

**DART Air Monitoring**  
**TARGETING/INSPECTION REPORT**

<b>Inspection Date(s):</b>	February 21, 2024 – February 22, 2024	<b>Inspection Announced:</b> {No}
<b>Name</b>		<b>Email</b>
<b>ERG Staff</b>		
Scott Sholar		Scott.Sholar@erg.com
<b>EPA Staff</b>		
Daniel Slade		Slade.Daniel@epa.gov

**Facilities Inspected:**

Name	Address	On Site?	PID Detects Made*	Winds Favorable**	Canister Sample Collected
Graphic Packaging International, LLC – Augusta Mill	4278 Mike Padgett Hwy, Augusta, GA 30906	No	No	Yes	No
PCS Nitrogen Fertilizer L.P. – Augusta Plant	23 Columbia Nitrogen Dr, Augusta, GA 30901	No	No	Yes	No
Solvay Specialty Polymers USA, LLC	3702 Clanton Rd, Augusta, GA 30906	No	Yes	Yes	Yes
KPR U.S. D/B/A Kendall Patient Recovery U.S., LLC	1430 Marvin Griffin Rd, August, GA 30906	No	No	Yes	No
US Battery MFG Co of Augusta	1895 Tobacco Rd, Augusta, GA 30906	No	No	Yes	No
Manus Bio Inc.	1762 Lovers Ln, Augusta, GA 30901	No	No	Yes	No

Name	Address	On Site?	PID Detects Made*	Winds Favorable**	Canister Sample Collected
Union Agener	1788 Lovers Ln, Augusta, GA 30901	No	No	Yes	No
Huntsman Pigments	1895 Doug Barnard Pkwy, Augusta, GA 30906	No	No	Yes	No
Prayon	1610 Marvin Griffin Rd, Augusta, GA 30906	No	No	Yes	No
Reeves Augusta	1 Apac Industrial Way, Augusta, GA 30907	No	No	Yes	No

\*“PID Detect” for this effort equates to a DART-3 PID reading above 100ppb.

\*\*“Favorable” denotes winds generally in the direction from facility to DART vehicle that are constant and not experiencing strong gusts.

## **SECTION I – INTRODUCTION**

### **Background Information**

On February 21 and 22, 2024, Scott Sholar of Eastern Research Group, Inc. (ERG) performed mobile air monitoring using the ERG Data Acquisition in Real Time (DART) in Augusta, GA. ERG was joined by Daniel Slade, EPA Region 4 staff, who provided input on the facility locations to be monitored. The purpose of the inspection was primarily to survey the local facilities and assist with targeted inspection efforts being performed by EPA.

ERG deployed the DART unit on an EPA vehicle each day. EPA drove the DART vehicle along all publicly accessible roads around the facilities at 10-15 miles per hour. ERG collected an air sample canister downwind from the Solvay Specialty Polymers plant while measuring elevated volatile organic compounds (VOCs).

