	<0.721

Vapor CoC Concentrations (ug/m3) for event conducted June 2019

	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MtBE	EBD
A-1	0.677	2.82	0.304	3.27	<1.05	<0.721	0.117
A-2	NA	NA	NA	NA	NA	NA	NA
A-3	1.03	5.28	4.06	13.24	1.32	<0.721	0.36
A-4	2.2	2.59	0.604	2.933	<1.05	<0.721	0.295
A-5	1.02	6.82	0.5	3.8	<1.05	<0.721	0.105
A-6R	0.393	1.09	0.161	0.573	<1.05	<0.721	<0.081
A-7	0.361	2.69	0.208	1.107	21.1	<0.721	0.17
SG-1	<0.639	5.69	1.06	4.81	<1.05	<0.721	<0.809
SG-2	<0.639	7.12	1.44	6.72	<1.05	<0.721	<0.809
SG-3	<0.639	4.33	0.921	1.12	<1.05	<0.721	<0.809
SG-4	<0.639	6.93	1.65	2.09	<1.05	<0.721	<0.809
SG-5	2.21	5.77	1.8	6.85	<1.05	<0.721	<0.809
SG-6	<0.639	4.6	1.26	5.68	<1.05	<0.721	<0.809

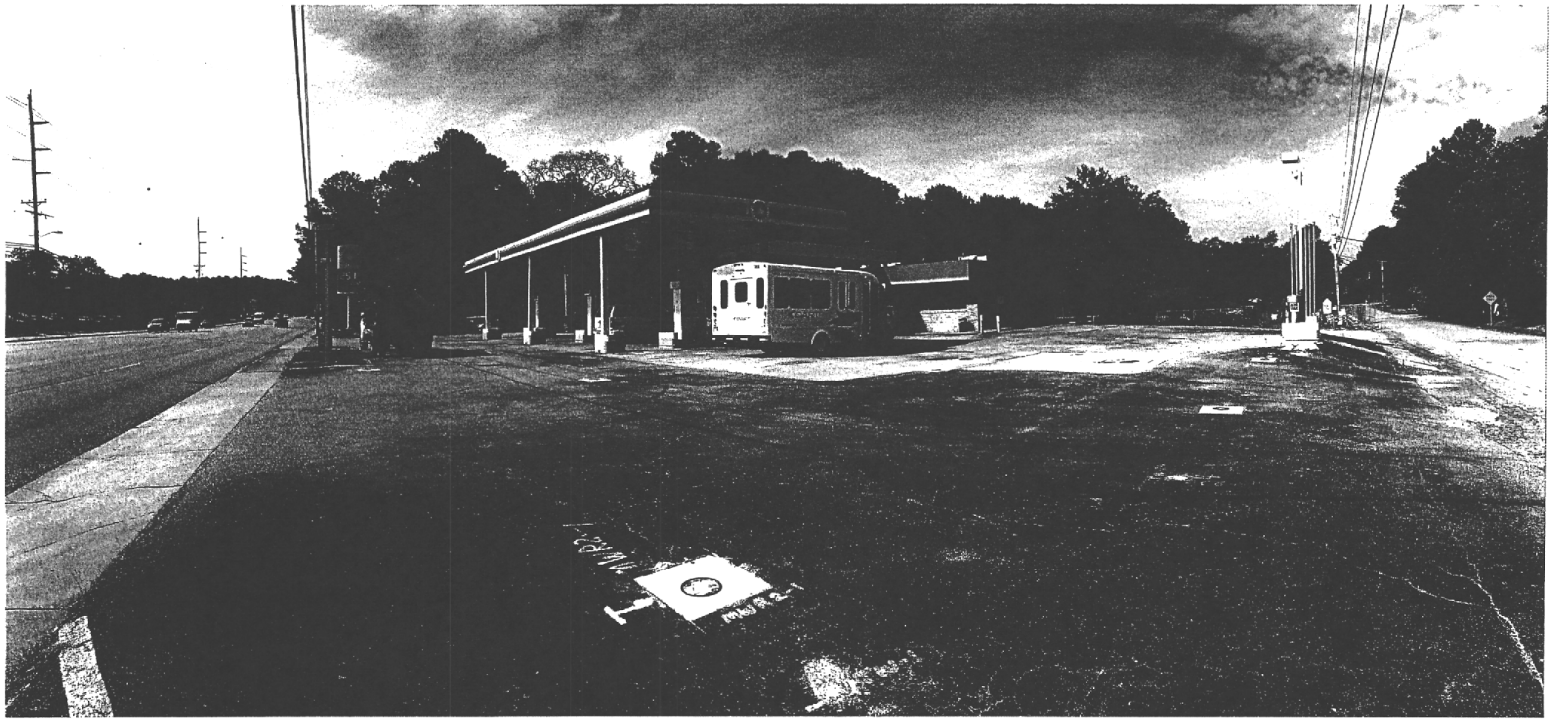
Vapor CoC Concentrations (ug/m3) for event conducted August 2019

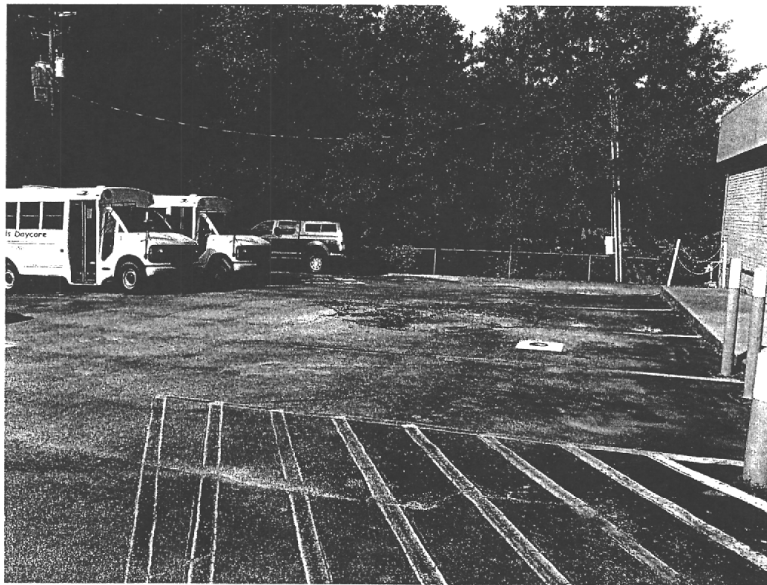
	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MtBE	MtBE
A-1	0.639	2.69	0.404	2.9	<0.262	<0.721	<0.721
A-2	NA	NA	NA	NA	NA	NA	NA
A-3	<0.319	<1.72	0.339	1.47	<0.262	<0.721	<0.721
A-4	0.45	0.897	0.152	0.653	<0.262	<0.721	<0.721
A-5	0.329	0.648	0.109	0.539	<0.262	<0.721	<0.721
A-6R	0.319	0.92	1.15	0.642	<0.262	<0.721	<0.721
A-7	<0.466	1.72	0.304	1.244	5.82	<0.721	<0.721
SG-1	<0.639	3.00	0.947	4.28	<1.05	<0.721	<0.721
SG-2	<0.639	<0.639	3.84	1.12	<1.05	<0.721	<0.721
SG-3	<0.639	4.18	1.19	5.39	<1.05	<0.721	<0.721
SG-4	<0.639	3.13	<0.869	8.81	<1.05	<0.721	<0.721
SG-5	<0.639	1.86	<0.869	2.01	<1.05	<0.721	<0.721
SG-6	<0.639	2.59	<0.869	8.71	<1.05	<0.721	<0.721

