



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 4**


Science and Ecosystem Support Division  
Enforcement and Investigations Branch  
980 College Station Road  
Athens, Georgia 30605-2720


April 11, 2016

**4SESD-EIB**

**MEMORANDUM**

**SUBJECT:** Grenada Manufacturing Vapor Intrusion Sampling Investigation  
(a.k.a. Rockwell International Wheel and Trim)  
Grenada, Mississippi  
SESD Project # 16-0323

**FROM:** Tim Slagle  
Superfund and Air Section 

**THRU:** Laura Ackerman, Chief  
Superfund and Air Section 


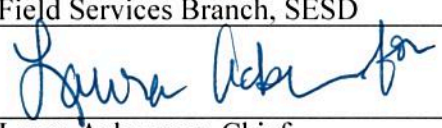
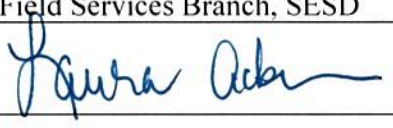
**TO:** Brian Bastek, RCRA Project Manager  
RCRA Corrective Action and Permitting Section  
Atlanta Federal Center  
61 Forsyth Street, SW  
Atlanta, Georgia 30303-8960

Attached is a copy of the Quality Assurance Project Plan (QAPP) for the Grenada Manufacturing Vapor Intrusion Sampling Investigation that will be conducted in Grenada, Mississippi, May 2-6, 2016. If you have any questions concerning the QAPP for the sampling investigation, please call me at (706) 355-8741 or e-mail me at [Slagle.Tim@epa.gov](mailto:Slagle.Tim@epa.gov).



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**U.S. Environmental Protection Agency**  
 Science and Ecosystem Support Division  
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 SESD Category 2 QAPP

<b>SECTION A: Project Planning Elements</b>		
<b>A1. Title (Project Name):</b>	Grenada Manufacturing Vapor Intrusion Sampling Investigation (a.k.a. Rockwell International Wheel and Trim)	
Project Location:	Grenada Manufacturing Facility Hwy 332 Grenada, Grenada County, Mississippi	
Project Requestor and Organization:	Brian Bastek, RCRA Project Manager RCRA Division Atlanta Federal Center 61 Forsyth Street S.W. Atlanta, GA 30303	
Project Leader's Name, Position and Organization:	Tim Slagle, Regional Expert Superfund and Air Section, Field Services Branch, SESD	
Project Leader's Signature:		Date: 4/11/2016
Technical Reviewer's Name and Position:	Landon Pruitt, Environmental Engineer Superfund and Air Section, Field Services Branch, SESD	
Technical Reviewer's Signature:		Date: 04/11/16
Section Chief's Name and Position:	Laura Ackerman, Chief Superfund and Air Section, Field Services Branch, SESD	
Section Chief's Signature:		Date: 04/11/16
<b>A2. Table of Contents</b>	N/A	
<b>A3. Distribution List</b>	Brian Bastek, RCRA Project Manager Meredith Anderson, Chief, RCRA Corrective Action and Permitting Section	
<b>A4. Project Personnel</b>	<b>Organization</b>	<b>Responsibilities</b>
Tim Slagle	SESD, FSB, Superfund and Air Section	Project Leader / Sampler
Landon Pruitt	SESD, FSB, Superfund and Air Section	Sampler / Safety Officer / Scribe
<b>Comments:</b> Personnel that have not been deemed competent and/or proficient under Science and Ecosystem Support Division's (SESD) ISO-17025 accreditation in the areas where they will be working will be teamed with SESD personnel who are competent and proficient in conducting these air sampling and field measurement activities.		



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**A5. Problem Definition (Investigation Objectives and Background Information):**

**Site Background:**

The manufacturing facility was constructed by Lyon in 1961 and sold to Rockwell International Corporation (Rockwell) in 1966. Rockwell's Automotive Division operated a wheel cover manufacturing facility at the site from 1966 to 1985 when the plant and property were sold to Textron Automotive Company (Textron), formerly Randall Textron. The Automotive Division was spun off from Rockwell in 1997 to form Meritor. In 1999, Textron sold the operations and property to Grenada Manufacturing, LLC (Grenada Manufacturing), who continued to operate the wheel cover plant until 2008 when portions of the plant and property were leased to ICE Industries, Inc. (ICE). Throughout most of the site history, the facility was used to manufacture automobile wheel covers. Following ICE's lease of the premises, the facility was converted to a stamping plant, providing stamp-formed parts for various industries.