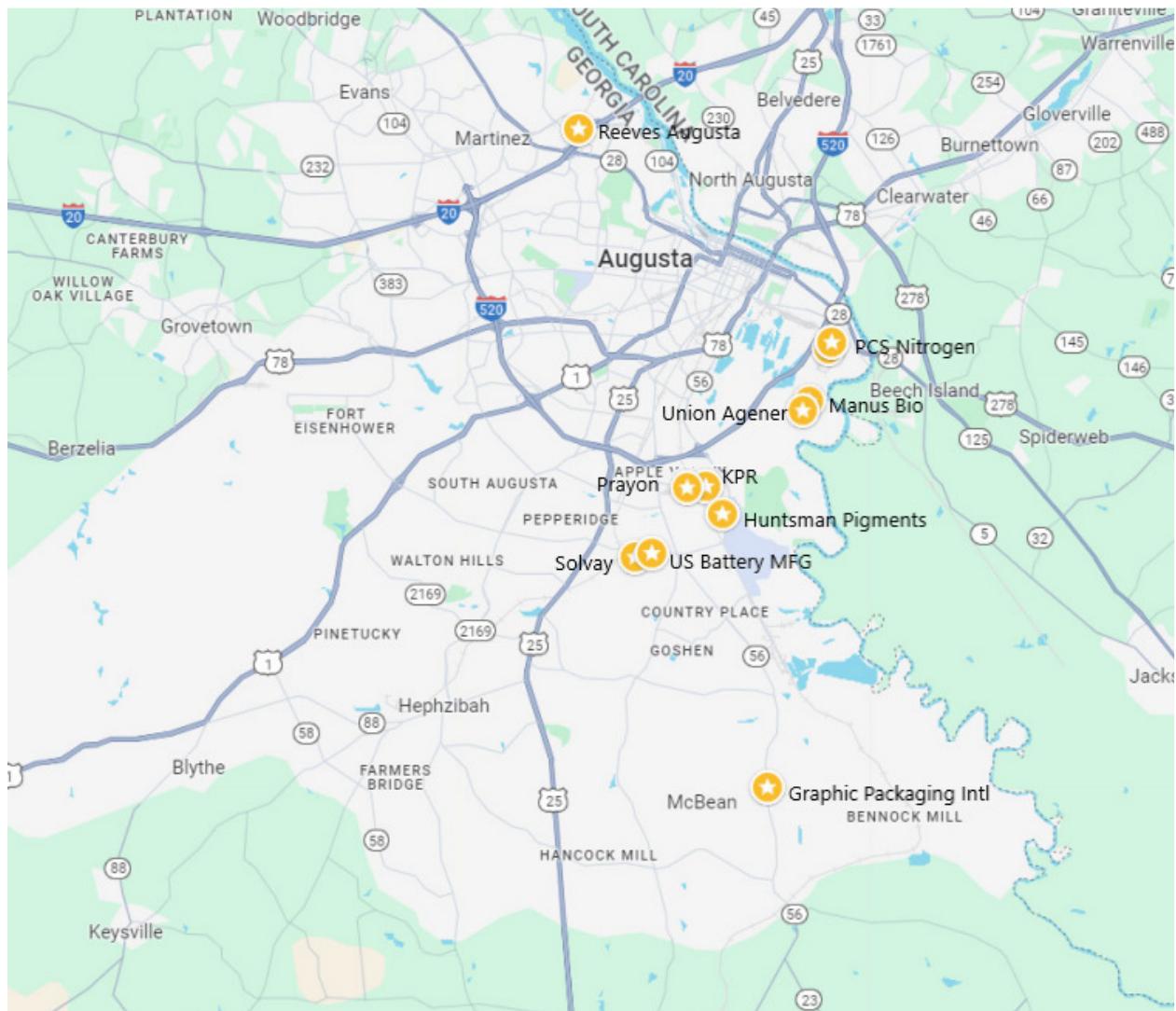
### **Area/Site Descriptions**

Only facilities where photoionization detectors (PID) detects were made or other locations of note will be outlined in this section. Figure 1 details permitted facilities considered for this investigation. Figures 2, 3 and 4 depict routes followed during different drive times.

