

Grenada Manufacturing, LLC

REVISED AMBIENT AIR MONITORING PLAN

Grenada, Mississippi

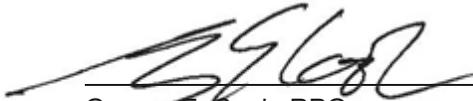
July 13, 2017



REVISED AMBIENT AIR MONITORING PLAN

I have reviewed this document in sufficient depth to accept full responsibility for its contents.




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**REVISED AMBIENT AIR
MONITORING PLAN**

Grenada, Mississippi

Prepared for:
Grenada Manufacturing, LLC
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Our Ref.:
LA003307.0008.00001

Date:
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- 2 Proposed Ambient Air Monitoring Locations

1 INTRODUCTION

This Revised Ambient Air Monitoring Plan details ambient air monitoring activities which will be conducted at the request of the U.S. Environmental Protection Agency (USEPA) at the former Grenada Manufacturing facility (current Ice Industries [Ice] facility), located in Grenada, Mississippi (“Facility”; Figure 1). The plan outlines the type of sampling, frequency of sampling, laboratory analysis, data evaluation, and reporting proposed for the scope of work, which will be conducted in accordance with the USEPA *OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air* (June 2015) and, where appropriate, USEPA Region 4 protocols. Revisions to this plan are based on discussions with and comments received from the USEPA.

2 SCOPE OF WORK

Based on the data evaluated and the request from USEPA, Arcadis U.S., Inc. (Arcadis) is proposing the following tasks:

- Conduct air monitoring with passive samplers to document ambient air concentrations along the fence line of the Facility boundary.

2.1 Ambient Air Sampling

Ambient air samples will be collected along the fence line of the Facility to document ambient air concentrations. Ambient air samples will be collected using the Radiello® passive samplers (RAD-130 solvent desorption type) used for previous passive ambient and indoor air samples. During the collection process, the passive sampler will be securely positioned at breathing height (approximately 5 feet above the ground). At this time, eight ambient air sample locations are proposed, along the perimeter of the Facility as shown on Figure 2.

The ambient air passive samplers will be placed so as to minimize potential contamination from extraneous sources. The passive samplers will be positioned away from wind shields such as trees or bushes and at least 15 feet away from any buildings. Meteorological data (temperature, precipitation, humidity, barometric pressure, and wind speed/direction) will be collected before and during sampling activities. Turnaround time for the laboratory analytical results will be 14 days.

2.2 Frequency of Air Sampling

Ambient air samplers at eight sample locations will be deployed for a sampling duration of 28 days. The passive samplers will be deployed and collected for a total of four sampling events, which generally correspond to the summer and fall months. The passive samplers will be retrieved after the specified 28-day exposure period and directly submitted to the laboratory for analysis. Turnaround on the passive samplers will be 14 days.

At the request of the USEPA, 7-day Radiello® passive samplers will be deployed at two locations along the northern fence line during the month of September 2017.

Sample Duration	Sampling Events	Sample Locations
7 days	Four	Two
28 days	Four	Eight

3 AIR SAMPLE LABORATORY ANALYSIS

Air samples will be analyzed for 7 of the 11 previously approved list of volatile organic compounds (VOCs) using the RAD 130 solvent extraction method. The VOCs include:

- 1,2-dichloroethane (1,2-DCA)
- cis-1,2-dichloroethene (cis-1,2 DCE)
- 1,1,2- trichloroethane (1,1,2-TCA)
- benzene
- tetrachloroethene (PCE)
- trichloroethene (TCE)
- toluene

Methylene chloride, 1,1-dichloroethene, trans-1,2-dichloroethene, and vinyl chloride are the only constituents from the list of approved VOCs that cannot be analyzed by the solvent extraction method. These constituents have not been primary air constituents during the evaluation. A summary of recently collected ambient air data is provided in Table 1.