Since 1989 EPA has been involved with the site and there have been a number of investigations and sampling events to discover and delineate a trichloroethene (TCE) contaminated groundwater plume and possible vapor intrusion and other air quality issues. There are several areas of concern that are potential sources for the contamination including several lagoons, an above storage tank (TCE), a below ground storage tank (toluene), an on-site landfill, and a waste water treatment plant.

**A6. Project Description:**

**Task Description:**

There is a potential health risk posed to the occupants of the Eastern Heights neighborhood just north of the facility (see Figure 1), possibly coming from one of the areas of concern. EPA Region 4 SESD personnel will collect indoor air and sub-slab soil gas samples from 18 residences located on the southern side of the neighborhood. In addition, SESD will collect ambient (outside) air samples from four locations around the perimeter of the Eastern Heights study area. The samples will be analyzed by the Analytical Support Branch (ASB) at SESD for the 18 analytes represented in Table 3 as requested by Brian Bastek, RCRA Project Manager. The data from this investigation will be used in conjunction with data from other sampling events to determine if contamination in the groundwater is posing a potential risk to the occupants of the Eastern Heights neighborhood.

Applicable regulatory information, actions levels, etc.	The data generated by this study will be evaluated by EPA Region 4. The data will be compared to site specific screening levels calculated by the USEPA VISL Calculator Version 3.4 from EPA Regional Screening Levels (RSL) from June 2015. These values are represented in Table 3.
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Field Study Date:	The week of May 1, 2016
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Projected Lab Completion Date:	June 13, 2016
Final Report Completion Date:	SESD field report will be provided approximately 30 days after receipt of all analytical data. Results that need immediate attention or are considered immediate action response levels will be reported to Brian Bastek immediately as “provisional data” under SESD <i>Operating Procedure for Report Preparation and Distribution</i> , SESDPROC-003-R5.

<p><b>A7. Quality Objectives and Criteria</b></p>
<p><b>Qualitative Objectives</b>          A sampling design has been developed (section B1) that will accomplish the objective that is identified in sections A5 and A6. Based on the background information that was received, the sampling design adequately addresses study boundaries, number of samples, timing of sampling event, length of sampling event, and monitored parameters. If at any time during the project it becomes necessary to adjust the sampling design, or if technical issues require modification to the project, then those adjustments or modifications will be discussed with the project manager and noted in the field logbook and described in the final report.</p> <p><b>Quantitative Objectives and Criteria for Measurement Data</b></p> <p><b>Precision and Accuracy</b>          These are quantitative measures that characterize the amount of variability and bias inherent in a data set.</p> <p>Two co-located (duplicate) indoor air samples and one co-located (duplicate) ambient air sample will be collected to assess the precision of the 24-hour monitoring method. The duplicate and primary samples will be collected at the same time using a separate, identical canister and flow controller with their inlets immediately adjacent to one another.</p> <p>Two split samples will be collected to assess the precision of the sub-slab soil gas monitoring method. The split samples will be collected at the same time using a separate, identical VOC sampler connected to a common sample inlet tube.</p> <p><b>Completeness</b>          The completeness of data recovery of this study is expected to be 100%. A statement will be made in the final report concerning the completeness of all monitoring activities.</p> <p><b>Comparability</b>          This refers to the ability to compare data from different sources with a degree of confidence. For this study, standard sampling and analytical methods are being utilized to ensure data comparability.</p>



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**A8. Special Training/Certifications**

- OSHA 40hr Personnel Protection Safety
- 8-Hr safety Refresher
- CPR/First Aid
- EPA Credentials under directive 3500.1

**A9. Documents and Records**

The final report will be prepared in accordance with the requirements of the *SESD Operating Procedure for Report Preparation and Distribution*, SESDPROC-003-R5. All field observations, measurements and sampling activities supporting the field investigation will be recorded and documented according to the *SESD Operating Procedure for Logbooks*, SESDPROC-010-R5. Project files will be maintained according to the *SESD Operating Procedure for Control of Records*, SESDPROC-002-R6.