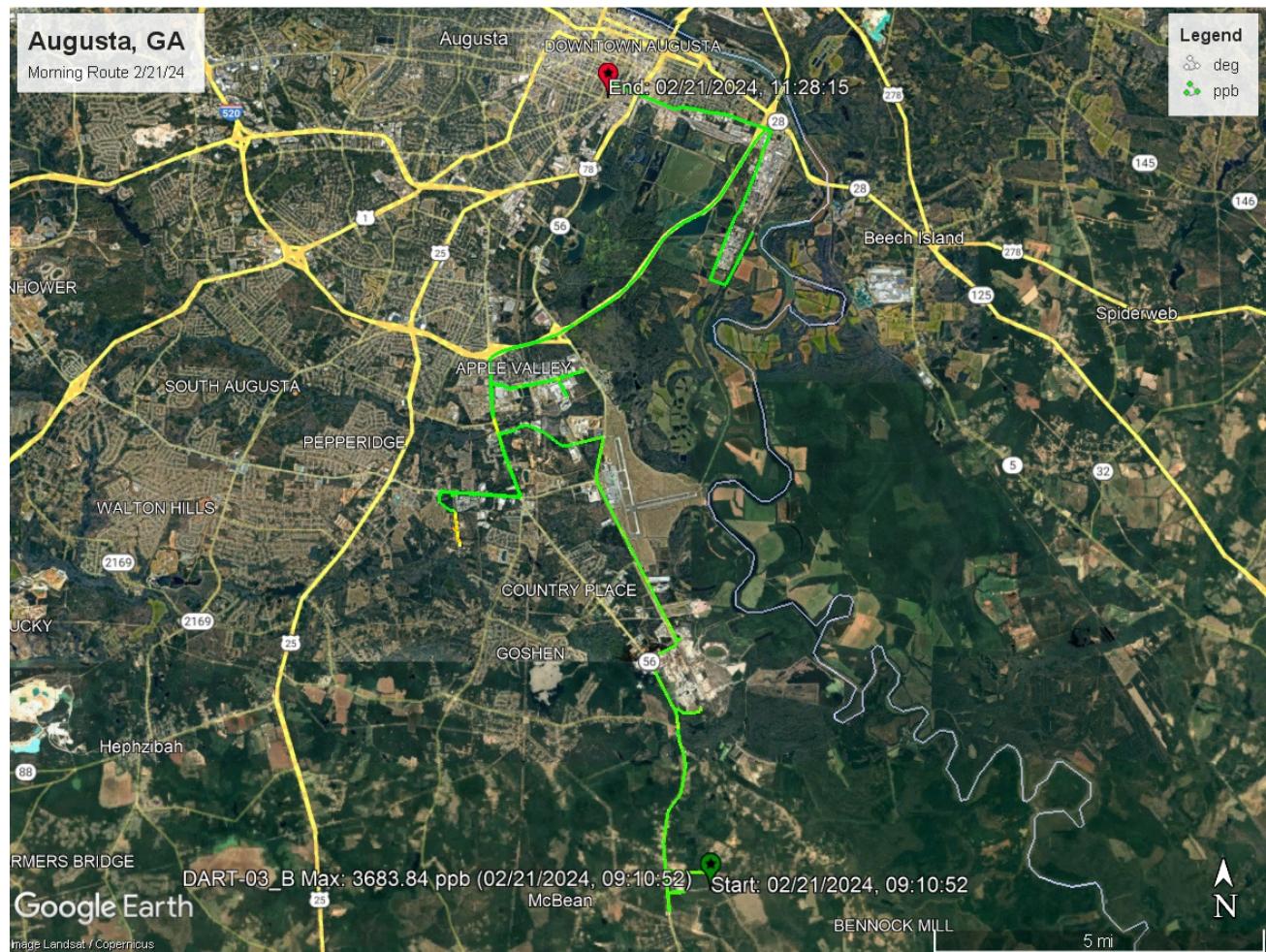
#### **Solvay Specialty Polymers**

Solvay is a resin and monomer production plant located on Clanton Rd in south Augusta, GA. ERG and EPA were able to navigate the DART on the road along the north and south of the facility on both days of monitoring.