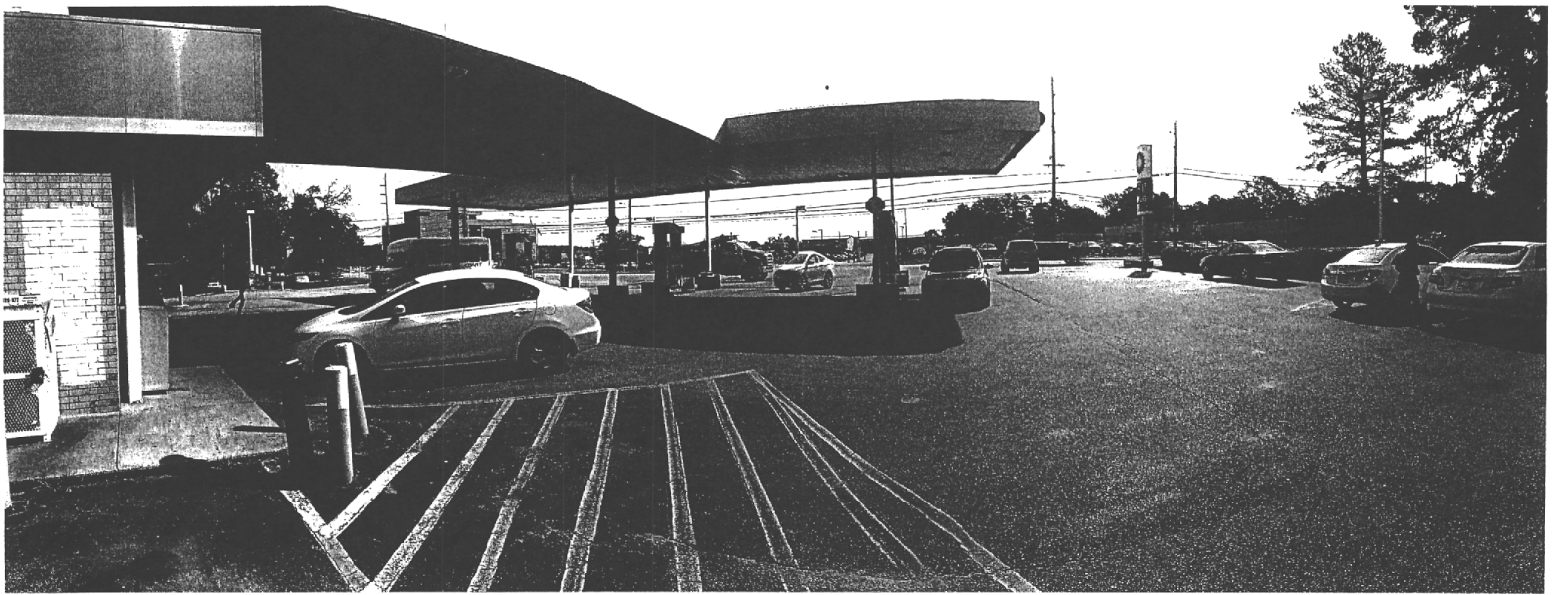
Broad River Amoco, UST Permit #11946
Richland County

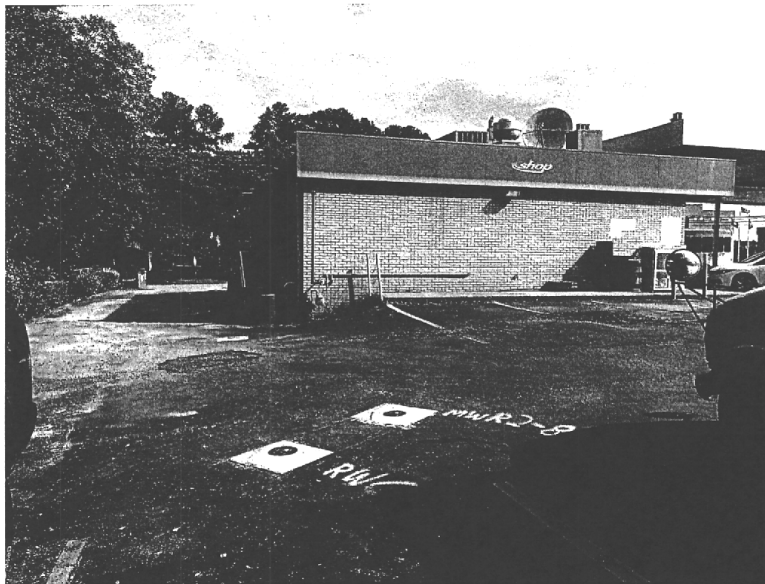
Target Free-Phase Product thickness SSTL

MW ID#	FPP SSTL
MW-2	0.01
MW-3	0.01
MW-4	0.01
MW-5	0.01
MWR2-6	0.01
MWR2-7	0.01
MWR2-8	0.01
MWR2-9	0.01
MWR2-12	0.01
MWR2-14	0.01











Underground Storage Tank Management Division
Field Activity Request Form

Date of Request 07/07/20

Type of Request (Check one)
[] Emergency (<2 Working Days)
[X] Specific (1-5 Working Days)
[X] Routine (10 Working Days)



Please specify type of work to be completed

Site ID # 11946
Site Name Broad River Road Amoco
Site Address 3445 Broad River Road, Columbia, SC
County Richland
Project Manager B Baldwin

Remember to Establish Cost Proposals

PACE CA# PACE PO#

Field Staff Information:

