

Grenada Manufacturing, LLC

REVISED FACILITY INDOOR AIR MONITORING PLAN

Grenada, Mississippi

July 13, 2017



REVISED FACILITY INDOOR AIR MONITORING PLAN

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




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**REVISED FACILITY
INDOOR AIR
MONITORING PLAN**

Grenada, Mississippi

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Our Ref.:
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FIGURES

Figure 1 Site Location Map

Figure 2 Site Map

1 INTRODUCTION

This Revised Facility Indoor Air Monitoring Plan details indoor 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 (the “Facility”; Figure 1). This plan outlines indoor air monitoring that will be conducted using passive samplers prior to installation of a sub-slab depressurization system (SSDS) and during operation of the SSDS Enhanced Pilot Study. Revisions to this plan are based on discussions with and comments received from the USEPA. The work will be conducted in accordance with the *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.

2 SCOPE OF WORK

Based on the data evaluated and discussions with the USEPA, Arcadis U.S., Inc. (Arcadis) is proposing to conduct the following tasks:

- Indoor air monitoring at specific intervals with passive samplers to determine variability in temporal indoor air concentrations.
- Ambient air sampling.
- SUMMA[®] canister sampling during one event to compare to passive sampler data.

2.1 Indoor Air Sampling (Radiello[®])

Radiello[®] passive samplers (RAD-130 solvent desorption type or RAD-145 desorption type) have previously been deployed at the Facility. Sample locations are depicted on Figure 2.

A program has been developed to collect additional indoor air data for further evaluation based on data previously collected at the Facility. Six specific locations have been selected for this program. These sample locations are depicted on Figure 2 and include the following:

- A-5
- B-3
- B-4
- B-6
- B-8
- B-9

Radiello[®] passive samplers will be placed at selected locations within the Facility. During each sample duration, the passive samplers will be securely positioned at breathing height (approximately 5 feet above the ground).

2.2 Indoor Air Sampling (SUMMA® Canister)

At the request of USEPA, SUMMA® canisters will be used to collect 24-hour duration samples from the six locations during the initial event. Six-liter polished stainless-steel SUMMA® canisters with calibrated flow controllers, calibrated for a 24-hour sample collection, will be used. These canisters will be cleaned and certified by the laboratory. During the collection process, the indoor air canisters will be securely positioned in the breathing zone (approximately 5 feet above the ground). A final canister vacuum on the flow controller will be recorded. At the completion of sampling, the canister will be closed and the flow controller removed. The canisters will be gauged with an independent gauge and the final vacuums recorded. The canisters will then be closed and sealed with a brass Swagelok® cap for shipment to the laboratory.

2.3 Frequency of Air Sampling

Indoor air samples at the six locations will be deployed for 24 hours and for 28 days (or durations equivalent to the periods prior to and during SSDS operation). At the request of the USEPA, 24-hour SUMMA® canisters will be collected during the initial event at all six locations. The program will continue for 3 months, which will coincide with the SSDS Enhanced Pilot Study. Additionally, at the request of the USEPA, 7-day Radiello® passive samplers will be deployed at two locations in the period prior to SSDS operation and in the period during SSDS operation. Based on historical data, the locations for the 7-day Radiello® passive samplers will be B-4 and B-6.

Sample Duration	Sampling Events	Sample Locations
24 hours	Three	Six
7 days	Two	Two
28 days	Three	Six

2.4 Ambient Air Sampling

Ambient air samples will be collected outdoors using passive samplers during collection of indoor air to evaluate potential background contaminant sources from outside the structures. Ambient air samples will be collected using the same Radiello® passive samplers (RAD-130 solvent desorption type or RAD-145 desorption type) used for the 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, one ambient air sample location is proposed. Ambient air samples are proposed for each of the sample durations.

The ambient air passive sampler 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. Collection of the ambient air samplers will follow the same methodology as described for indoor air samples. Meteorological data (temperature, precipitation, humidity, barometric pressure, and wind speed/direction) will be collected before and during sampling activities.

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. Air samples collected with SUMMA® canisters will be analyzed for the 11 previously approved list of VOCs.

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 liter. 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 for each of the 20 samples.

