

Community Update Meeting  
for the area around  
Graphic Packaging  
International, Kalamazoo

October 5, 2021

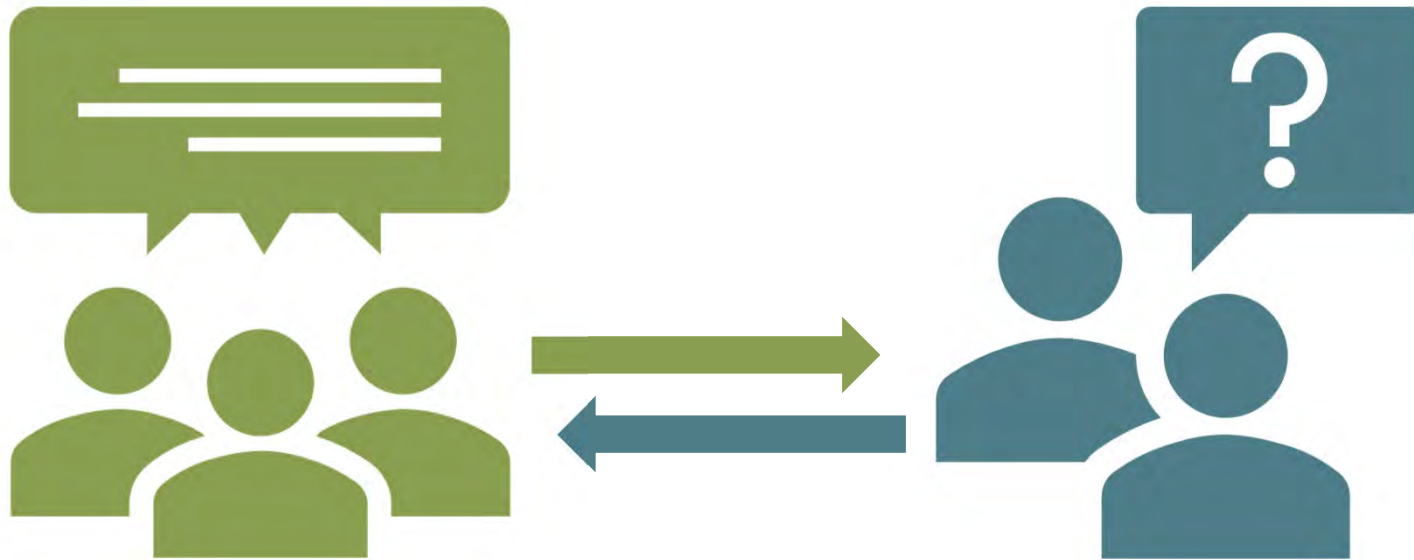


All lines are muted during the meeting.



We are recording this meeting.

# How will things work tonight?



# How to ask a question?



Use the “Q/A”  
box in at the  
bottom of your  
screen.



Click the  
“hand” icon at  
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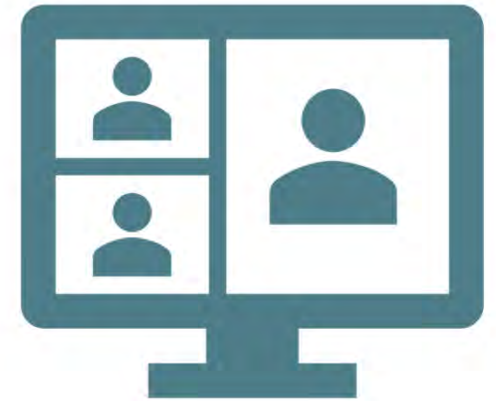


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your phone.

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# Agenda

- Introduction of speakers and partners
- Background and company information
- Introduction of sampling events
  - Envirosuite data
  - Public Health Consultation
  - USEPA mobile monitoring
  - Cairpol
- Details of sampling events
- Where to find other information
- Whom to contact with further questions





Introduction to air sampling events:

# COMPANY INFORMATION AND BACKGROUND



# Company Information

- Recycled coated paperboard production facility
- This location has been a paper mill since the 1920s
- Graphic Packaging bought the facility in 2000.
- Two sections: The Paperboard Mill and the Carton Plant
- Facility also has wastewater treatment equipment used to treat and recycle water





# Why are we here?

## Community Concerns

- Many odor complaints over the past ten years
- Graphic Packaging Violations of Nuisance Odor Rule 901
- Citizen concerns about hydrogen sulfide (H<sub>2</sub>S)

## What is H<sub>2</sub>S?

- Hydrogen sulfide (H<sub>2</sub>S) is a colorless gas with a strong odor of rotten eggs.
- It is produced naturally in the environment, but it can also come from various industrial processes.