Date Field Activity Completed 7/13/20
Completed By C. White
Date Field Notes Entered into EFIS: 8/24/20

Notes Gauge wells with historical FPP, and wells adjacent to FPP Wells to gather baseline levels for bid

11946



S. Jahue Moore†
James Edward Bradley†
Sheila McNair Robinson
Christian G. Spradley
William H. Edwards
Stanley L. Myers
Jane H. Downey*
S. Jahue Moore, Jr.
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Lester McGill Bell, Jr.
Bryan C. Letteer
Sierra D. Carini
Nicole E. Jackson

J. Mark Taylor†
Robert D. Hazel†
C. David Sawyer, Jr.†
Billy C. Coleman
1916-2019

August 24, 2020

Carolina Technical Services, Inc.
7130-A Broad River Road
Irmo, SC 29063

RE: UST Management Tracking Contractor

Gentlemen:

I have been retained to represent Broad River C-Store, LLC in regard to a problem which developed related to tanks at 4335 Broad River Road, Columbia, South Carolina.

I attach hereto a copy of a letter from DHEC along with various material related to the problem in question.

We have been requested to select proposed contractors. We have selected your company along with two others.

We have been directed to provide you a copy of DHEC's letters of August 5, 2020. We have also been requested to ask you to submit a financial approval form in compliance with DHEC's letter.

We would greatly appreciate your taking appropriate action to assist in regard to this problem.

Thank you for your assistance.

Yours very truly,

S. Jahue Moore

SJM/arj
Enclosures
cc w/enclos.

Bradly Baldwin – DHEC
Paul Desai



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August 24, 2020

Kleen Sites Geoservices, Inc.
2047 Industrial Blvd
Lexington, SC 29072

RE: UST Management Tracking Contractor

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1916-2019

August 24, 2020

S&ME, Inc. Columbia
134 Suber Road
Columbia, SC 29210

RE: UST Management Tracking Contractor

Gentlemen:

I have been retained to represent Broad River C-Store, LLC in regard to a problem which developed related to tanks at 4335 Broad River Road, Columbia, South Carolina.

I attach hereto a copy of a letter from DHEC along with various material related to the problem in question.

We have been requested to select proposed contractors. We have selected your company along with two others.

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cc w/enclos.: Bradly Baldwin – DHEC
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Robert D. Hazel†
C. David Sawyer, Jr.†
Billy C. Coleman
1916-2019



September 11, 2020

SC DHEC
2600 Bull Street
Columbia, SC 29201

RE: Broad River C-Store – UST Management



Gentlemen:

You will please find enclosed a copy of a response letter we have received from a proposed DHEC UST Management contractor regarding the Broad River C-Store.

Yours very truly,

S. Jahue Moore

SJM/arj
Enclosure
cc w/enclos.: Paul Desai



KLEEN SITES GEOSERVICES, INC.

ENVIRONMENTAL SERVICES

September 2, 2020

Mr. S. Jahue Moore
Moore Taylor Law Firm
1700 Sunset Boulevard
West Columbia, South Carolina 29169

Re: Response to Corrective Action Solicitation
Broad River Amoco
4335 Broad River Road
Columbia, Richland County, SC
UST Permit # 11946

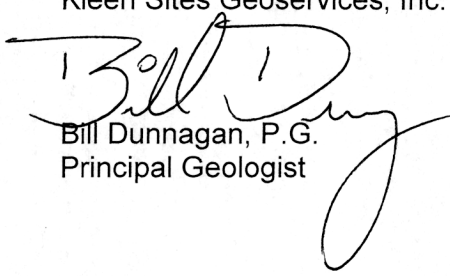
Dear Mr. Moore:

This letter is in response to the corrective action solicitation for the Broad River Amoco site located in Columbia, South Carolina. Kleen Sites Geoservices has provided contamination assessment services to convenience store and oil company owners through the SUPERB Fund for 30 years. However, we made the decision several years ago that we would not participate in Pay for Performance (PFP) corrective action projects. Site cleanup often involves factors including site access to neighboring properties, buildings and other structures that are above contaminated parcels, inhomogeneous subsurface conditions, etc. that are beyond the control of the cleanup contractor. For this reason, our company must decline to bid on the Broad River Amoco corrective action project.

We do appreciate you providing Kleen Sites Geoservices with the opportunity to bid on this project. There are a number of qualified environmental firms in the area that should be able to provide you with a competitive bid. Please contact me at (803) 479-9291 or by email at bill@kleensites.com if you have any questions concerning this response. Good luck to you and your client on the successful completion of this project.

Sincerely,

Kleen Sites Geoservices, Inc.


Bill Dunnagan, P.G.
Principal Geologist

2047 Industrial Blvd., Lexington, SC 29072

(803) 996-0637 (803) 996-0638 (Fax)

www.kleensites.com

IV. CORRECTIVE ACTION SOLICITATION RESPONSE FORM

A. ACCEPTANCE and DELIVERY STATEMENT

In compliance with the solicitation and subject to all conditions thereof, the UST Site Rehabilitation Contractor agrees, if selected by the UST Owner/Operator within _____ days from the date of financial approval form submittal, to complete the corrective action as specified at the price set forth for the site as stated below. For the purpose of this submittal and possible acceptance of financial approval, I certify that this company understands the nature of the release(s) and the geologic conditions at the site as documented in the technical file and this solicitation. Any quantities listed in the corrective action method(s) below are estimates and changes to those quantities or to the listed method(s) will not affect the financial approval amount. Additionally, I certify that this company understands that acceptance is based on total cost to treat the area of concern.



Envirorisk Consultants, Inc.
UST Site Rehabilitation Contractor (Print)

428

UST Site Rehabilitation Contractor Certification #

Kenneth Summerour
Registered Professional Name (Print)

[Signature]
Registered Professional Signature (required)

P.G. [X] P.E. [] (check appropriate box)

Professional Certification # 3742

B. CORRECTIVE ACTION SOLICITATION RESPONSE

Please respond to the following questions for Broad River Amoco, UST Permit #11946, 4355 Broad River Rd., Columbia, SC:

- 1. PREVENT MIGRATION OF FREE PRODUCT ONTO PLAYPALS AND ADJACENT PROPERTIES
a. State and describe the corrective action method(s) or technology(ies) that will be discussed in detail in the CAP to effectively prevent migration of FPP onto Playpals and adjacent properties and achieve all reduction milestones in 90 days, should financial approval occur. Only method(s) and/or technology(ies) that will be implemented on site should be included. Attach an additional sheet if necessary.