Sample media will be ordered from a certified laboratory using proper quality assurance/quality control procedures and chain-of-custody protocols. Analytical results will be reported in parts per million by volume and micrograms per cubic meter. The laboratory will be instructed to report data with constituent detection limits at or below screening levels. To minimize potential effects on the sample integrity, samples will be shipped within 24 hours following collection and the samples will be chilled during storage and shipping. To improve the confidence in measured concentrations, a duplicate sample will be collected and analyzed for the same parameters as the parent samples. One duplicate sample will be collected per 20 samples (or per event).

4 DATA EVALUATION AND REPORTING

Upon receiving the air sample data, which is expected approximately 14 days after completion of sampling, the analytical package will be reviewed for completeness. The results will be verbally discussed with the USEPA after the completeness check. Once validated (within 30 days of receipt of laboratory analytical results), the data package will be provided to the USEPA and Ice.

A Summary Report documenting field activities, sample collection methods and locations, laboratory analytical results, and an evaluation of the frequency monitoring will be provided to the USEPA within 30 days after the ambient air study evaluation is completed.

5 SCHEDULE

Upon receiving the USEPA approval of this plan and, in coordination with Ice, personnel will mobilize to the area to conduct the ambient air monitoring activities. The following schedule is expected contingent on access and logistical operations. This schedule may be modified, and discussed with the USEPA, based on field observations, data collected and/or evaluation of the data,

- **Initial (1st) Event** – Deploy the first set of 28-day Radiello® passive samplers.
- **2nd Event** – Retrieve the first set of 28-day Radiello® passive samplers. Deploy the second set of 28-day Radiello® passive samplers.
- **3rd Event** – Retrieve the second set of 28-day Radiello® passive samplers. Deploy the third set of 28-day Radiello® passive samplers; deploy the first set of 7-day Radiello® passive samplers.
- **4th Event** – Retrieve the first set of 7-day Radiello® passive samplers. Deploy the second set of 7-day Radiello® passive samplers.
- **5th Event** – Retrieve the second set of 7-day Radiello® passive samplers. Deploy the third set of 7-day Radiello® passive samplers.
- **6th Event** – Retrieve the third set of 7-day Radiello® passive samplers. Deploy the fourth set of 7-day Radiello® passive samplers.
- **7th Event** – Retrieve the fourth set of 7-day Radiello® passive samplers and the third set of 28-day Radiello® passive samplers. Deploy the fourth set of 28-day Radiello® passive samplers.
- **8th Event** – Retrieve the fourth set of 28-day Radiello® passive samplers.

TABLE



Table 1
Summary of Recent Ambient Air Analytical Results
Revised Ambient Air Monitoring Plan
Grenada Manufacturing, LLC
Grenada, Mississippi