**SECTION B: Data Generation and Acquisition**

**B1. Sampling Design**

The sampling design was chosen based on the data quality objectives of the study.

Media	Number of Samples	Analyses
Sub-Slab Soil Gas	20 (including QC)	VOCs (see Table 3)
Indoor Air	20 (including QC)	VOCs (see Table 3)
Ambient Air	5 (including QC)	VOCs (see Table 3)
Trip Blank Air	1	VOCs(see Table 3)

**B2. Sampling Methods, General Procedures**

The following SESD field measurement and sampling procedures will be followed during this field study, as applicable:

- SESDPROC-303-R5 Ambient Air Sampling
- SESDPROC-307-R3 Soil Gas Sampling
- SESDPROC-110-R4 Global Positioning System
- SESDPROC-005-R2 Sample and Evidence Management
- SESDPROC-010-R5 Log Books
- SESDPROC-205-R3 Field Equipment Cleaning and Decontamination



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**SAMPLING PROCEDURE:**

SESD will collect 18 indoor air, 18 soil gas and 4 ambient air samples (Table 1). In addition, six Quality Assurance/Quality Control (QA/QC) samples (Table 2) will also be collected. The total number of samples from all 4 matrices including QA/QC samples will be approximately 46. All sampling and QA/QC procedures for field activities will be conducted in accordance with the EPA Region 4 SESD Field Branches Quality Systems and Technical Procedures. Sample custody will be maintained by SESD for transport to the SESD laboratory for analysis.

Analysis of the air samples will be conducted by the SESD laboratory in accordance with *EPA Compendium Method TO-15, Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*, January 1999. Laboratory QA/QC procedures will be conducted in accordance with the guidelines incorporated in the analytical method.

The number of sampling locations are to be based on access permission and discussion between property occupants, the RCRA Project Manager, and SESD sampling personnel. Access to the properties to be sampled will be obtained by the RCRA Project Manager.

SESD will establish a temporary meteorological station that will collect wind speed and direction data for the duration of the investigation. The site will be located in an open field south of the Eastern Heights neighborhood.

Figure 1 and Table 1 indicate where the sampling will be conducted.

**INDOOR AIR AND AMBIENT AIR SAMPLING**

SESD will collect 24-hour indoor air and ambient air samples using 6 liter passivated sampling canisters. The indoor air samples will be collected in the area of the home where the residents spend most of their time. This is usually the living or dining room. In addition, SESD will collect ambient air samples from four locations (north, south, east and west) around the perimeter of the Eastern Heights study area. The ambient air samples will be collected outside the structure, during the indoor air sampling interval, to assess the background concentrations of VOCs contained in the ambient air that may be infiltrating the indoor air. No designated background sample will be collected due to RCRA Project Manager request.

**SUB-SLAB SOIL GAS SAMPLING**

SESD will be working cooperatively with the EPA Environmental Response Team (ERT) to collect sub-slab soil gas samples from 18 residences. ERT operates EPA's Trace atmospheric Gas Analyzer (TAGA) Mobile Laboratory. The TAGA lab contains a gas chromatograph/mass spectrometer (GC/MS) that is capable of providing real-time VOC results while on-site. ERT will install permanent sampling ports in the floor of each residence, as close to the center of the structure as possible and collect samples using Tedlar® bags. The samples will be analyzed in the TAGA lab. The installation of the sampling ports and



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the on-site collection and analysis of samples conducted by the TAGA team will be addressed in a separate Quality Assurance Project Plan that will be prepared by David Mickunas, TAGA Laboratories Coordinator.

ERT will use an electric drill to bore a hole thru the floor slab to install a stainless steel sampling port. A short length of ¼ inch diameter Teflon® tubing will be attached to the port and a soil gas sample will be collected into a Tedlar® bag for on-site sample analysis by EPA's TAGA Mobile Laboratory. SESD will then connect the sampling tube to a flow device attached to a 6-liter passivated sampling canister. The canister will be filled over a period of approximately 30-minutes depending on soil conditions. The canister will be returned to SESD for analysis of the analytes listed in Table 3. SESD is collecting and analyzing the canisters to provide a lower detection limit than what can be obtained by the TAGA's GC/MS.