In order to prevent further FPP migration, Envirorisk proposes to install 2 L-shaped hydraulic control

barriers on the SW and NW corners of the property. These barriers will be positioned near and overlapping

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

the areas where FPP seepage was observed on the PlayPals property. The hydraulic barrier will be constructed after excavation and removing soils down to approximately 15' and backfilling with a low capillary pressure gravel based material. 4" vertical observation wells will be installed in the hydraulic barrier for FPP gauging and extraction, if needed. The areas will be backfilled and restored to grade with minimal disturbances to site operations. The downslope wall of the barrier on the west will be lined with an impermeable barrier to prevent further migration onto the PlayPals property.

- b. Please provide the two method(s), which will be discussed in detail in the CAP, used to verify that both the short term and long term migration prevention system meets the design objective and monitor the physical and/or chemical effectiveness of method(s) or technology(ies) listed in Section III.B.2.

The high permeability of the gravel hydraulic barrier and low capillary pressure relative to the surrounding water-bearing unit will provide a collection point to effectively halt FPP migration. Weekly gauging of the 15 vertical observation wells will be performed. During weekly gauging events, the exposed soil bank on the PlayPals property will be inspected and photographed. In addition, 1" temporary FPP gauging points may be installed on the downslope side of the trench to monitor the effectiveness of the barrier.

- c. The Corrective Action Cost for this component is \$99,500.00 in whole dollars, regardless of the type, quantity, or duration of the permitted technology applied, to prevent the migration of the free phase product onto Playpals and adjacent properties; complete all associated monitoring and post-corrective action verification; prepare all plans, reports, and correspondence; obtain and meet all terms and conditions of all required permits and licenses; design, install, monitor, operate, maintain, and when completed, properly abandon and/or remove all assessment and corrective action components, if necessary; and complete other items outlined in this solicitation

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

- d. Please provide a cost breakdown and estimated timetable (as shown in Solicitation Section VIII.4.A) for implementation as well as attainment of contractual remediation goals pertaining to this specific component.

Please see attached table labeled "Section 1d."

2. FREE PRODUCT REMOVAL AT BROAD RIVER AMOCO PROPERTY

- a. Please provide detailed information as to how the active corrective action treatment techniques that will be discussed in the CAP will, in accordance with this solicitation, effectively remove free phase product to reach target SSTL values and achieve all performance milestones within the 5 year contract period. Please include the number of proposed injection points, proposed number of extraction points, proposed volume of excavated material, proposed volume of injected material, etc. Only method(s) and/or technology(ies) that will be implemented on site should be included. Attach an additional sheet if necessary.

A review of the file data indicates that numerous AFVR events have been conducted at the site with

minimal long term effectiveness. Envirorisk proposes to utilize surfactant/oxidant based desorption

and capture methods to complete remediation. Our process will entail the installation of up to 50

large gravel envelope injection/extraction wells in target areas. Treatment will be performed using

plant-based surfactants combined with low concentration oxidant mixtures to provide effective FPP

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

desorption. Extraction(s) will be performed using a series of pumps and and short term extraction events.

- b. The Corrective Action Cost, pertaining to this specific component, in whole dollars is \$280,000.00, regardless of the type, quantity, or duration of the permitted technology applied, to treat the area of concern shown in the Appendix such that FPP thickness does not exceed SSTLs at any point in the area of concern; complete all associated monitoring and post-corrective action verification; prepare all plans, reports, and correspondence; obtain and meet all terms and conditions of all required permits and licenses; design, install, monitor, operate, maintain, and when completed, properly abandon and/or remove all assessment and corrective action components; and complete other items outlined in this solicitation.

- c. Please provide how the corrective action costs stated in item #1b will be allocated for the corrective action activities listed in item #2a to include, but not limited to, sampling/analyses over the entire duration of the contract, corrective action system installation, site restoration, etc. Attach an additional sheet if necessary.

Please see attached tables labeled "Section 1d and 2e."

- d. The CACT, in months, to achieve all performance milestones from the date of CAP implementation until the final corrective action performance milestone have been achieved and maintained for 2 consecutive quarters is 36 months. All activities must be completed within 5 years of the effective date. Any request for an extension beyond the 5 year time frame must be made in writing by the Owner/Operator and the CACT may be extended with a written no cost extension granted by DHEC.

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

- e. Please provide a cost breakdown and estimated timetable (as shown in Solicitation Section VIII.4.A) for implementation as well as attainment of contractual remediation goals pertaining to this specific component.

Please see attached table labeled "Section 2e."

3. EXCAVATION OF PLAYPALS PROPERTY AND REPLACEMENT OF FRENCH DRAIN SYSTEM

- a. The Corrective Action cost is \$443,000.00, in whole dollars, to complete all component tasks as described in this solicitation including, but not limited to, excavation of the impacted soil, sheet piling, dewatering, addition of the amendments (Persulfate Compound & Oxygen Releasing Compound), backfilling and compaction of clean fill, installation of up to 6 replacement monitoring wells, preparation of all documentation/reports, and replacement of the French drain.

- b. Please provide the manufacturer and name of the proposed Persulfate Compound & Oxygen Releasing Compound (ORC) to be used in backfill of the excavation area.

Sodium persulfate from PeroxyChem or other

A mixture of IXPEN 70C granules and IXPEN 75C granules of calcium peroxide by Carus.

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

4. TOTAL CORRECTIVE ACTION COST FOR ALL COMPONENTS: \$822,500.00

- a. Please provide an estimated timetable for implementation of all proposed techniques discussed in Item 1, 2, and 3 as well as attainment of all performance milestones (i.e. Free Product Removal, 60% reduction, 90% reduction, 100% reduction, etc.) **Please note, the table is for example purposes only and not inclusive, actual line items to be included may vary depending on the technology and costs that will actually be incurred. All anticipated costs should be accounted for in the table along with the appropriate time for completion.**

Item	Cost	Time (date)
Preconstruction Cost		
Baseline Sampling	\$9,500	July 2020
Surfactant Selection	\$15,000	August 2020
CAP Design	\$10,000	August 2020
Construction Cost		
Site Preparation	\$8,000	September 2020
Well Installation/Drilling Services	\$25,000	October 2020
Drill Cuttings/Disposal	\$3,000	October 2020
Surfactant Cost	\$40,000	September 2020
Chemical Injection Cost	\$25,000	September 2020
Installation of Air Sparging/Vapor Extraction	\$35,000	October 2020
Soil Excavation	\$45,000	November 2020
Soil amendments & Backfill costs	\$20,000	November 2020
AFVR w/ off gas (10 events/96 hours)	\$85,000	July 2023
Wastewater/Product Disposal (200,000 gallons)	\$95,000	July 2023

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

Skimmers/Socks	\$6,500	July 2023
Operations & Maintenance Costs		
Labor Costs	\$85,000	August 2025
Utilities/Indirect Misc Cost	\$23,000	August 2025
Analytical/Groundwater Sampling (# events & frequency)	\$65,250	August 2025
Total		\$595,250

Please see attached table labeled "Section 4a."