Sample Details [†]						Constituent (µg/m ³)										
Sample ID	Location	Consultant	Sample Duration [‡]	Sample Dates	Analysis	1,2-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,2-TCA	Benzene	Methylene Chloride	PCE	TCE	Toluene	Vinyl Chloride
Facility - Ambient Air																
OA001	West side of facility	CTEH	24-hours	10/26/2016	TO-15	< 0.16	< 0.16	0.49	< 0.16	< 0.16	0.58	< 0.81	0.52	1.7	1.2	< 0.16
		CTEH	24-hours	1/20/2017	TO-15	< 0.32	< 0.32	< 0.32	< 0.32	< 0.44	0.53	3.7	0.19 J	< 0.21	1.5	< 0.1
OA002	North side of facility	CTEH	24-hours	10/26/2016	TO-15	< 0.14	< 0.14	0.56	< 0.14	< 0.14	1.2	< 0.7	0.66	2	1.5	< 0.14
		CTEH	24-hours	1/20/2017	TO-15	< 0.32	< 0.32	< 0.32	< 0.32	< 0.44	0.36	2.6	0.12 J	< 3.02	1.1	< 0.1
OA003	East side of facility	CTEH	24-hours	10/26/2016	TO-15	< 0.14	< 0.14	0.68	< 0.14	< 0.14	0.41	< 0.7	0.48	3.5	0.9	< 0.14
		CTEH	24-hours	1/20/2017	TO-15	< 0.32	< 0.32	< 0.32	< 0.32	< 0.44	0.34	1.9	< 0.54	< 0.21	0.74	< 0.1
OA004	South side of facility	CTEH	24-hours	1/20/2017	TO-15	< 0.32	< 0.32	< 0.32	< 0.32	< 0.44	0.38	2.1	< 0.54	< 0.21	0.86	< 0.1
OA005	South side of facility	CTEH	24-hours	1/20/2017	TO-15	< 0.32	< 0.32	< 0.32	< 0.32	< 0.44	0.44	1.8	0.47 J	< 0.21	1.2	< 0.1
OA006	Southeast side of facility	CTEH	24-hours	1/20/2017	TO-15	< 0.32	< 0.32	< 0.32	< 0.32	< 0.44	0.48	1.6	< 0.54	< 0.21	1.3	< 0.1
AMB-N	North side of facility	Arcadis	24-hours	3/2/2017	TO-15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	0.34	< 0.74	< 0.15	< 0.15	< 0.74	< 0.15
AMB-R-N			13-days	3/2/2017 - 3/15/2017	RAD 130	< 0.68	NA	< 0.71	NA	< 0.88	< 0.66	NA	< 0.89	< 0.71	< 0.76	NA
554 JU			8-hours	5/2/2017	RAD 145*	< 58	NA	< 60	NA	< 75	< 56	NA	< 76	< 65	< 60	NA
115 JX			8-hours	5/9/2017	RAD 145	ND	NA	ND	NA	ND	2.9	NA	< 2.2	< 2.1	7.4	NA
106 JX			8-hours	5/2/2017	RAD 145*	< 53	NA	< 55	NA	< 69	< 51	NA	< 70	< 60	< 56	NA
421 JX			8-hours	5/9/2017	RAD 145	ND	NA	ND	NA	ND	2.9	NA	< 2.1	2.9	4.7	NA
547 JU			8-hours	5/1/2017	RAD 145*	< 53	NA	< 55	NA	< 68	< 51	NA	< 69	< 59	< 55	NA
114 JX			8-hours	5/8/2017	RAD 145	ND	NA	ND	NA	ND	2.7	NA	< 2.0	< 1.9	6.8	NA
097 QK			7-days	5/1/2017 - 5/8/2017	RAD 130	< 2.6	NA	< 2.7	NA	< 3.3	< 2.5	NA	< 3.4	< 2.9	< 2.7 UJ	NA
AMB-S			South side of facility	Arcadis	24-hours	3/2/2017	TO-15	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	0.44	< 0.88	< 0.18	0.53
AMB-R-S	13-days	3/2/2017 - 3/15/2017			RAD 130	< 0.68	NA	< 0.71	NA	< 0.88	< 0.66	NA	< 0.89	< 0.71	< 0.76	NA
555 JU	8-hrs	5/2/2017			RAD 145*	< 58	NA	< 60	NA	< 75	< 56	NA	< 76	< 65	< 61	NA
122 JX	8-hrs	5/9/2017			RAD 145	ND	NA	ND	NA	ND	2.8	NA	< 2.2	< 2.0	8.1	NA
107 JX	8-hrs	5/2/2017			RAD 145*	< 53	NA	< 55	NA	< 69	< 51	NA	< 70	< 60	< 56	NA
420 JX	8-hrs	5/9/2017			RAD 145	ND	NA	ND	NA	ND	2.7	NA	< 2.1	< 2.0	4.9	NA
545 JU	8-hrs	5/1/2017			RAD 145*	< 55	NA	< 57	NA	< 71	< 53	NA	< 72	< 62	< 57	NA
121 JX	8-hrs	5/8/2017			RAD 145	ND	NA	ND	NA	ND	3.2	NA	< 2.0	< 1.9	9.0	NA
095 QK	7-days	5/1/2017 - 5/8/2017			RAD 130	< 2.6	NA	< 2.7	NA	< 3.3	< 2.5	NA	< 3.4	< 2.9	< 2.7 UJ	NA
AMB-E	East side of facility	Arcadis			24-hours	3/2/2017	TO-15	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	0.37	< 0.71	< 0.14	0.32
108 JX			8-hrs	5/9/2017	RAD 145	ND	NA	ND	NA	ND	2.6	NA	< 2.2	< 2.1	25	NA
423 JX			8-hrs	5/9/2017	RAD 145	ND	NA	ND	NA	ND	2.3	NA	< 2.1	< 2.0	18	NA
109 JX			8-hrs	5/8/2017	RAD 145	ND	NA	ND	NA	ND	2.2	NA	< 2.0	< 1.9	21	NA
AMB-W	West side of facility	Arcadis	24-hours	3/2/2017	TO-15	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	0.37	< 0.67	< 0.13	< 0.13	< 0.67	< 0.13
113 JX			8-hrs	5/9/2017	RAD 145	ND	NA	ND	NA	ND	2.8	NA	< 2.2	< 2.0	8.7	NA
422 JX			8-hrs	5/9/2017	RAD 145	ND	NA	ND	NA	ND	3.0	NA	< 2.1	< 2.0	9.1	NA
112 JX			8-hrs	5/8/2017	RAD 145	ND	NA	ND	NA	NA	3.2	NA	< 2.0	< 1.9	8.8	NA