### SAMPLE IDENTIFICATION PROTOCOLS

SESD will use the following Station ID naming convention for the sampling stations (Figure 1, Tables 1 and 2) used for this investigation:

GM, for Grenada Manufacturing, will be followed by a numerical Station ID. For the first sampling station, the entire Station ID would read GM01. The Sample ID will begin with the Station ID and be followed by matrix identifier:

- AA for Ambient Air
- IA for Indoor Air
- SS for Sub-Slab Soil Gas
- TA for Trip Blank Air

The matrix identifier will be followed by the numerical month-year of the sampling event. For example, an ambient air sample station GM01, sampled in May 2016 would have a Sample ID as follows: GM01AA0516.

Soil Gas split samples will be identified with an "S" following the sampling station ID. Duplicate air samples will be identified with a "D" following the sampling station ID. For example, a co-located ambient air duplicate sample collected at sample station GM01, sampled in May 2016 would have a Sample ID as follows: GM01DAA0516.

### **B3. Sampling Handling and Custody**

All samples will be handled and custody maintained according to the following:

*SESD Analytical Support Branch Laboratory Operations and Quality Assurance Manual,*  
April 2015 Version.

*SESD Operating Procedure for Sample and Evidence Management, SESDPROC-005-R2.*



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*SESD Operating Procedure for Packing, Labeling and Shipping of Environmental and Waste Samples, SESDPROC-209-R3.*

**B4. Analytical Methods**

**SESD:**

The air samples will be analyzed for the compounds listed in Table 3 using *EPA Compendium Method TO-15, Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*, January 1999. The EPA Method TO-15 VOC Target Analytes are also listed along with Minimum Detection Limits (MDLs) in Table 3.

<b>CLP:</b>	N/A
<b>Other:</b>	N/A

**B5. Quality Control**

<b>Field:</b>	<p>Field quality control measure will be in accordance with the <i>SESD Operating Procedure for Field Sampling Quality Control</i>, SESD PROC-011-R4.</p> <p>The number and type of field quality control samples proposed for this investigation are as follows:</p> <p>One air canister trip blank will be transported to the field, but not exposed, to check the possibility of contamination of the samples during transport and storage.</p> <p>One co-located ambient air duplicate sample will be collected. Two co-located indoor air duplicate samples will be collected.</p> <p>Two sub-slab soil gas split samples will be collected.</p>
<b>Laboratory:</b>	<p>Specific laboratory quality control measures are specified in the <i>SESD Analytical Support Branch Laboratory Operations and Quality Assurance Manual</i>, April 2015.</p>

**B6. Instrument/Equipment Testing, Inspection and Maintenance**

All field measurement instruments and equipment will be maintained in accordance with the *SESD Operating Procedure for Equipment Inventory and Management*, SESDPROC-108-R5.

**B7. Instrument/Equipment Calibration and Frequency**

All field measurement instruments and equipment are calibrated according to the *SESD Operating Procedure for Equipment Inventory and Management*, SESDPROC-108-R5 and according to specific procedures included within the defined operating procedures for each instrument (see specific field measurement procedures in Section B2 of this QAPP).





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**B8. Inspection/Acceptance for Supplies and Consumables**

All critical supplies and consumables for this field investigation are inspected and maintained in accordance with the following procedures:

*SESD Operating Procedure for Purchasing of Services and Supplies, SESDPROC-015-R5.*  
*SESD Operating Procedure for Equipment Inventory and Management, SESDPROC-108-R5.*  
*SESD Operating Procedure for Field Sampling Quality Control, SESDPROC-011-R4.*

The SESD Field Quality Manager and the Branch Quality Assurance Officers are responsible for ensuring that these requirements are met.