Section 1d. Prevent Migration of FPP onto PlayPals and Adjacent Properties

Item	Cost	Time (date)
CAP Design & Implementation	\$10,500	30 days from award
Soil Disposal	\$18,000	30 days from award
Construction Labor & Materials	\$55,000	30 days from award
Post Barrier Monitoring	\$11,500	Weekly
Reporting	\$4,500	Included in CASE Report
Total	\$99,500	

Section 2e. FP Removal at Broad River Amoco Property

Item	Cost	Time (date)
Administrative costs	\$3,500	N/A
CAP Preparation & CAP Implementation Report	\$15,000	30 days from Authorization (can be concurrent with section 1d.)
Injection/Extraction Well Installation	\$35,000	30 days from Authorization (can be concurrent with section 1d.)
Surfactant/Oxidant costs	\$14,500	30 days from Authorization (can be concurrent with section 1d.)
Injection/Extraction & Application costs (labor)	\$30,500	Weekly applications as needed
Liquid Disposal & misc. costs	\$6,500	N/A
FPP Quarterly Gauging	\$25,000	Quarterly
Semi-Annual Sampling & CASE Reporting	\$150,000	Semi-annually
Total	\$280,000	

Section 3c. Excavation of PlayPals and Replacement of French Drain System

Item	Cost	Time (date)
Preparation of ECAP, Excavation Report, Work Plans, and Project Management	\$10,500	Implement ECAP within 30 days of DHEC authorization
Field prep, utility locate, Health & Safety	\$7,500	N/A
Soil Transport & Disposal	\$135,000	Excavation in sections, assume 20-30 days to complete
Oxygen Releasing Product (Solvay/XP70/75) & Equipment, transportation	\$69,500	Apply 3'-7' zone excavate, backfill in sections
Sodium persulfate, transport	\$33,920	N/A
Labor & materials for excavation, backfilling, french drain construction	\$82,330	N/A
Backfill material	\$52,900	N/A
Geotechnical Soil Compaction/Engineering	\$6,500	Compaction testing performed in 1' lifts
Shoring adjacent to building	\$28,000	N/A
Install french drain	\$5,500	completed in 2 to 3 days following backfilling
Misc, Well Abandonment, reseeding landscaping	\$8,150	N/A
Soil Confirmation Sampling	\$3,200	
Total	\$443,000	

Section 4a. Total Corrective Action Costs

Prevent Migration of FPP onto PlayPals and Adjacent Properties		
Item	Cost	Time (date)
CAP Design & Implementation	\$10,500	30 days from award - start July 2020
Soil Disposal	\$18,000	30 days from award
Construction Labor & Materials	\$55,000	30 days from award
Post Barrier Monitoring	\$11,500	Weekly, assume goal met within 30 days of installation
Reporting	\$4,500	Included in CASE Report
Total	\$99,500	
FP Removal at Broad River Amoco Property		
Item	Cost	Time (date)
Administrative costs	\$3,500	N/A
CAP Preparation & CAP Implementation Report	\$15,000	30 days from Authorization (can be concurrent with FPP Barrier)
Injection/Extraction Well Installation	\$35,000	30 days from Authorization (can be concurrent with FPP Barrier)
Surfactant/Oxidant costs	\$14,500	30 days from Authorization (can be concurrent with FPP Barrier)
Injection/Extraction & Application costs (labor)	\$30,500	Weekly applications
Liquid Disposal & misc. costs	\$6,500	N/A
FPP Quarterly Gauging	\$25,000	Quarterly
Semi-Annual Sampling & CASE Reporting	\$150,000	Semiannually
Goals		Anticipate reaching 60% FPP goal 16 months after award 90% within 1 year 100% within 2 years
Total	\$280,000	

Excavation of PlayPals and Replacement of French Drain System		
Item	Cost	Time (date)
Preparation of ECAP, Excavation Report, Work Plans, and Project Management	\$10,500	Implement ECAP within 30 days of DHEC authorization, assumed after 90-day barrier monitoring
Field prep, utility locate, Health & Safety	\$7,500	N/A
Soil Transport & Disposal	\$135,000	Excavation in sections, assume 20-30 days to complete
Oxygen Releasing Product (SolvayIXPER70/75) & Equipment, transportation	\$69,500	Apply 3'-7' zone excavate, backfill in sections
Sodium persulfate, transportation	\$33,920	
Labor & materials for excavation, backfilling, french drain construction	\$82,330	N/A
Backfill material	\$52,900	N/A
Geotechnical Soil Compaction/Engineering	\$6,500	Compaction testing performed in 1' lifts
Shoring adjacent to building	\$28,000	N/A
Install french drain	\$5,500	completed in 2 to 3 days following backfilling
Misc, Well Abandonment, reseeding landscaping	\$8,150	N/A
Soil Confirmation Sampling	\$3,200	
Goals		Assume 2 months for project completion
Total	\$443,000	
GRAND TOTAL	\$822,500	

**EnviroRisk Bid Submission Clarification Questions – UST
Permit #11946**

1. Have you conducted a site visit to familiarize yourself with the site and the layout of the property?

Yes and this week conducted another visit to update us on site conditions

2. Are you aware of the elevation difference between the Broad River Amoco Property and the Play Pals Property? Will this affect the proposed remediation plan?

Yes, we are aware of the elevation differences and no this will not affect the plan

3. Are you aware of the presence of several interceptor trenches currently on the Play Pals property? Do you understand that they cannot be utilized as is for the proposed remediation and do you understand that they will need to be deconstructed and returned to pre-existing conditions during the site restoration phase of the contract if they are not utilized?

We are aware of the trenches and open excavations present on the Play Pals property. There are also above ground PVC piping runs, absorbent booms, piles of disturbed soil both covered and uncovered with plastic, and left over 55 gallon drums. The drums were locked and were located in a water filled excavation so we weren't able to determine if they contain soil or water. The site is extremely over-grown but all of the trenches and open excavations appear to be in the footprint of the proposed excavation area outlined in the Bid document. We were not planning on utilizing any of the trenches or excavations for remedial purposes. After excavation and backfilling with chemical oxidant and soils, the French drain will be installed and the site surface restored.