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 laboratory results receipt), the data package will be provided to the USEPA and Ice. The data obtained from activities described in this Facility Indoor Air Monitoring Plan will be evaluated.

This air monitoring plan is designed to provide data prior to and during operation of the SSDS Enhanced Pilot Study. The pilot test detailed in the February 22, 2017, Interim Measures Evaluation, Focused Facility Sub-Slab Assessment, and Pilot Study Plan was completed during the week of March 13, 2017. These data were used to develop the SSDS design. An Enhanced Pilot Study Work Plan utilizing the operational parameters of the SSDS was submitted to the USEPA on June 15, 2017 and approved in a letter dated July 7, 2017.

A Summary Report documenting field activities, sample collection methods and locations, laboratory results, and an evaluation of the frequency monitoring will be provided to the USEPA within 30 days of completion of the plan.

5 SCHEDULE

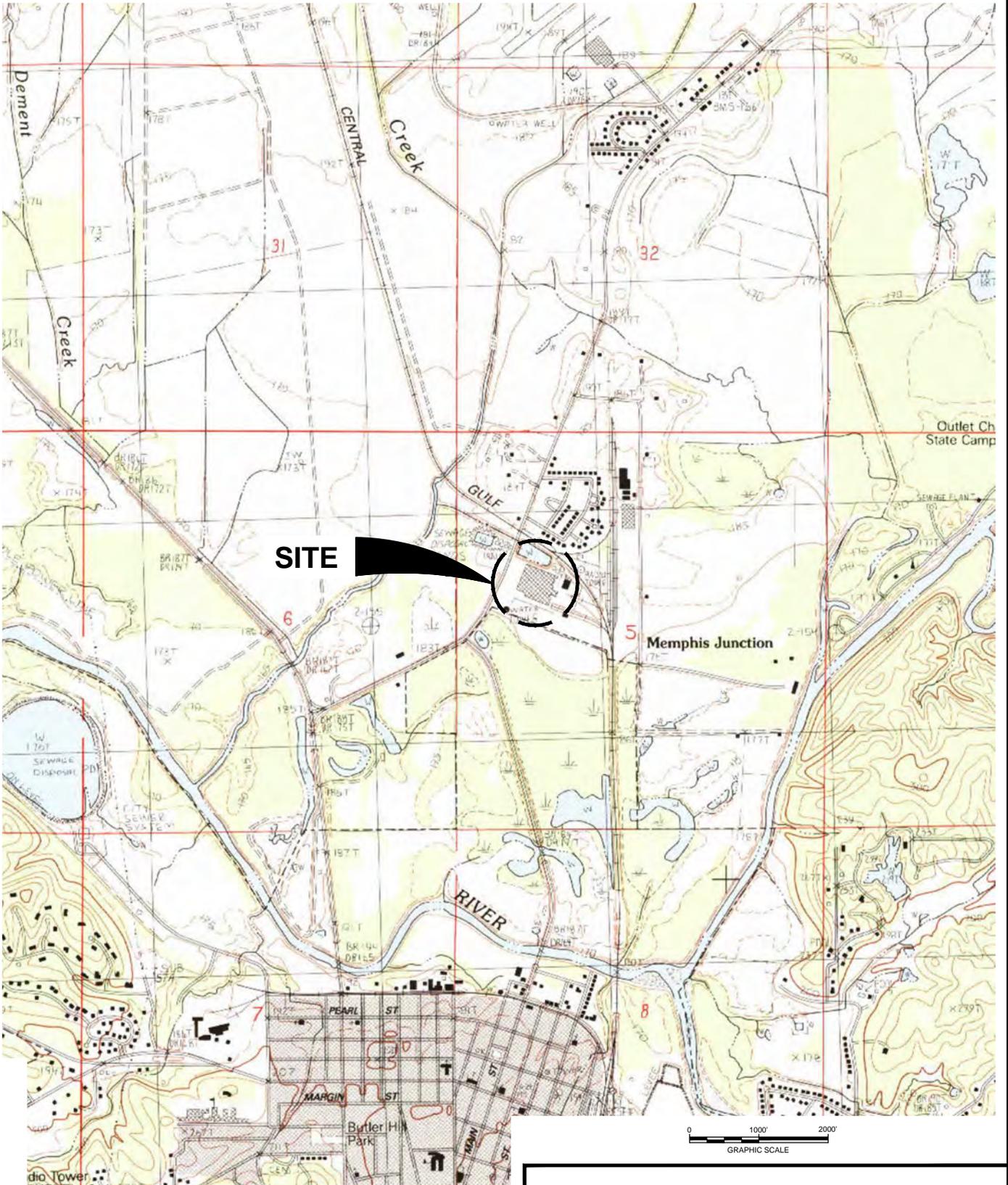
Upon receiving USEPA approval of this plan and in coordination with Ice, personnel will mobilize to the Facility to initiate the Facility Indoor Air Monitoring Plan work. The following schedule is expected, contingent on access and logistical operations. This schedule may be modified, and discussed with the USEPA, based on field observations, data collected, and/or evaluation of the data.