**B9. Non-direct Measurements:**

N/A

**B10. Data Management**

The field project leader will be responsible for ensuring that all requirements for data management are met. All data generated for this field investigation, whether hand-recorded or obtained using an electronic data logger will be recorded, stored and managed according to the following procedures:

*SESD Operating Procedure for Control of Records, SESDPROC-002-R6.*  
*SESD Operating Procedures for Logbooks, SESDPROC-010-R5.*

**SECTION C: Assessment/Oversight**

**C1. Assessments and Response Actions**

Assessments will be conducted during the field investigation according to the *SESD Operating Procedure for Project Planning, SESDPROC-016-R5*, to ensure the QAPP is being implemented as approved. The Project Leader is responsible for all corrective actions while in the field.

**C2. Reports to Management**

The Project Leader will be responsible for notifying the Project Manager (Requestor) and appropriate SESD management if any circumstances arise during the field investigation that may adversely impact the quality of the data collected.



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## SECTION D: Data Validation and Usability

### **D1. Data Review, Verification, and Validation**

All analytical data will be provided by the SESD Analytical Support Branch and reviewed, verified and validated in accordance with the *SESD Analytical Support Branch Laboratory Operations and Quality Assurance Manual*, April 2015.

All data derived from SESD field measurements will be reviewed, verified, and validated in accordance with the *SESD Operating Procedure for Report Preparation and Distribution*, SESDPROC-003-R5.

### **D2. Verification and Validation Methods**

All analytical data will be provided by the SESD Analytical Support Branch and reviewed, verified and validated in accordance with the *SESD Analytical Support Branch Laboratory Operations and Quality Assurance Manual*, April 2015.

All data derived from SESD field measurements will be reviewed, verified, and validated in accordance with the *SESD Operating Procedure for Report Preparation and Distribution*, SESDPROC-003-R5.

### **D3. Reconciliation with User Requirements**

The usability of all data derived from SESD field sampling and measurements conducted during this field investigation will be evaluated in accordance with the *SESD Operating Procedure for Report Preparation and Distribution*, SESDPROC-003-R5.

**\*\*Footnotes:** This Quality Assurance Project Plan (QAPP) has been prepared and approved according to the EPA *Requirements for Quality Assurance Project Plans (EPA QA/R5 EPA/240/B-01/003)*, U.S. Environmental Protection Agency, Office of Environmental Information, Washington, DC, March 2001(USEPA, 2001). This document will be used to ensure that the environmental data collected for this project are of the type and quality for the intended purposes. **This document is for SESD use only.**