We request that the drums (4 or 5?) be removed prior to the start of field work since these drums were filled by others and we have no analytical to profile the waste.

4. EnviroRisk is proposing two or more hydraulic control barriers. Exactly how many control barriers does EnviroRisk plan on installing? Will EnviroRisk be able to obtain permission to install the hydraulic barriers on the PlayPals property? Does EnviroRisk have an alternative in the event that permission cannot be obtained?

Based on current/historic free product occurrences, we proposed two passive hydraulic barriers. One barrier is roughly "L" shaped and will extend from slightly east of MWR-2-9, west to RW-C, and north-NW past MWR-2-12. A smaller trench will be advanced adjacent and south of MW-4/RW-7 and will extend north in the

direction of the on-site dumpster. A small additional barrier trench or a series of closely spaced large auger borings (will be advanced if needed around RW-D to the north or directly behind the convenience store building, where only traces of free product have historically been detected. Both trenches or auger borings will be extended to approx. depths of 15 feet or deeper, depending on the extent of free product observed in the soils. Free product extraction will occur using a combination of manual pumping recovery methods and mobile vacuum extraction (AFVR), depending on product accumulation.

No barriers are proposed on the Play Pals property since the intention of the barriers is to prevent free product migration off-site.

5. Does EnviroRisk have a contingency plan for the hydraulic control barrier in the event that it does not perform as planned? Yes, a series of 1" or 2" temporary wells will be installed on the downslope side of the trenches or auger borings and will be regularly gauged to ensure that further free product migration is not occurring.
6. Can you please provide further information regarding the impermeable barrier that will be utilized on the downslope side of the hydraulic barrier? The barrier we are proposing will ideally consist of double-thick 6 mill poly sheeting. A weighted rod or board will be used to secure the sheeting from the base of the trench interior to ensure a tight fit against the rear soil wall (northwest side) extending and overlapping the surface. The trenches will then be backfilled with gravel. Observation/extraction wells will be installed in the gravel trenches. If extensive sloughing of the rear trench walls is observed, a grout wall may be necessary.
7. Can you verify whether the installation of the observation wells will be installed or not? Yes, a series of vertical observation/extraction wells will be installed to gauge product and for periodic free product extraction.
8. Can you provide further specifications on the low capillary pressure gravel-based material that will be used? EnviroRisk will determine the gravel size/type after excavation is commenced. Any gravel product will provide for capillary "suction" of the free product as groundwater flows into the trenches.
9. Please confirm whether or not the 1" temporary points will or will not be installed on the downslope of the trench to monitor the effectiveness of the barrier. Under what circumstances would the gauging points be installed to monitor the effectiveness of the barrier? Yes, temporary wells will be installed.
10. Can you provide further details on how you will verify the effectiveness of the

mitigation barrier to ensure that free product does not pass the barrier? Regular gauging of the temporary wells on a weekly or biweekly basis will be performed as well as visual observations of the exposed soil bank on the Play Pals property.

11. How will you ensure that the free product does not go around the barrier and stays confined to the Broad River Road Amoco property? This question has already been answered above. Barriers will be installed and extended farther than described if necessary based on field observations of soil conditions.
12. Will EnviroRisk be conducting a utility survey prior to the installation of the hydraulic barrier? Yes. Note that the underground gas line will require temporary capping and removal on the Play Pals property.
13. Will EnviroRisk be able to adequately conduct weekly inspections as proposed for the duration of the contract? Yes, it is anticipated that the weekly inspection schedule will be modified after the 90-day timeframe. Weekly inspections may also be adjusted based on product accumulation.
14. Are you aware the site is an active gas station? Yes Are you aware of the number of wells currently installed on the property? Yes Can you please provide a map showing how you plan to install 50 additional wells on the property? Yes, see attached. Can you please provide a schematic of a large gravel envelope injection/extraction well? No, we don't have a schematic. The injection/extraction wells will be constructed using a smaller auger rig fitted with 6.26 ID augers or slightly larger to produce a 10" to 12" borehole or larger 2' to 3' borings drilled using a bucket auger rig. The wells will be constructed similarly to typical monitoring wells with manhole completions and boring logs and 1903s provided. We have discussed this with the property owner who is agreeable to this approach.
15. What is the planned method of drilling the injection/envelope wells at the site? See above
16. Can you please provide additional detail on the plant-based surfactant and low-concentration oxidant mixture? A surfactant containing D-limonene or similar surfactant that we have used previously will be utilized such as sodium laurel sulfate. The surfactant will be selected after examining the product type since a review of file information and discussion with site owners indicates that different viscosity products may be present. The surfactants role is only to emulsify the product by reducing the interstitial pressure in the soil pores that holds the product in place. Oxidants that may be employed would include calcium peroxide, sodium percarbonate, or very dilute and stabilized mixtures of hydrogen peroxide with a catalyst. Some of these oxidants are useful in combination with surfactants.

17. EnviroRisk listed PeroxyChem or "other". Can you provide clarification on "other" that would be utilized if PeroxyChem is not? Terra Systems who purchases sodium and potassium persulfate for United Initiators (the manufacturer).
18. Can you please provide more detail regarding the short-term extraction events planned as part of the FPP Removal? Depending on the extent of free product recharge, extraction will be performed using a typical vacuum truck or pump truck after injecting surfactant or oxidants. Extraction may be performed during injection if significant recovery is observed but based on the low permeability or preferential permeability anticipated, extraction will likely occur a day or two following injection to allow more time for product emulsification. EnviroRisk is currently utilizing this treatment method successfully on several PFP sites.
19. Please explain how EnviroRisk will conduct the injection and extraction events on the subject property without disrupting the ongoing business operations. The work will be performed in a manner that doesn't result in blocking all of the dispenser pumps. The owner is agreeable with the scope of work and understands that the work will disturb site operations to some extent.
20. Please indicate whether EnviroRisk will be submitting one CAP or three separate CAPs for the proposed work? We had planned to submit two CAPs, one for the first two phases and an ECAP for the work on Play Pals.
21. Is EnviroRisk aware of the playground equipment bordering the excavation area? Yes, it doesn't appear that DHECs planned excavation area will result in the removal of the equipment.
22. Does EnviroRisk understand that some of the excavation area is concrete and will need to be replaced once excavation is completed? Yes Has that cost been incorporated into the submitted bid? Yes
23. Is EnviroRisk aware that no additional costs will be approved from the SUPERB account for any additional remedial work that would be necessary to achieve the terms and conditions of the solicitation? Yes Does EnviroRisk understand that additional costs beyond what is approved from the SUPERB account would be a matter between EnviroRisk and the responsible parties? Yes.