# What is EGLE doing to address the odors and citizen concerns?

- Continue to conduct inspections and complaint investigations
- Nuisance Odor Violations of Rule 901 and Enforcement
- Hydrogen Sulfide (H<sub>2</sub>S) Monitoring along Riverview Drive
- Envirosuite H<sub>2</sub>S Data Collection and evaluation from Graphic Packaging and the Kalamazoo Water Reclamation Plant
- Continue to collaborate with the city of Kalamazoo, MDHHS, USEPA, and Agency for Toxic Substances and Disease Registry (ATSDR)

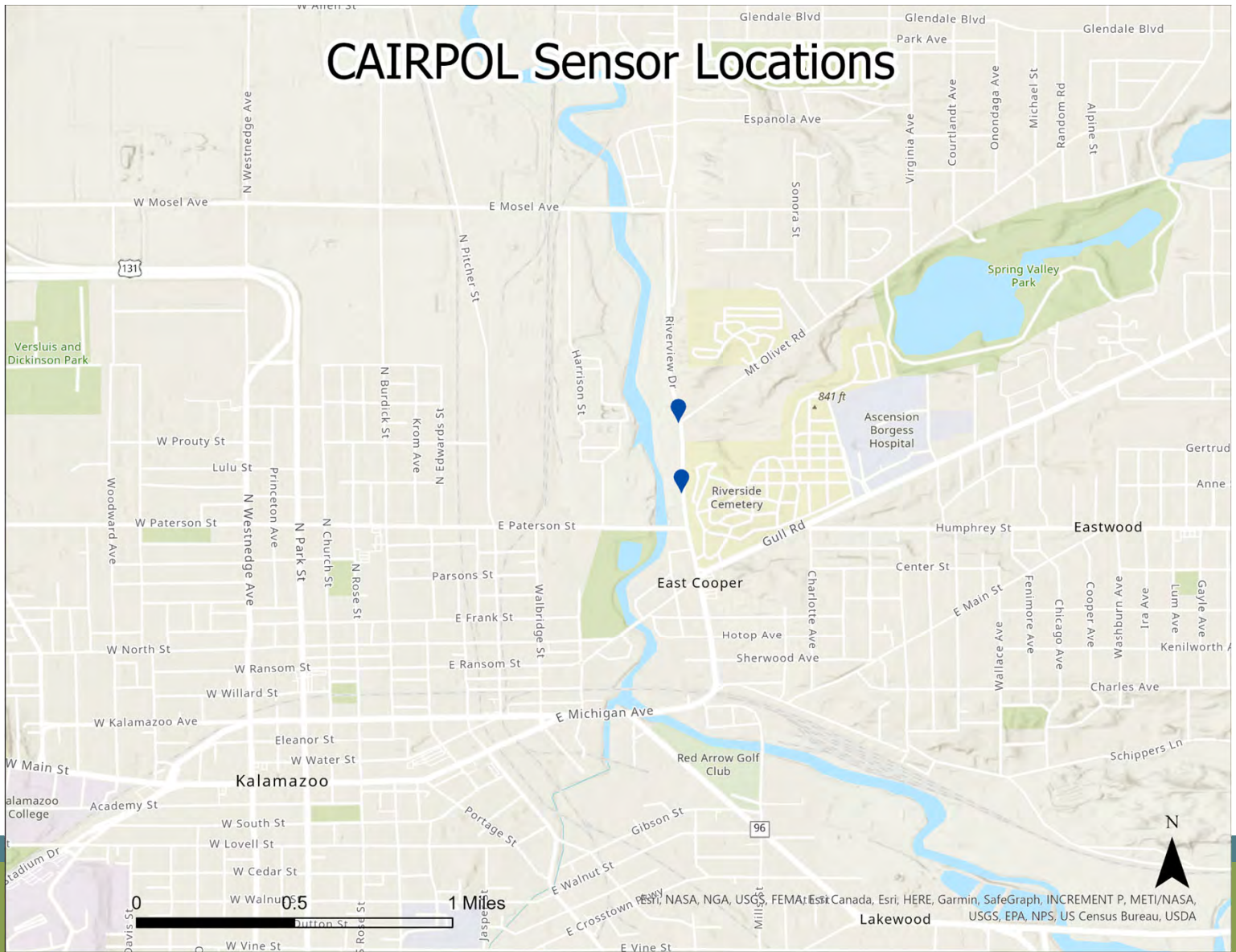


# What has Graphic Packaging (GPI) been doing to reduce odors?

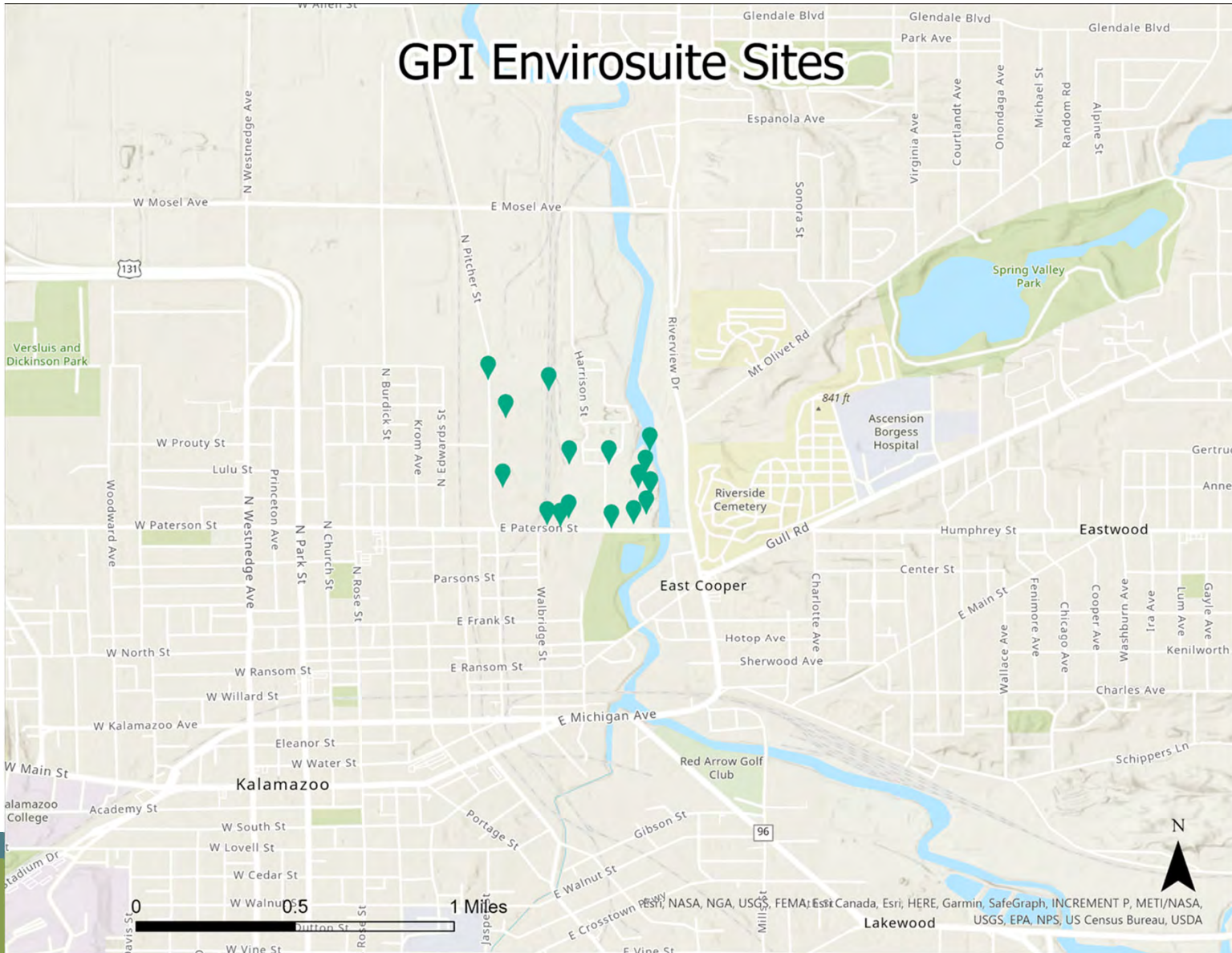
- Installation of 16 Envirosuite H<sub>2</sub>S monitors on GPI property
- Wastewater treatment system modifications
- Increased sludge removal
- Third-party Odor Study
- Submitted Odor Minimization Plan in Dec. 2020
- Quarterly monitoring of H<sub>2</sub>S at various locations in the plant using a handheld Jerome monitor
- Engineering study completed in Sept. 2021