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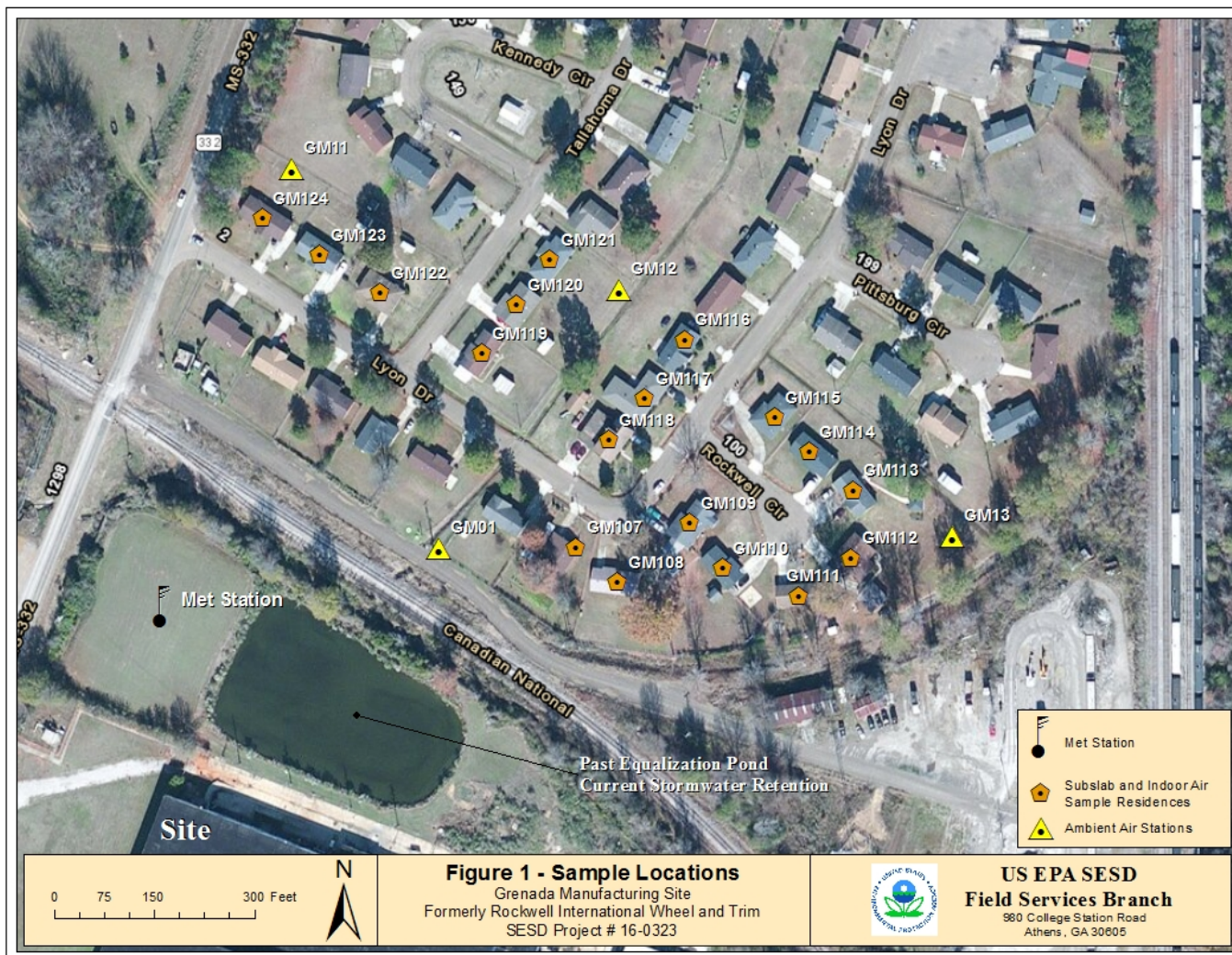
**REFERENCES:**

1. Arcadis, DRAFT Report. *Summary of Residential Air Sapling Analytical Results, Grenada Manufacturing Facility, Grenada, MS.* September 2015.
2. EPA Region 4 SEDS ASB. *SESD Analytical Support Branch Laboratory Operations and Quality Assurance Manual*, April 2015.
3. USEPA. *EPA Compendium Method TO-15, Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*, January 1999.
4. EPA Region 4 SEDS. *Field Branches Quality System and Technical Procedures (Latest Versions)*. <http://www.epa.gov/quality/quality-system-and-technical-procedures-sesd-field-branches/>. Webpage last updated January 13, 2016.
5. USEPA. *Quality Assurance Project Plan for Grenada Manufacturing Ambient Air Sampling Event*. January, 2016
6. USEPA. *Quality Assurance Project Plan for Grenada Manufacturing Ambient Air Sampling Event*. February, 2016



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Redaction(s)  
subject to Exemption 6 (Personal  
Privacy Information)

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**TABLE 1. Sample Station Information**