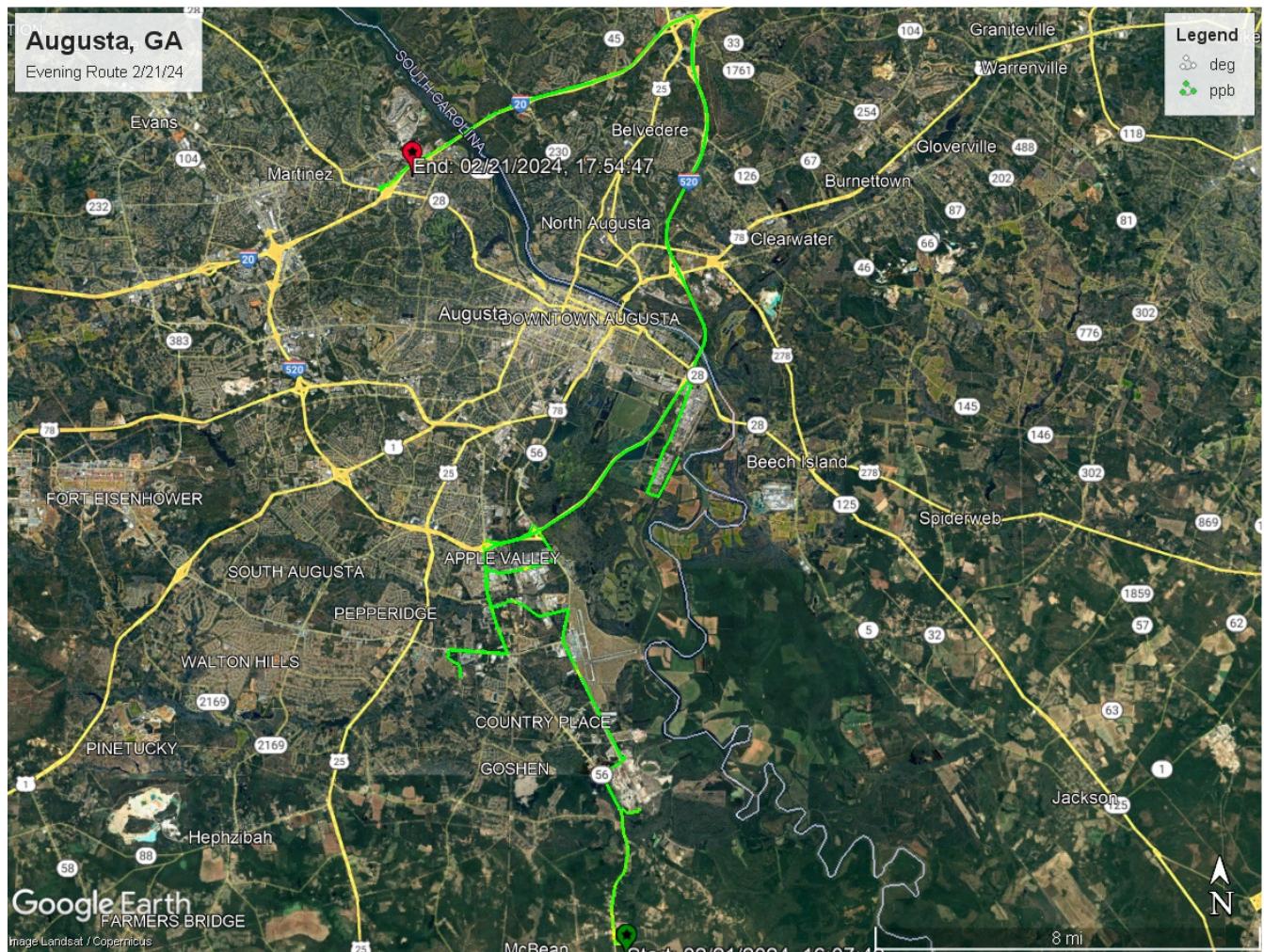
**Figure 1.** Map of Facilities and surrounding area during February 21 and 22, 2024 investigation.