EnviroRisk has received tentative approval from the site owner, Mr. Desai to perform this bid scope. Mr. Cecchini has repeatedly indicated that he is unwilling to accept responsibility for any site rehabilitation. If this bid is awarded to us,

EnviroRisk would appreciate any assistance DHEC can offer regarding the responsible parties and gaining off-site access. In addition, EnviroRisk would welcome any site observations from field personnel involved in prior emergency response actions to ensure that the free product barrier and other corrective action is implemented in the best manner to achieve goals quickly.

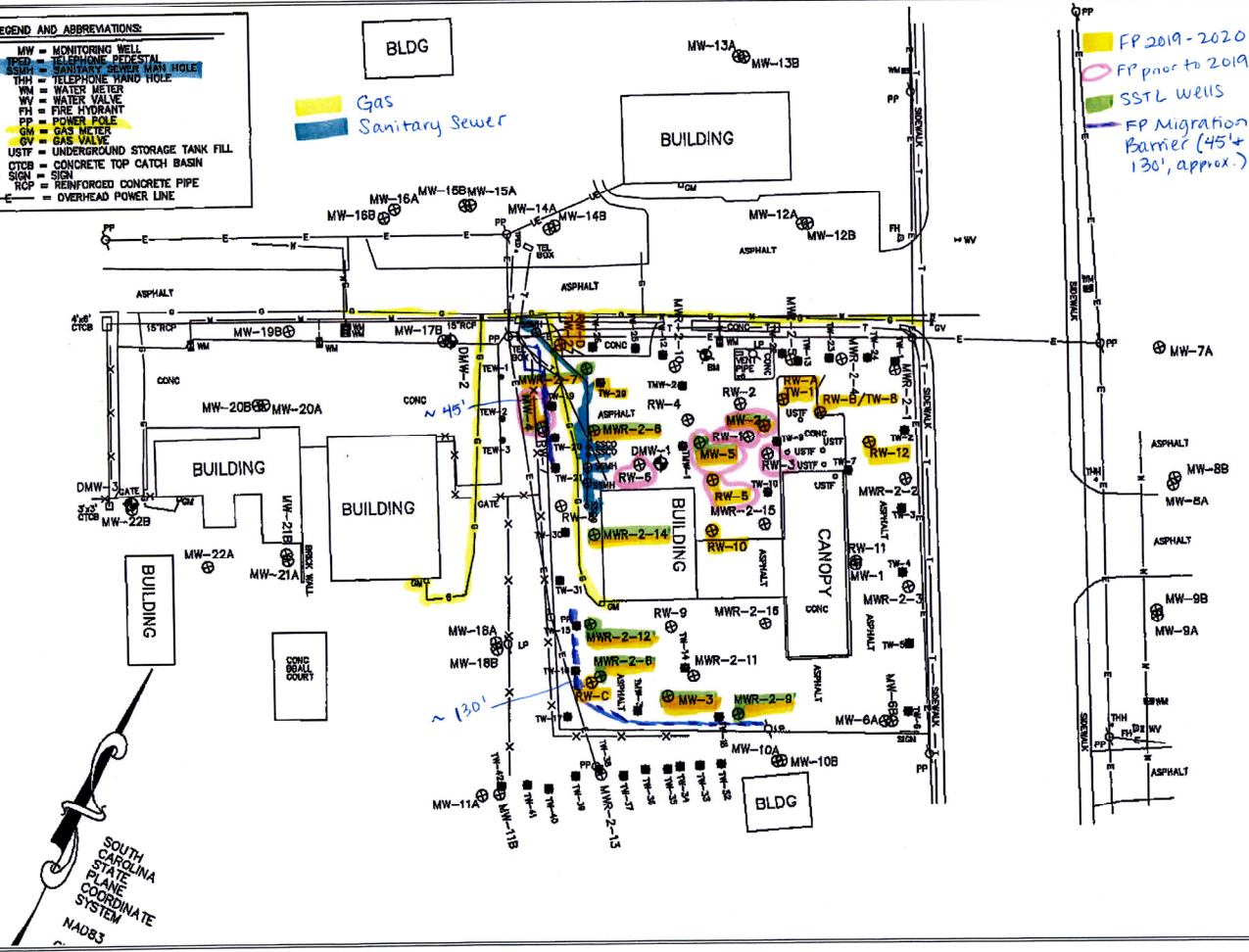
LEGEND AND ABBREVIATIONS:

MW	= MONITORING WELL
TPED	= TELEPHONE PEDICESTAL
SMH	= SANITARY SEWER MAN HOLE
THH	= TELEPHONE HAND HOLE
WM	= WATER METER
WV	= WATER VALVE
FH	= FIRE HYDRANT
PP	= POWER POLE
GM	= GAS METER
GV	= GAS VALVE
USTF	= UNDERGROUND STORAGE TANK FILL
CTCB	= CONCRETE TOP CATCH BASIN
SIGN	= SIGN
RCP	= REINFORCED CONCRETE PIPE
OP	= OVERHEAD POWER LINE

BLDG

Gas
Sanitary Sewer

FP 2019-2020
FP prior to 2019
SSTL wells
FP Migration Barrier (45'+ 130', approx.)



ENVIORISK
CONSULTANTS, INC.

BROAD RIVER AMOCO, UST PERMIT 11946
4335 BROAD RIVER ROAD
COLUMBIA, RICHLAND COUNTY, SOUTH CAROLINA

Free Product Migration Barrier Map **DRAFT**

FIGURE NO

1

LEGEND AND ABBREVIATIONS:

○	MW	MONITORING WELL
○	TPED	TELEPHONE PEDESTAL
○	SSMH	SANITARY SEWER MAIN HOLE
○	THH	TELEPHONE HAND HOLE
○	WM	WATER METER
○	WV	WATER VALVE
○	FH	FIRE HYDRANT
○	PP	POWER POLE
○	GM	GAS METER
○	GV	GAS VALVE
○	USTF	UNDERGROUND STORAGE TANK FILL
○	CTCB	CONCRETE TOP CATCH BASIN
○	SGN	SIGN
○	RCP	REINFORCED CONCRETE PIPE
○	E	OVERHEAD POWER LINE

● Proposed EWs
(49 total)