Station ID	Sample ID	Location/Address	Latitude*	Longitude*	Matrix
GM01	GM01AA0516	South ambient air location	33.80506895	-89.80015824	Ambient Air
GM11	GM11AA0516	West ambient air location	33.80636768	-89.80076134	
GM12	GM12AA0516	North ambient air location	33.80595308	-89.79941396	
GM13	GM13AA0516	East ambient air location	33.80511017	-89.79804096	
GM107	GM107SS0516	██████████	33.80507488	-89.79958934	Subslab Soil Gas
	GM107IA0516				Indoor Air
GM108	GM108SS0516	██████████	33.80495638	-89.79941821	Subslab Soil Gas
	GM108IA0516				Indoor Air
GM109	GM109SS0516	██████████	33.80515783	-89.79911873	Subslab Soil Gas
	GM109IA0516				Indoor Air
GM110	GM110SS0516	██████████	33.80500378	-89.79898326	Subslab Soil Gas
	GM110IA0516				Indoor Air
GM111	GM111SS0516	██████████	33.80490898	-89.79866952	Subslab Soil Gas
	GM111IA0516				Indoor Air
GM112	GM112SS0516	██████████	33.80503933	-89.79845561	Subslab Soil Gas
	GM112IA0516				Indoor Air
GM113	GM113SS0516	██████████	33.8052704	-89.79844848	Subslab Soil Gas
	GM113IA0516				Indoor Air
GM114	GM114SS0516	██████████	33.80540075	-89.79862674	Subslab Soil Gas
	GM114IA0516				Indoor Air
GM115	GM115SS0516	██████████	33.80551924	-89.79876935	Subslab Soil Gas
	GM115IA0516				Indoor Air
GM116	GM116IA0516	██████████	33.80578586	-89.79914013	Subslab Soil Gas
	GM116SS0516				Indoor Air
GM117	GM117SS0516	██████████	33.80558442	-89.79930412	Subslab Soil Gas
	GM117IA0516				Indoor Air
GM118	GM118SS0516	██████████	33.80544222	-89.79945386	Subslab Soil Gas
	GM118IA0516				Indoor Air
GM119	GM119SS0516	██████████	33.80573846	-89.79997438	Subslab Soil Gas
	GM119IA0516				Indoor Air
GM120	GM1020SS0516	██████████	33.80590436	-89.79983177	Subslab Soil Gas
	GM120IA0516				Indoor Air
GM121	GM121SS0516	██████████	33.8060584	-89.7996963	Subslab Soil Gas
	GM121IA0516				Indoor Air
GM122	GM122SS0516	██████████	33.80594583	-89.80039507	Subslab Soil Gas
	GM122IA0516				Indoor Air
GM123	GM123SS0516	██████████	33.80607618	-89.80064464	Subslab Soil Gas
	GM123IA0516				Indoor Air
GM124	GM124SS0516	██████████	33.8062006	-89.80087994	Subslab Soil Gas
	GM124IA0516				Indoor Air



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**TABLE 2. QA/QC Sample Information**

Station ID	Sample ID	Location/Address	Latitude	Longitude	Matrix
xxxxx	xxxxxAAD0516	duplicate sample locations to be determined in the field	-	-	Ambient Air
xxxxx	xxxxxIAD0516		-	-	Indoor Air
xxxxx	xxxxxIAD0516		-	-	Indoor Air
xxxxx	xxxxxSSD0516		-	-	Subslab Soil Gas
xxxxx	xxxxxSSD0516		-	-	Subslab Soil Gas
#R4DART#	GMTBA0116	-	-	-	Trip Blank Air

\* Names and locations subject to change if more knowledge of site becomes available

**TABLE 3. Requested Analytes** (Screening Levels were calculated in referenced [see page 9] *Draft* Report from Arcadis)

Constituent	Calculated Screening Levels for Indoor Air / Ambient Air ( $\mu\text{g}/\text{m}^3$ ) <sup>†</sup>	SESD ASB Method TO-15 Detection Limits, MDLs ( $\mu\text{g}/\text{m}^3$ )
Benzene	0.36	0.067
Chloroform	0.12	0.10
Dichloroethane, 1,2-	0.11	0.11
Dichloroethene, 1,1-	210	0.078
Dichloroethene, cis-1,2-	NL	0.083
Dichloroethene, trans-1,2-	NL	0.087
Ethylbenzene	1.1	0.092
Methylene chloride	100	0.077
Tetrachloroethene	11	0.14
Toluene	5200	0.080
Trichloroethane, 1,1,2-	0.18	0.12
Trichloroethene	0.48	0.11
Trimethylbenzene, 1,2,4-	7.3	0.11
Vinyl chloride	0.17	0.053
m-Xylenes	100	0.19
o-Xylenes	100	0.093
p-Xylenes	100	0.19
Xylenes	100	n/a

<sup>†</sup> USEPA VISL Calculator Version 3.4, June 2015 RSLs used by Arcadis to calculate target residential screening levels for indoor air/ambient air, based on the lower of either a target cancer risk of 1E-06 or a target hazard index of 1. Screening levels assumes 26 year exposure duration, 350 days per year, 24 hours per day.