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Residential Neighborhood South of Facility - Ambient Air																
1-AA	South Lyon Drive and HWY 332	Arcadis	24- hours	9/23/2015	TO-15	< 0.15	< 0.076	0.85	< 0.76	< 0.21	0.30 J	< 1.3	< 0.26	1.2	0.66	0.10
		Arcadis	24-hours	3/3/2016	TO-15	< 0.13	< 0.063	< 0.13	< 0.63	< 0.17	0.34	< 1.1	< 0.22	< 0.17	0.56	< 0.041
2-AA	South Lyon Drive	Arcadis	24- hours	9/23/2015	TO-15	< 0.15	< 0.072	0.67	< 0.72	< 0.20	0.32	< 1.3	< 0.25	1.0	0.89	0.046 J
		Arcadis	24-hours	3/3/2016	TO-15	< 0.12	< 0.060	< 0.12	< 0.60	< 0.16	0.3	< 1.0	< 0.20	< 0.16	0.34	< 0.038
GM12 (GM12AA0516)	North	USEPA	24- hours	5/3/2016	TO-15	< 1.9	< 1.8	< 1.9	< 2.0	< 2.7	0.59 J,O	< 1.6	< 3.3	< 2.6	1.9	< 1.2
GM12 (GM12AA20516)		USEPA	24-hours	5/4/2016	TO-15	< 2.0	< 1.9	0.22 J,O	< 2.1	< 2.8	0.55 J,O	< 1.7	< 3.4	< 2.7	2.1	0.19 J,O
GM01 (GM01AA0516)	South	USEPA	24- hours	5/3/2016	TO-15	< 2.1	< 2.0	< 2.1	< 2.2	< 2.9	0.57 J,O	< 1.8	< 3.6	< 2.8	0.96 J,O	< 1.3
GM01 (GM01AAD0516)		USEPA	24-hours	5/4/2016	TO-15	< 2.0	< 1.9	< 2.0	< 2.1	< 2.9	0.61 J,O	< 1.7	< 3.5	< 2.8	1.0 J,O	< 1.3
GM01 (GM01AA20516)		USEPA	24- hours	5/3/2016	TO-15	< 2.0	< 1.9	0.28 J,O	< 2.1	< 2.8	0.44 J,O	< 1.7	< 3.4	< 2.7	0.69 J,O	< 1.3
GM01 (GM01AA2D0516)		USEPA	24-hours	5/4/2016	TO-15	< 2.1	< 1.9	0.29 J,O	< 2.2	< 2.9	0.41 J,O	< 1.7	< 3.5	< 2.8	0.68 J,O	< 1.3
GM13 (GM13AA0516)	East	USEPA	24- hours	5/3/2016	TO-15	< 2.0	< 1.9	< 2.0	< 2.1	< 2.8	0.41 J,O	< 1.7	< 3.5	< 2.8	0.72 J,O	< 1.3
GM13 (GM13AA20516)		USEPA	24-hours	5/4/2016	TO-15	< 2.1	< 2.0	< 2.1	< 2.2	< 2.9	< 1.7	< 1.8	< 3.6	< 2.8	0.44 J,O	< 1.3
GM11 (GM11AA0516)	West	USEPA	24- hours	5/3/2016	TO-15	< 2.1	< 2.0	0.24 J,O	< 2.2	< 2.9	0.63 J,O	< 1.8	< 3.6	< 2.8	1.1 J,O	< 1.3
GM11 (GM11AA20516)		USEPA	24-hours	5/4/2016	TO-15	< 2.1	< 2.0	0.28 J,O	< 2.2	< 3.0	0.46 J,O	< 1.8	< 3.6	< 2.9	0.69 J,O	< 1.4

