



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4**

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

August 23, 2016

4SESD-EIB

MEMORANDUM

SUBJECT: Grenada Manufacturing Vapor Intrusion Sampling Investigation
(a.k.a. Rockwell International Wheel and Trim)
Grenada, Mississippi
SESD Project # 16-0574

FROM: Landon Pruitt
Superfund and Air Section

A handwritten signature in black ink, appearing to read "Landon Pruitt".

THRU: Laura Ackerman, Chief
Superfund and Air Section

A handwritten signature in blue ink, appearing to read "Laura Ackerman".


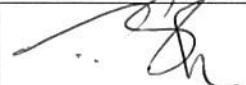
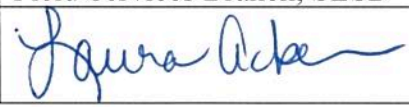
TO: Brian Bastek, Project Manager
RCR Division
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, Georgia 30303-8960

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 during the week of September 19, 2016. If you have any questions concerning the QAPP for the sampling investigation, please call me at (706) 355-8620 or e-mail me at pruitt.landon@epa.gov.



Quality Assurance Project Plan
U.S. Environmental Protection Agency
 Science and Ecosystem Support Division
 980 College Station Road
 Athens, GA 30605

SESD Project ID No.: 16-0547
 SESD Category 2 QAPP

SECTION A: Project Planning Elements		
A1. Title (Project Name):	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, Project Manager RCRD Atlanta Federal Center 61 Forsyth Street S.W. Atlanta, GA 30303	
Project Leader's Name, Position and Organization:	Landon Pruitt, Environmental Engineer Superfund and Air Section, Field Services Branch, SESD	
Project Leader's Signature:		Date: 8/23/2016
Technical Reviewer's Name and Position:	Tim Slagle, Regional Expert Superfund and Air Section, Field Services Branch, SESD	
Technical Reviewer's Signature:		Date: 8/23/2016
Section Chief's Name and Position:	Laura Ackerman, Chief Superfund and Air Section, Field Services Branch, SESD	
Section Chief's Signature:		Date: 08/24/16
A2. Table of Contents	N/A	
A3. Distribution List	Brian Bastek, RCRD Project Manager Meredith Anderson, Chief, RCRD Corrective Action and Permitting Section	
A4. Project Personnel	Organization	Responsibilities
Landon Pruitt	SESD, FSB, Superfund and Air Section	Project Leader / Sampler
TBD	ESAT/ILS	Sampler / Safety Officer / Scribe
Comments: 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.		



Quality Assurance Project Plan
U.S. Environmental Protection Agency
 Science and Ecosystem Support Division
 980 College Station Road
 Athens, GA 30605

SESD Project ID No.: 16-0547
 SESD Category 2 QAPP

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 1 of the residences; (b) (6) located on the southern side of the neighborhood. Previous sampling of this residence in May 2016, showed an indoor air concentration of benzene that is a potential health risk. In addition, SESD will collect ambient (outside) air samples from five 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, RCRD 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.
Field Study Date:	The week of September 19, 2016



Quality Assurance Project Plan
U.S. Environmental Protection Agency
 Science and Ecosystem Support Division
 980 College Station Road
 Athens, GA 30605

SESD Project ID No.: 16-0547
 SESD Category 2 QAPP

Projected Lab Completion Date:	October 31, 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.

A7. Quality Objectives and Criteria

Qualitative Objectives

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.

Quantitative Objectives and Criteria for Measurement Data

Precision and Accuracy

These are quantitative measures that characterize the amount of variability and bias inherent in a data set.

One co-located (duplicate) indoor 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.

One split sample will be collected to assess the precision of the sub-slab soil gas monitoring method. The split sample will be collected at the same time using a separate, identical VOC sampler connected to a common sample inlet tube.

Completeness

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.

Comparability

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.



Quality Assurance Project Plan
U.S. Environmental Protection Agency
 Science and Ecosystem Support Division
 980 College Station Road
 Athens, GA 30605

SESD Project ID No.: 16-0547
 SESD Category 2 QAPP

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	2 (including QC)	VOCs (see Table 3)
Indoor Air	2 (including QC)	VOCs (see Table 3)
Ambient Air	5	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-R3 Sample and Evidence Management
- SESDPROC-010-R5 Logbooks
- SESDPROC-205-R3 Field Equipment Cleaning and Decontamination



Quality Assurance Project Plan
U.S. Environmental Protection Agency
Science and Ecosystem Support Division
980 College Station Road
Athens, GA 30605

SESD Project ID No.: 16-0547
SESD Category 2 QAPP

SAMPLING PROCEDURE:

SESD will collect one indoor air, one soil gas and 5 ambient air samples (Table 1). In addition, three 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 10. 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 (some ambient locations are on private property as well), the RCRD Project Manager, and SESD sampling personnel. Access to the properties to be sampled will be obtained by the RCRD 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 sample will be collected in the same location as the previous investigation. In addition, SESD will collect ambient air samples from five locations 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 RCRD Project Manager request.

SUB-SLAB SOIL GAS SAMPLING

SESD will use the permanent sampling port in the floor of (b) (6) previously installed by SESD and the EPA Environmental Response Team (ERT) during the May 2016 investigation to collect a sub-slab soil gas sample from the residence.