- **Initial (1st) Event** – Deploy and retrieve the 24-hour Radiello[®] passive samplers and 24-hour SUMMA[®] canisters; deploy the two 7-day Radiello[®] passive samplers and the 28-day Radiello[®] passive samplers.
- **2nd Event** – Retrieve the 7-day Radiello[®] passive samplers.
- **3rd Event** – Retrieve the 28-day Radiello[®] passive samplers; deploy and retrieve the 24-hour Radiello[®] passive samplers; deploy the two 7-day Radiello[®] passive samplers and the 28-day Radiello[®] passive samplers.
- **4th Event** – Retrieve the 7-day Radiello[®] passive samplers.
- **5th Event** – Retrieve the 28-day Radiello[®] passive samplers; deploy and retrieve the 24-hour Radiello[®] passive samplers; deploy the 28-day Radiello[®] passive samplers.
- **6th Event** – Retrieve the 28-day Radiello[®] passive samplers.

FIGURES

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



GRENADA MANUFACTURING, LLC 332 OLD HIGHWAY 7, GRENADA, MISSISSIPPI	
SITE LOCATION MAP	
 ARCADIS Design & Consultancy for natural and built assets	FIGURE 1

CITY: (Recd) DIV: (GROUP: (Recd) DB: (Recd) LD: (Opt) PIC: (Opt) PNI: (Recd) TMI: (Opt) LYS: (Opt) ON: (Off) REF: GA: PROJECT: Thompson Hite LLP LA 003307.0009 Indoor Air Sampling Program Figures 3307-09-02.dwg LAYOUT: LAYOUT PROJECTNAME: --- PLOTSTYLE: TABLE: COLOR3.CTB PLOTTED: 6/20/2017 1:18 PM BY: MEN, SOTHON



LEGEND:

- ◆ SS-22 SUB-SLAB SAMPLE LOCATION AND DESIGNATION
- A-7 INDOOR AIR SAMPLE LOCATION AND DESIGNATION
- ▲ R-1 RADIOLLOS SAMPLE LOCATION AND DESIGNATION

- APPROXIMATE LOCATION OF BASEMENT (DUST PITS)
- APPROXIMATE LOCATION OF PROPOSED CONCRETE REPLACEMENT PROJECT
- HISTORICAL FEATURES
- NEW BLISS PRESS AREA
- CATCH BASIN
- SUBSURFACE DRAIN LINE
- SANITARY SEWER