Notes:

- ‡ Sample duration is approximate.
- * Laboratory inadvertently prepared samples for RAD 130 analysis.
- J The identification of the analyte is acceptable; the reported value is an estimate.
- O Other qualifiers have been assigned providing additional information. Results greater than MDL but less than MRL.
- TO-15 TO-15 samples collected in 6-liter summa canisters for an approximate 24-hour sample duration. Modified USEPA Method TO-15 gas chromatography/mass spectrometry (GC/MS) used for the analytical method by CTEH and Arcadis. The Trace Atmospheric Gas Analyzer USEPA Method TO-15 GC/MS used for the analytical method by the USEPA.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

Abbreviations:

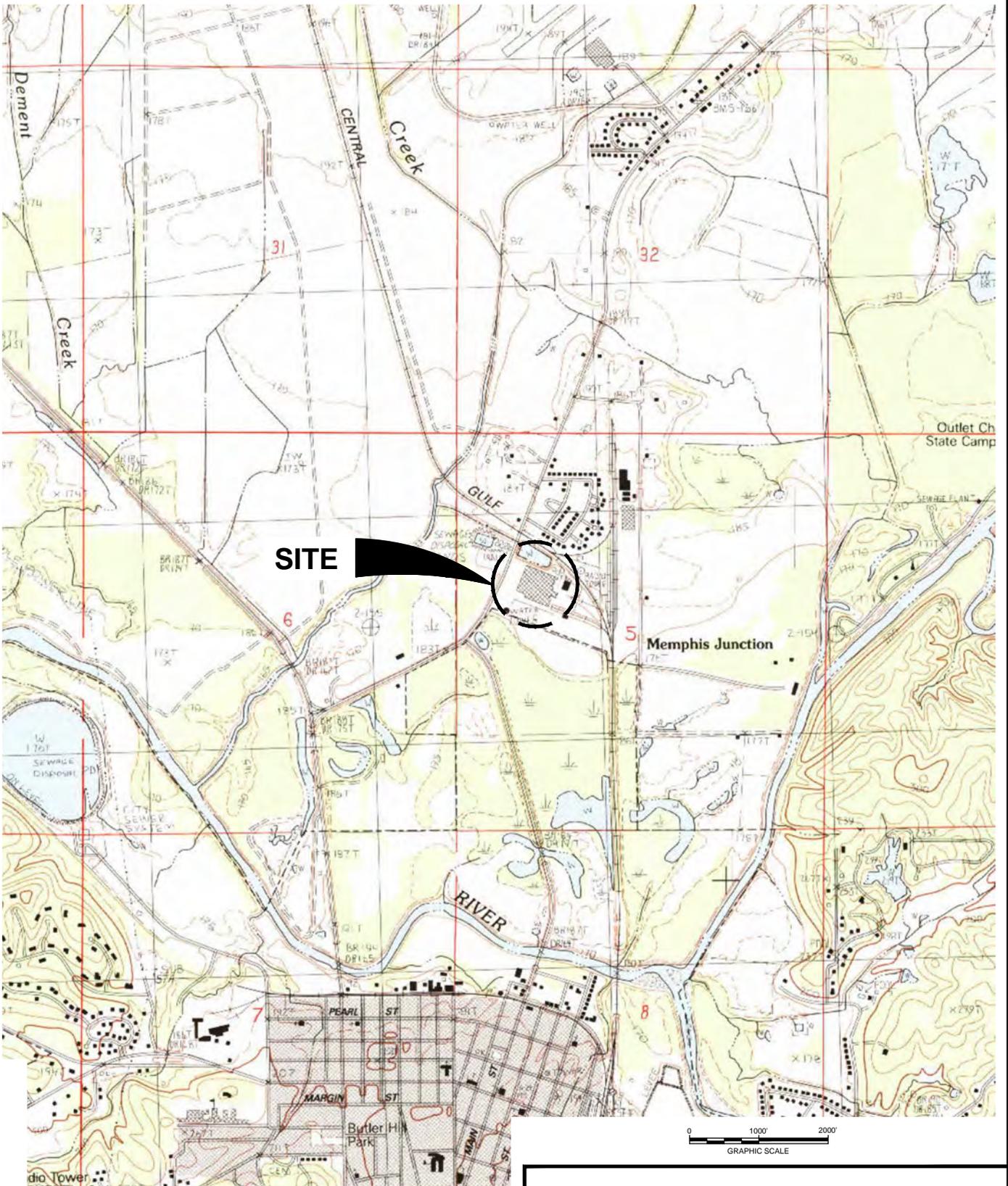
- µg/m³ Micrograms per cubic meter.
- CTEH Center for Toxicology and Environmental Health, LLC.
- DCA Dichloroethane.
- DCE Dichloroethene.
- MDI Method detection limit.
- MRL Method reporting limit.
- NA Not available.
- ND Non-detect.
- PCE Tetrachloroethene.
- RAD 130 Samples collected in Radiello 130 passive samples and analyzed by solvent panel scan by gas chromatography/mass spectrometry.
- RAD 145 Samples collected in Radiello 145 passive samples and analyzed by thermal desorption scan by gas chromatography/mass spectrometry.
- TCA Trichloroethane.
- TCE Trichloroethene.
- USEPA United States Environmental Protection Agency.