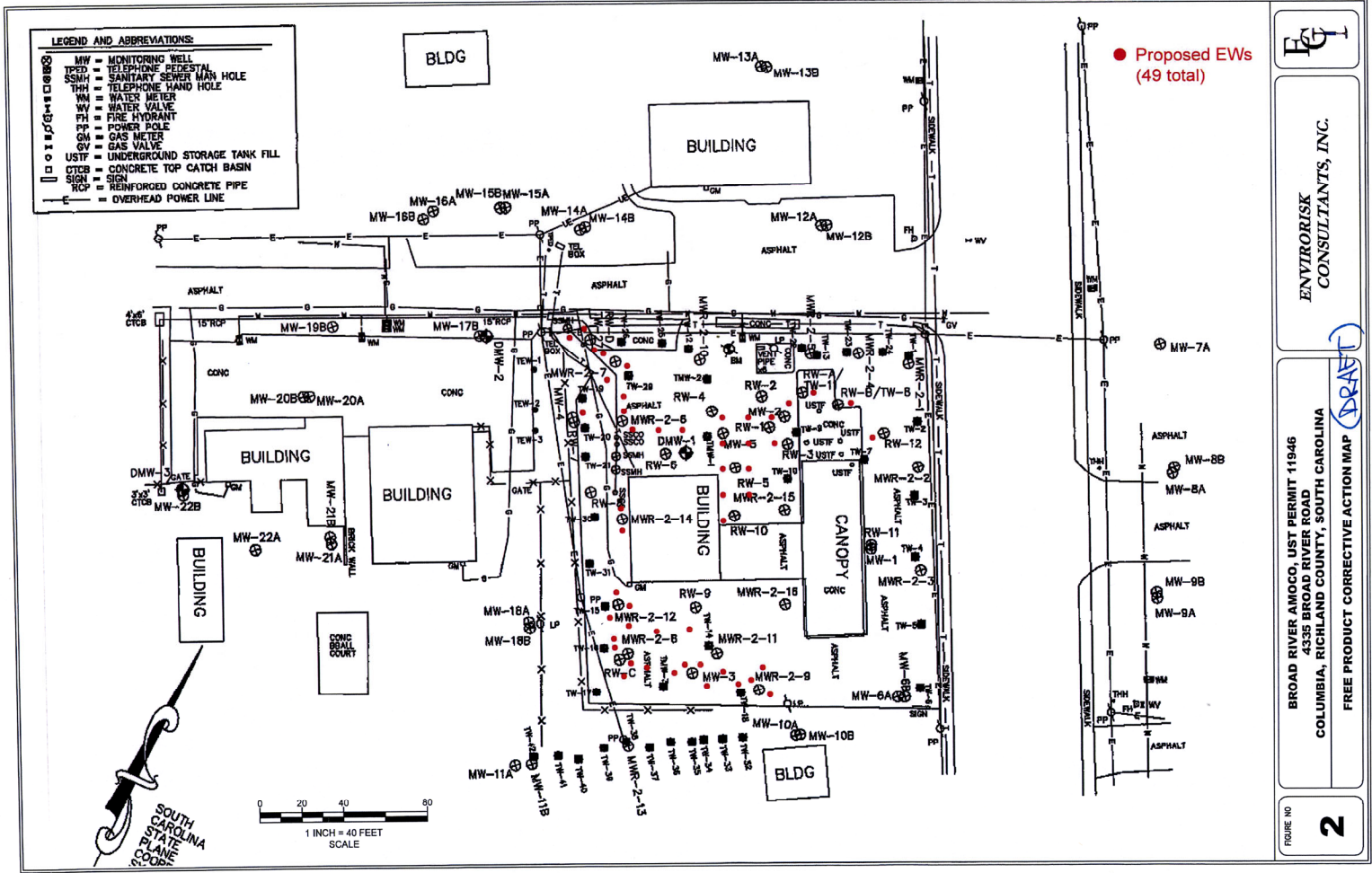
ENVIRISK
CONSULTANTS, INC.

DRAFT

BROAD RIVER AMOCO, UST PERMIT 11946
4335 BROAD RIVER ROAD
COLUMBIA, RICHLAND COUNTY, SOUTH CAROLINA
FREE PRODUCT CORRECTIVE ACTION MAP

FIGURE NO

2



SOUTH CAROLINA
STATE PLANE
COORDINATE



PAUL DESAI
BROAD RIVER C STORE LLC
41 CROMWELL CT
IRMO SC 29063

OCT 14 2020



Re: **Corrective Action Solicitation Response Summary**
Broad River Amoco, 4335 Broad River Rd., Columbia, SC
UST Permit #11946
Release #2 reported November 16, 2018
Richland County
Corrective Action Solicitation Responses received September 18, 2020

Dear Mr. Desai:

The Underground Storage Tank Management Division (UST Division) of the South Carolina Department of Health and Environmental Control (DHEC) has reviewed the Corrective Action Solicitation responses resulting from the Technical Specifications Package. The Corrective Action Cost submitted by EnviroRisk was for the amount of \$822,500.

The Corrective Action Cost is defined as the total amount established through the procurement process to complete the scope of work/specifications detailed in the solicitation unless otherwise modified pursuant to the terms of this solicitation. The maximum allowable Corrective Action Cost DHEC can establish is dependent on the remaining State Underground Petroleum Environmental Response Bank (SUPERB) account balance for the individual release, less costs required for verification of performance milestones. Corrective action costs above the maximum amount allowable, as established in S.C. Code Ann. § 44-2-40 (2018), are the responsibility of the owner/operator. The verification costs for this release will be **\$10,000**. The Corrective Action Cost will be established in the amount of **\$411,250**. This amount is one-half of the amount submitted by EnviroRisk for the corrective action of both releases. To date, \$73,125.73 has been spent from SUPERB for this release.

Copies of the corrective action solicitation responses are enclosed for your review. A "Corrective Action Solicitation Response Summary" form is also enclosed for you to specify your choice of contractor. Any Class I Certified Underground Storage Tank Contractor may perform the necessary activities at the established price. Please return the Corrective Action Solicitation Response Summary form in order for the necessary financial approval to be made. **The Corrective Action Solicitation Response Summary Form should be returned to the UST Division within 30 days from the date of this letter.**

You may consider entering a written contract with your selected contractor following completion of the solicitation process to address any costs that exceed reasonable or SUPERB-allowable costs and not approved by DHEC for reimbursement from the SUPERB Account. DHEC would not be a party to the contract; however, we will monitor and ensure you are making progress with corrective action activities. If the selected contractor is not able to complete the required activities, you will be required to find another certified contractor to complete the required activities. Except for the limitations specified in the solicitation, the reasonable (or SUPERB-allowable) cost is the maximum amount the SUPERB Account will pay for this active corrective action.