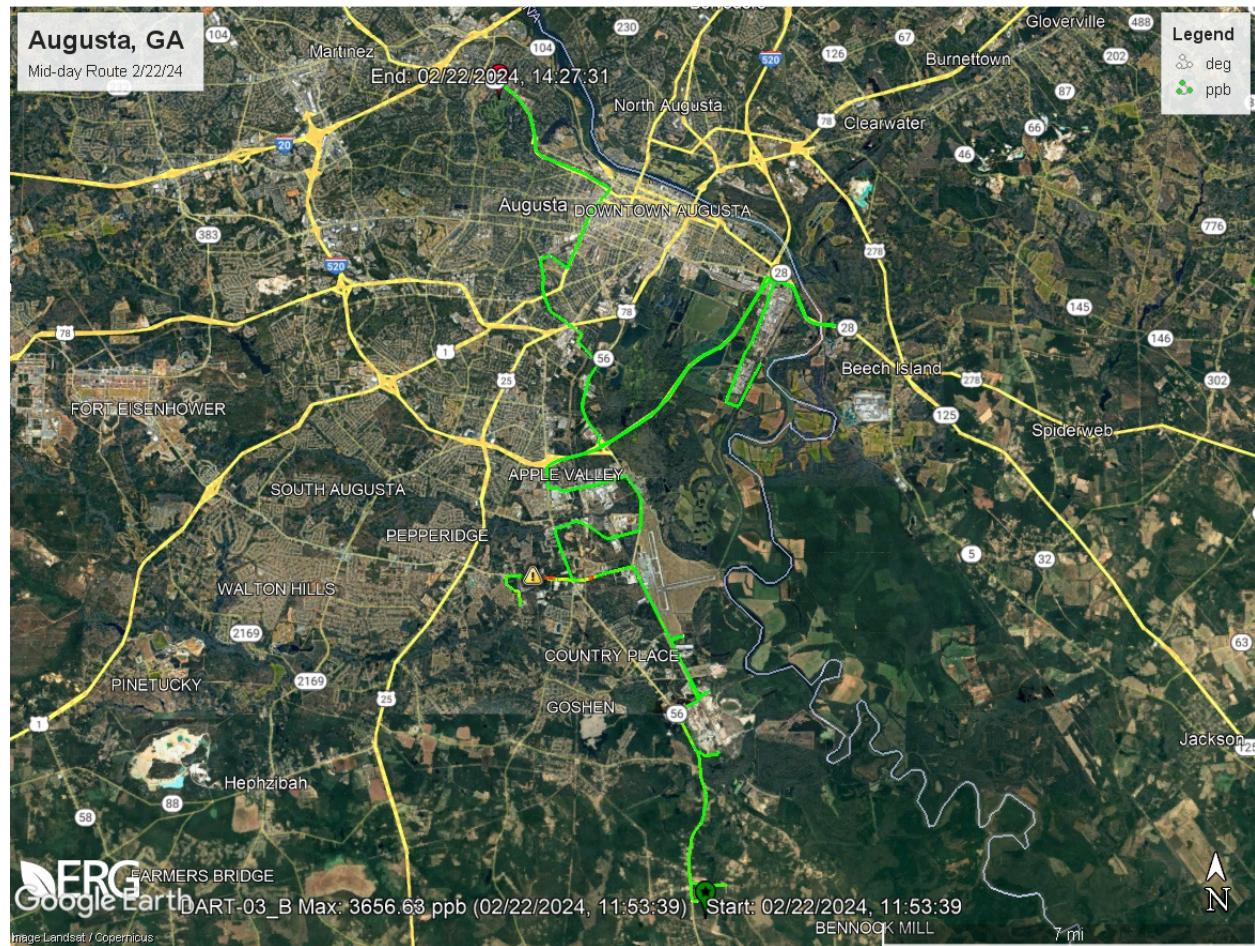
**Figure 2.** Map of morning route monitored around Augusta, GA and surrounding area on February 21, 2024.



**Figure 3.** Map of evening route monitored around Augusta, GA and surrounding area on February 21, 2024.



**Figure 4.** Map of route monitored around Augusta, GA and surrounding area on February 22, 2024.



## SECTION II – OBSERVATIONS

### Quality Assurance Observations

**Table 1.** DART Specifications

	DART-3
PID lamp ionization energy (eV)	10.6eV
Detection Range (ppb)	0-3000ppb
mV baseline	100-400mV
Calibration Factor	1.16
Visualization Color Scale	Green: 0 – 50ppb Yellow/Orange: 50 – 100ppb Red: >100ppb

DART-3 is equipped with PID that measure VOCs in the air and can distinguish between an ambient air concentration versus an elevated VOC plume. DART-3 was able to detect compounds with an ionization energy of 10.6ev or below. The DART-3 detection range was 20 – 3000 parts per billion (ppb).

The DART output is in millivolts (mV). The baseline hovers around the ambient background mV count (typically 100 – 400mV) for DART-3 and a VOC measurement is the inflection above the baseline. Concentration measurements in mV are converted to ppb, by multiplying the inflection above baseline by the calibration factor. During pre-deployment testing for the Augusta, GA deployment a calibration factor of 1.16 was determined for DART-3. Isobutylene is used to determine the DART calibration factor, so all VOC concentrations are referenced to isobutylene.

As an example, if ambient air background is hovering around 400mV on DART-3 and a peak of VOCs is measured at 930mV, the measured inflection is 530mV. The inflection is then multiplied by the calculated response factor (1.16 in this instance) to calculate a VOC plume of 615ppb.