FIGURES



CITY:SYRACUSE,NY DIV:GROUP:ENVCAD DB.G:STEINBERGER LD: PIC: P.M.E.:MOOSBRUGGER TM: L.YR:(0)MON:"OFF"-REF:
 C:\ENVCAD\STRACUSE\ACTLA030700060003\DIV\REPORT\CONCEPTLA3307001.dwg LAYOUT: 1 SAVED: 6/14/2017 2:37 PM ACADVER: 19.1S (LMS TECH) PAGES: 1 PLOT: 6/14/2017 2:37 PM BY: STEINBERGER, GEORGE

PROJECTNAME: ...
 IMAGES: LAG307X01.jpg
 XREFS:



REFERENCE: BASE MAP USGS 7.5 MINUTE QUADRANGLE.,
 GRENADA, MS, 1983



GRENADA MANUFACTURING, LLC
 332 OLD HIGHWAY 7, GRENADA, MISSISSIPPI

SITE LOCATION MAP

	Design & Consultancy for natural and built assets	FIGURE
		1

CITY:\Reed\DIV\GROUP\Reed\ DB:\Reed\ LD:\Opt\ PIC:\Opt\ P:\Reed\ T:\Opt\ LYS\OPTION\OFF\REF\ GA\PROJECT\Thompson\Hie\LLPLA003307\0004\Site-Slab_Assessment\Figures\3307-44-02--Ambient2Rev.dwg LAYOUT: 01 SAVED: 7/11/2017 10:12 AM ACADVER: 18.2S (LMS TECH) PAGES: 01 PLOTSTYLETABLE: COLOR3.CTB PLOTTED: 7/11/2017 10:20 AM BY: MEN, SOTHON XREFS: PROJECTNAME: --



LEGEND:
 AMBIENT SAMPLE LOCATION



GRENADA MANUFACTURING, LLC Ambient Air Monitoring Plan	
PROPOSED AMBIENT AIR MONITORING LOCATIONS	
	FIGURE 2

Arcadis U.S., Inc.

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Fax 225 218 9677

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A decorative graphic consisting of three thin orange lines. One line is horizontal, extending across the width of the page. Two other lines are diagonal, starting from the bottom left and extending towards the top right, crossing the horizontal line.