SESD will connect a short length of ¼ inch diameter Teflon® tubing to the port. The tubing will pass



Quality Assurance Project Plan
U.S. Environmental Protection Agency
Science and Ecosystem Support Division
980 College Station Road
Athens, GA 30605

SESD Project ID No.: 16-0547
SESD Category 2 QAPP

through a stainless steel shroud. The shroud will be filled with helium while a soil gas sample is collected into a Tedlar® bag for on-site sample analysis of helium content using a helium detector. The helium concentration in the Tedlar bag must be less than ten percent of the helium concentration in the shroud to insure integrity of the sampling port. 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.

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, the indoor air sample station GM123, sampled in September 2016 would have a Sample ID as follows: GM123IA0916.

Soil Gas split samples will be identified with an "S" following the matrix identifier. Duplicate air samples will be identified with a "D" following the matrix identifier. For example, a co-located indoor air duplicate sample collected at sample station GM123, sampled in July 2016 would have a Sample ID as follows: GM123IAD0916.

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 2016 Version.

SESD Operating Procedure for Sample and Evidence Management, SESDPROC-005-R3.

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

B4. Analytical Methods

SESD:



Quality Assurance Project Plan
U.S. Environmental Protection Agency
 Science and Ecosystem Support Division
 980 College Station Road
 Athens, GA 30605

SESD Project ID No.: 16-0547
 SESD Category 2 QAPP

<p>The air samples will be analyzed for the compounds listed in Table 3 using <i>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)</i>, January 1999. The EPA Method TO-15 VOC Target Analytes are also listed along with Minimum Detection Limits (MDLs) in Table 3.</p>	
CLP:	N/A
Other:	N/A
B5. Quality Control	
Field:	<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 indoor air duplicate sample will be collected.</p> <p>One sub-slab soil gas split sample will be collected.</p>
Laboratory:	<p>Specific laboratory quality control measures are specified in the <i>SESD Analytical Support Branch Laboratory Operations and Quality Assurance Manual</i>, April 2016.</p>
B6. Instrument/Equipment Testing, Inspection and Maintenance	
<p>All field measurement instruments and equipment will be maintained in accordance with the <i>SESD Operating Procedure for Equipment Inventory and Management</i>, SESDPROC-108-R5.</p>	
B7. Instrument/Equipment Calibration and Frequency	
<p>All field measurement instruments and equipment are calibrated according to the <i>SESD Operating Procedure for Equipment Inventory and Management</i>, 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).</p>	



Quality Assurance Project Plan
U.S. Environmental Protection Agency
Science and Ecosystem Support Division
980 College Station Road
Athens, GA 30605

SESD Project ID No.: 16-0547
SESD Category 2 QAPP

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.



Quality Assurance Project Plan
U.S. Environmental Protection Agency
Science and Ecosystem Support Division
980 College Station Road
Athens, GA 30605

SESD Project ID No.: 16-0547
SESD Category 2 QAPP

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 2016.

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 2016.

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.**



Quality Assurance Project Plan
U.S. Environmental Protection Agency
Science and Ecosystem Support Division
980 College Station Road
Athens, GA 30605

SESD Project ID No.: 16-0547
SESD Category 2 QAPP

REFERENCES:

1. Arcadis, DRAFT Report. *Summary of Residential Air Sampling Analytical Results, Grenada Manufacturing Facility, Grenada, MS.* September 2015.
2. EPA Region 4 SESD ASB. *SESD Analytical Support Branch Laboratory Operations and Quality Assurance Manual*, April 2016.
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 SESD. *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 July 12, 2016.
5. USEPA. *Quality Assurance Project Plan for Grenada Manufacturing Ambient Air Sampling Event*. May, 2016, SESD Project # 16-0323
6. USEPA. Memorandum, *Grenada Manufacturing Site Vapor Intrusion Study Data for (b) (6)*, Grenada, Mississippi. June 28, 2016, SESD Project # 16-0323



Quality Assurance Project Plan
U.S. Environmental Protection Agency
Science and Ecosystem Support Division
980 College Station Road
Athens, GA 30605

SESD Project ID No.: 16-0547
SESD Category 2 QAPP





Quality Assurance Project Plan
U.S. Environmental Protection Agency
 Science and Ecosystem Support Division
 980 College Station Road
 Athens, GA 30605

SESD Project ID No.: 16-0547
 SESD Category 2 QAPP

TABLE 1. Sample Station Information

Station ID	Sample ID	Location	* Latitude	* Longitude	Matrix
GM03	GM03AA0916	West Ambient Air Location	33.805891	-89.801215	Ambient Air
GM14	GM14AA0916	North Ambient Air Location (b) (6) backyard	33.806238	-89.800558	
GM15	GM15AA0916	Northeast side of retention pond	33.804479	-89.799995	
GM16	GM16AA0916	East Ambient Air Location Lyon Drive at drainage ditch	33.805504	-89.799807	
GM17	GM17AA0916	South Ambient Air Location Gravel Road			
GM123	GM123IA0916	(b) (6)	33.806076	-89.800644	Indoor Air
	GM123SG0916				Subslab Soil Gas

* Names and locations subject to change as more knowledge of the site becomes available

TABLE 2. QA/QC Sample Information

Station ID	Sample ID	Location	Matrix
GM123	GM123IAD0916	(b) (6)	Indoor Air duplicate
	GM123SSS0916		Subslab Soil Gas Split
#R4DART#	GMTBA0916	-	Trip Blank Air



Quality Assurance Project Plan
U.S. Environmental Protection Agency
 Science and Ecosystem Support Division
 980 College Station Road
 Athens, GA 30605

SESD Project ID No.: 16-0547
 SESD Category 2 QAPP

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 ($\mu\text{g}/\text{m}^3$)†	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

† 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.