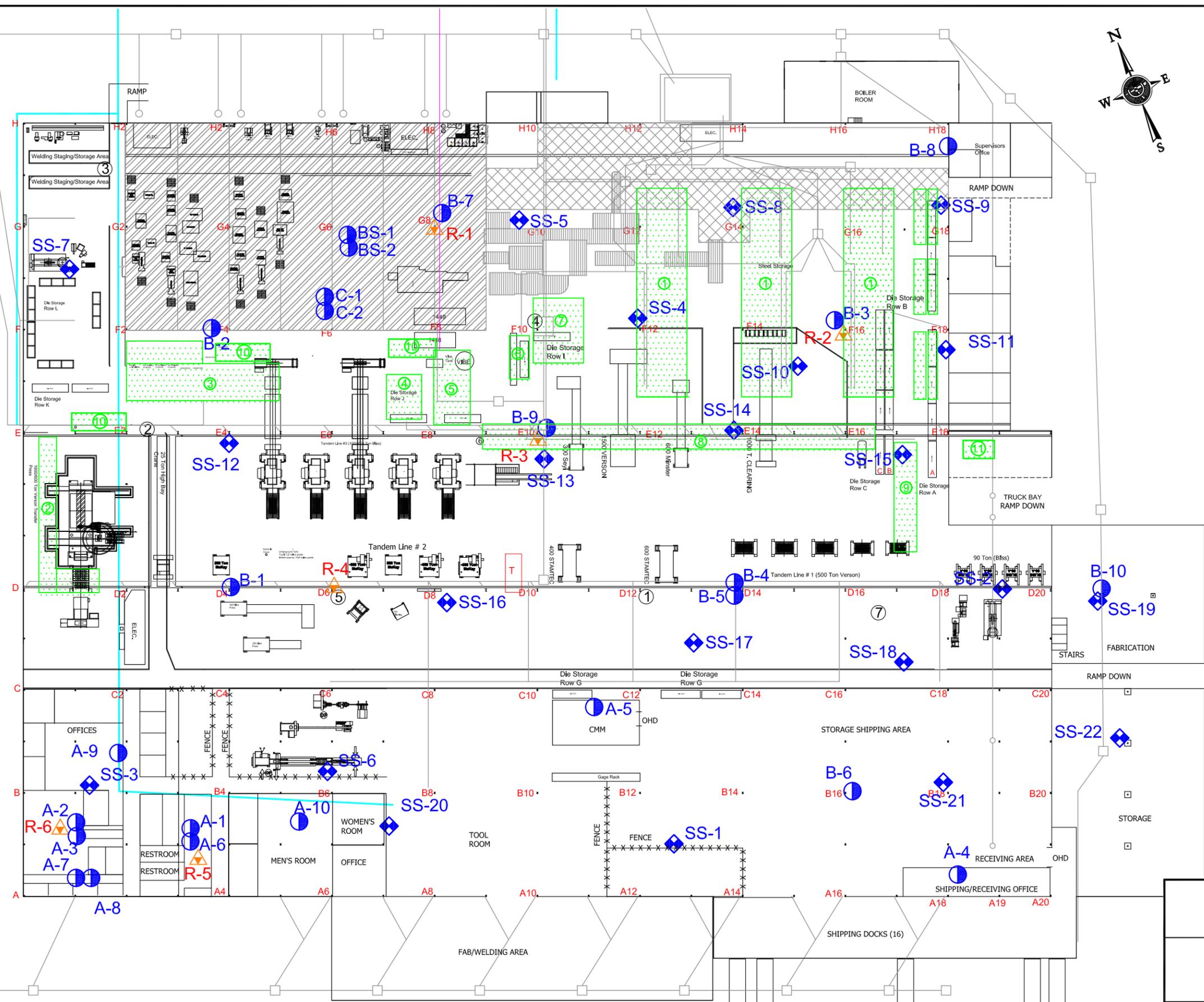
NOTES:

SUB-SLAB SAMPLE LOCATIONS SS-7 AND SS-8 WILL BE LOCATED IN THE BASEMENT.

SAMPLES C-1, C-2, BS-1, AND BS-2 COLLECTED IN THE BASEMENT.

SAMPLES A-7 AND A-8 COLLECTED UPSTAIRS IN THE OFFICE.

- A-1 DESIGNATION FOR OFFICE SPACE
- B-1 DESIGNATION FOR OPERATION AREAS
- C-1 DESIGNATION FOR BASEMENT SAMPLES
- ① FORMER CHROME PLATING PITS
- ② CATALYTIC CONVERTER
- ③ BUFF WASH (SOAK AND SPRAY)
- ④ STRESS WASH
- ⑤ BUTLER WASH
- ⑥ CAUSTIC PAINT STRIPPER
- ⑦ PAINT BOIL OFF
- ⑧ WHITE LINE
- ⑨ POWDER COAT AND WET MASK WASH
- ⑩ VAPOR DEGREASER
- ⑪ TCE STILL



GRENADA MANUFACTURING, LLC

SITE MAP

FIGURE
2

Arcadis U.S., Inc.

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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, intersecting the horizontal line.