For purposes of this DART investigation any DART- 3 measurement found above 100ppb was considered a “detect” or a measurement of a VOC plume. Further information on PID can be found on the vendor’s website at <https://ionscience.com/usa/products/minipid-2-hs-high-sensitivity-gas-sensor/>.

ERG verified the DART PID calibration pre-deployment. The ERG inspection team exposed the DART PID to a VOC source during set up and prior to operation each day (i.e., a “bump test”). All bump tests showed a positive inflection from baseline within 10 seconds of exposure to standard VOC source. This verified the proper operation of the DART flow system and PID.

Several times throughout the day, the inspection team observed visual wind readings from windsocks and flags on facility properties and compared them to the wind direction readings from the DART to

verify the readings were correct. The monitoring readings were consistent with visual observations and the DART wind readings were determined to be acceptable for the investigation.

During post-deployment data processing, ERG determined an hourly baseline low, determined the mV inflection above baseline for each measurement, and then converted the inflected mV readings to ppb concentrations.

### **Individual Site Observations**

Facilities where fence line detects were made are discussed below. Figures 5 and 6 visualize the DART data collected on the two days of monitoring. For the DART data visualized below green depicts measurements made below 0 through 49ppb. Yellow to orange readings are between 50 and 99ppb. Red measurements are above 100ppb.

Area or on-road detects are provided in the accompanying data but, if not discussed here specifically, are likely due to mobile source emissions or were plumes or anomalies that could not be found again or reproduced while in the area.

#### Solvay Specialty Polymers

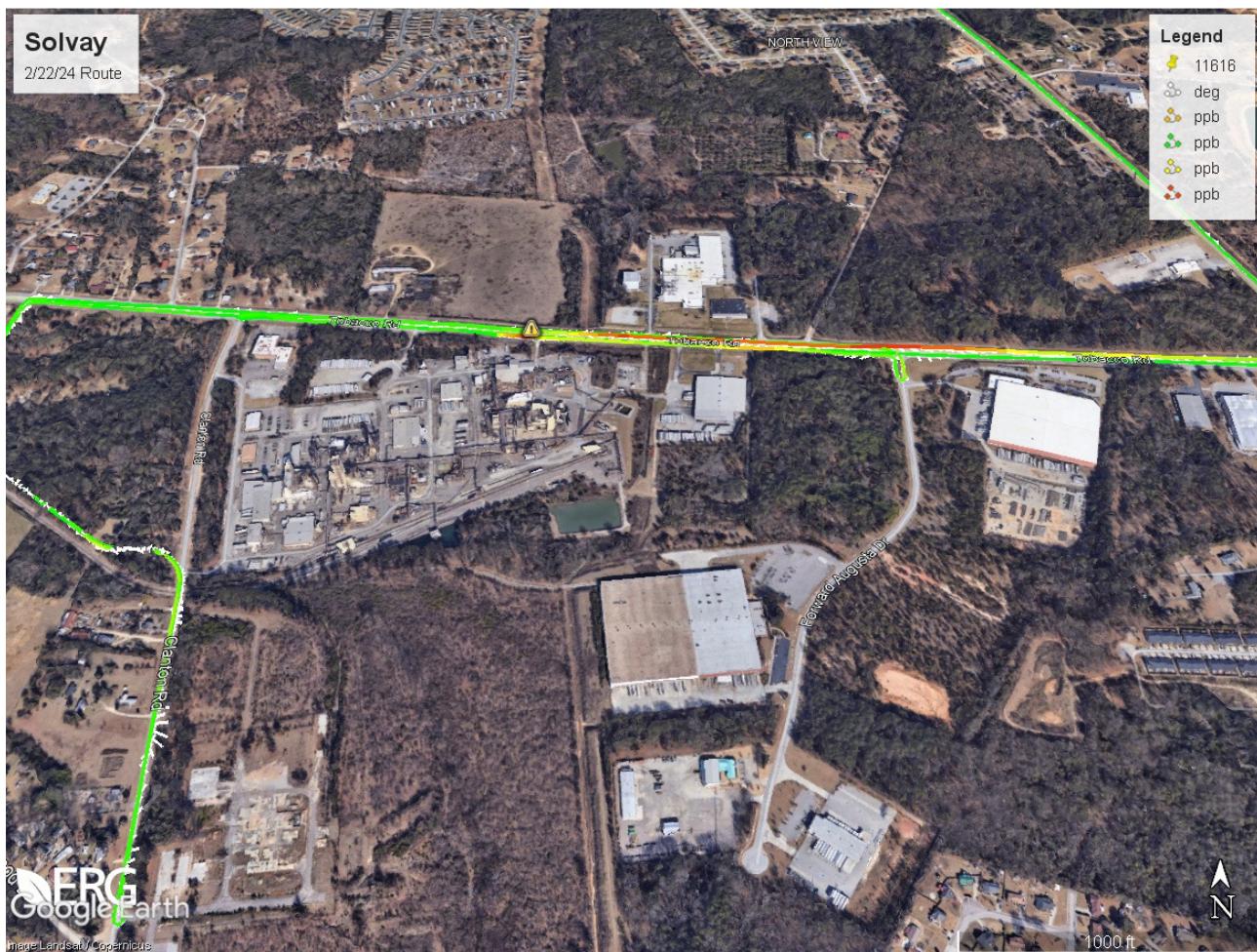
ERG drove the DART vehicle on public roads upwind and downwind of the Solvay Specialty Polymer plant on February 21 and 22, 2024. As shown in Figures 5 and 6 some readings were consistent with background measurements (green bars). A few measurements (visualized as red and orange bars) are observed as sustained plumes downwind from the facility.

On 2/21 while navigating the vehicle downwind of the Solvay Specialty Polymer plant along Clanton Tobacco Road a plume was detected on the northeast corner. A measurement exceeding 100ppb was recorded. A grab canister sample was collected on DART-3 and sent to ERG for analysis. Analytical results will be provided as an addendum. Imagery of the February 22 detects (red, orange, and yellow bars) and background measurements (green bars) from the DART is shown below in Figures 5 and 6.

**Figure 5. Solvay Plant morning route February 21, 2024 Measurements**



**Figure 6. Solvay Plant route February 22, 2024 Measurements**



### SECTION III – Analytical Results

For each canister sample collected, ERG performed analysis according to EPA Compendium Method TO-15 and the National Air Toxics Trend Stations (NATTS) Technical Assistance Document (TAD). Analytical notes are listed below:

- Chlorobenzene had to be diluted onto calibration scale for ERG's analysis. All results have been adjusted based on their dilution factor and are final.
- Acrolein exceeded sampling media lot blank criteria and the result for that compound is an estimate.

The results are presented below.

**Table 2.** Tobacco Road Canister TO-15 Analysis Results

Compound	Concentration (ppbV)	Compound	Concentration (ppbV)
Dichlorodifluoromethane	0.4645	tert-Amyl Methyl Ether	N.D.
Chloromethane	0.5273	1,2-Dichloropropane	N.D.
Dichlorotetrafluoroethane	0.0158	Ethyl Acrylate	N.D.
Vinyl chloride	N.D.	Bromodichloromethane	N.D.
1,3-Butadiene	0.2811	Trichloroethylene	N.D.
Ethylene oxide	N.D.	Methyl Methacrylate	N.D.
Bromomethane	0.0070	cis-1,3-Dichloropropene	N.D.
Chloroethane	N.D.	Methyl Isobutyl Ketone	0.0566
Acetonitrile	0.3353	trans-1,3-Dichloropropene	N.D.
Acrolein	0.2525	1,1,2-Trichloroethane	N.D.
Trichlorofluoromethane	0.2180	Toluene	1.3838
Acrylonitrile	0.0644	Dibromochloromethane	N.D.
1,1-Dichloroethene	N.D.	1,2-Dibromoethane	N.D.
Dichloromethane	0.1011	n-Octane	0.0884
Carbon Disulfide	0.0925	Tetrachloroethylene	0.0051
Trichlorotrifluoroethane	0.0686	Chlorobenzene	48.6520
trans-1,2-Dichloroethylene	N.D.	Ethylbenzene	0.1562
1,1-Dichloroethane	N.D.	m,p-Xylene	0.4562
Methyl tert-Butyl Ether	N.D.	Bromoform	N.D.
Chloroprene	N.D.	Styrene	0.0538
cis-1,2-Dichloroethylene	N.D.	1,1,2,2-Tetrachloroethane	N.D.
Bromochloromethane	N.D.	o-Xylene	0.1983
Chloroform	0.0238	1,3,5-Trimethylbenzene	0.0346
Ethyl tert-Butyl Ether	N.D.	1,2,4-Trimethylbenzene	0.1330
1,2-Dichloroethane	0.0194	m-Dichlorobenzene	0.0018
1,1,1-Trichloroethane	N.D.	p-Dichlorobenzene	0.0156
Benzene	0.5704	o-Dichlorobenzene	0.0010
Carbon Tetrachloride	0.0795	1,2,4-Trichlorobenzene	N.D.
		Hexachloro-1,3-butadiene	N.D.

N.D. = Non-Detect

**Table 3.** Speciated Non-Methane Organic Compound Analysis Results

Compound	Concentration (ppbc)	Compound	Concentration (ppbc)
Ethylene	12.1487	Cyclohexane	0.8437
Acetylene	3.3126	2-Methylhexane	1.2075
Ethane	9.1992	2,3-Dimethylpentane	0.8295
Propylene	6.1796	3-Methylhexane	2.2695
Propane	4.1627	1-Heptene	0.2969
Propyne	0.3627	2,2,4-Trimethylpentane	1.6266
Isobutane	3.3066	n-Heptane	1.0617
Isobutene	2.6804	Methylcyclohexane	0.6294
1-Butene	0.9923	2,2,3-Trimethylpentane	N.D.
1,3-Butadiene	1.0732	2,3,4-Trimethylpentane	0.4726
n-Butane	7.4267	Toluene	9.9519
trans-2-Butene	0.2996	2-Methylheptane	N.D.
cis-2-Butene	0.2643	3-Methylheptane	0.423
3-Methyl-1-Butene	0.1356	1-Octene	0.2407
Isopentane	5.2753	n-Octane	0.878
1-Pentene	0.4543	Ethylbenzene	1.2576
2-Methyl-1-Butene	0.3543	m/p-Xylene	3.7638
n-Pentane	3.2307	Styrene	N.D.
Isoprene	N.D.	o-Xylene	1.6557
trans-2-Pentene	0.2789	1-Nonene	0.5205
cis-2-Pentene	0.1125	n-Nonane	1.5014
2-Methyl-2-Butene	0.3289	Isopropylbenzene	0.1132
2,2-Dimethylbutane	N.D.	alpha-Pinene	N.D.
Cyclopentene	0.1	n-Propylbenzene	0.336
4-Methyl-1-Pentene	N.D.	m-Ethyltoluene	1.1341
Cyclopentane	0.321	p-Ethyltoluene	0.5261
2,3,-Dimethylbutane	0.6237	1,3,5-Trimethylbenzene	0.4487
2-Methylpentane	2.6033	o-Ethyltoluene	0.428
3-Methylpentane	1.6398	beta-Pinene	2.2985
2-Methyl-1-Pentene	0.0824	1,2,4-Trimethylbenzene	1.4753
1-Hexene	0.2459	n-Decane	0.4222
2-Ethyl-1-butene	N.D.	1,2,3-Trimethylbenzene	0.3302
n-Hexane	3.4539	m-Diethylbenzene	0.0532
trans-2-Hexene	0.1461	p-Diethylbenzene	N.D.
cis-2-Hexene	N.D.		
Methylcyclopentane	1.435		
2,4-Dimethylpentane	0.4011		
Benzene	3.4469		

**Table 3. Speciated Non-Methane Organic Compound Analysis Results**

Compound	Concentration (ppbc)
1-Undecene	N.D.
n-Undecane	0.4286
1-Dodecene	0.1305
n-Dodecane	0.5639
1-Tridecene	0.6078
n-Tridecane	0.192

N.D. = Non-Detect

#### **SECTION IV – Conclusions**

All conclusions and decisions to follow-up on the findings presented here will be solely at the determination of the EPA.

#### **SECTION V – Appendix**

Attachment 1 – COC Form DART February 22, 2024 Solvay sample

Attachment 2 – Data Visualization for February 21, 2024 routes (.kmz file)

Attachment 3 – Data Visualization for February 22, 2024 route (.kmz file)