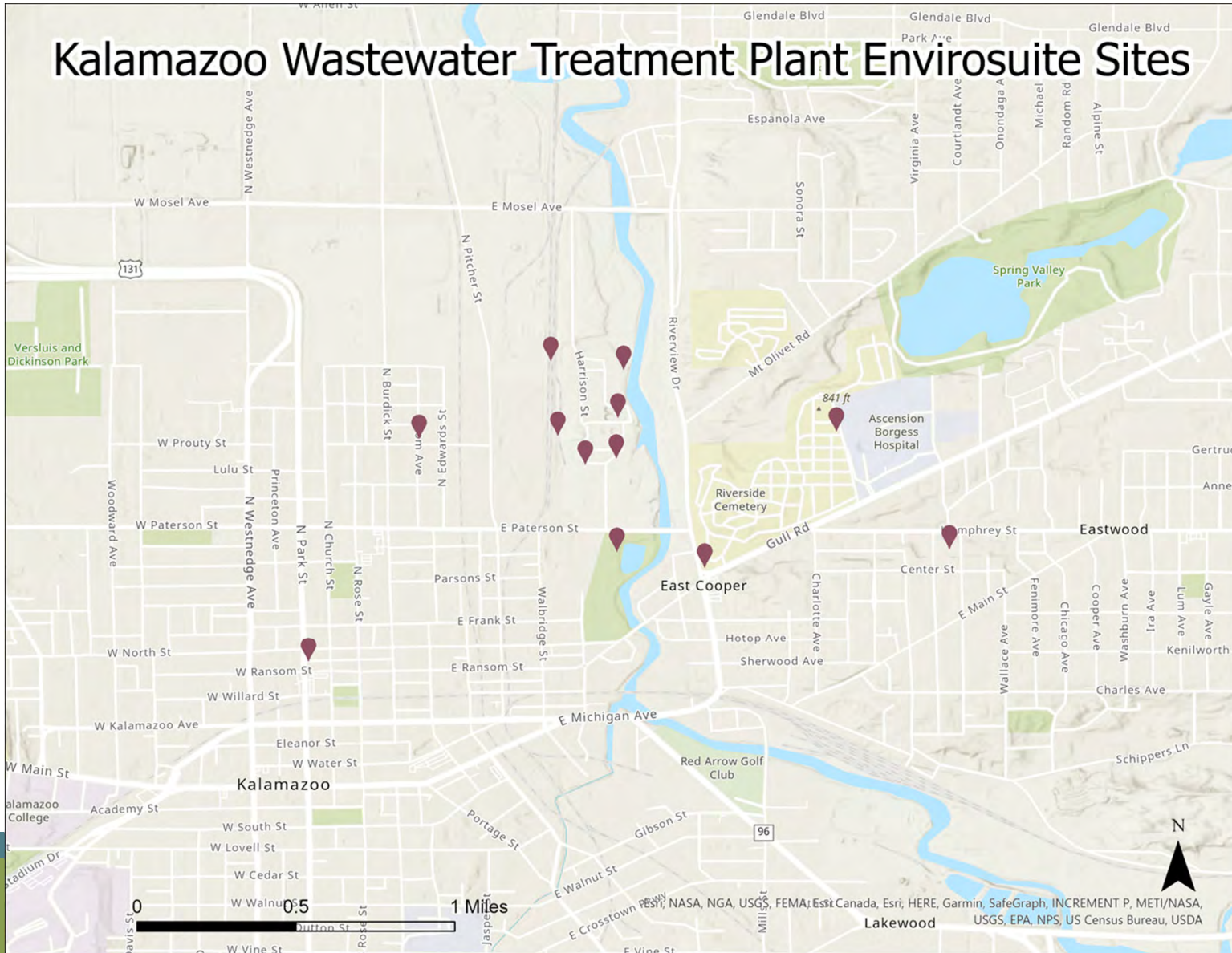
# CAIRPOL Sensor Locations



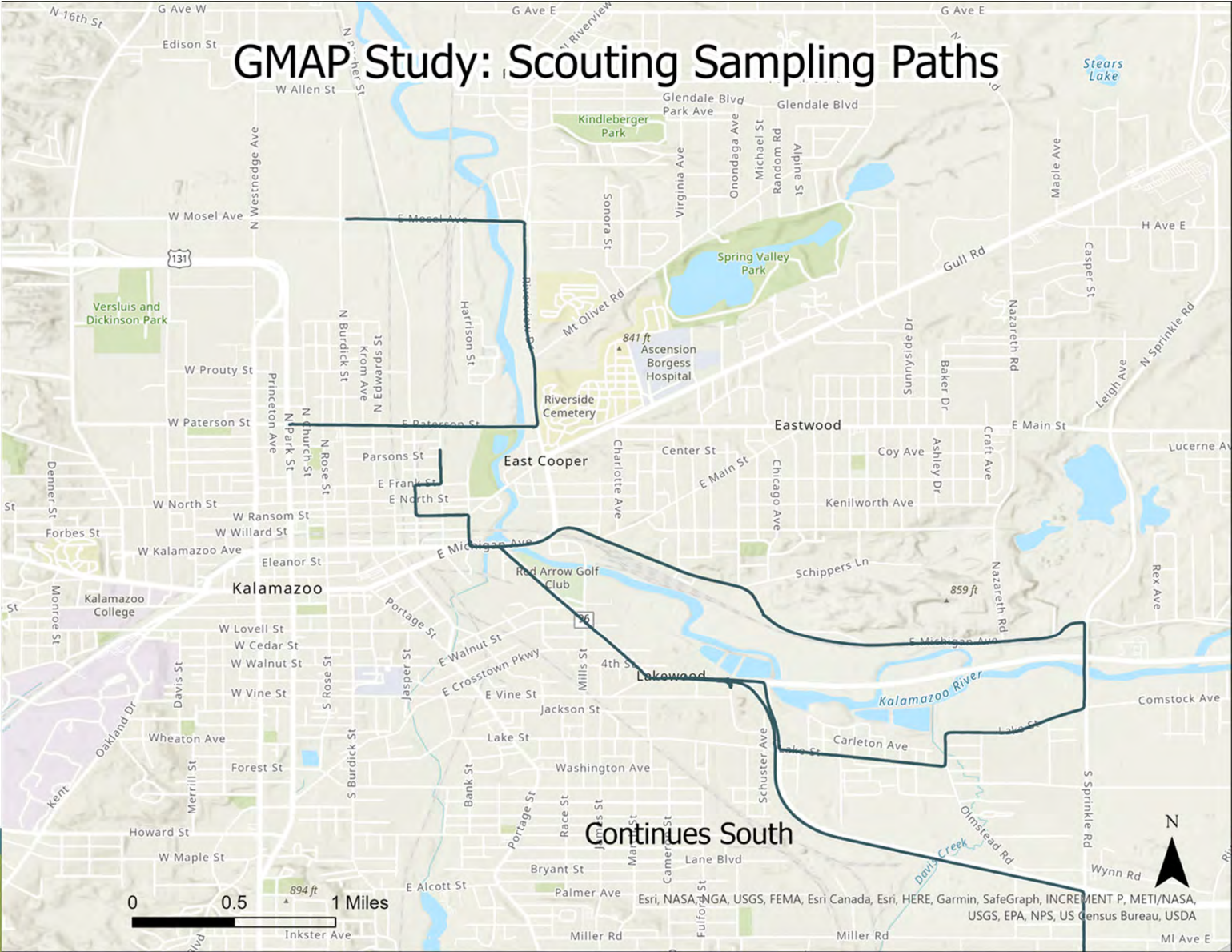
# GPI Envirosuite Sites



# Kalamazoo Wastewater Treatment Plant Envirosuite Sites



# GMAP Study: Scouting Sampling Paths



Esri, NASA, NOAA, USGS, FEMA, Esri Canada, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

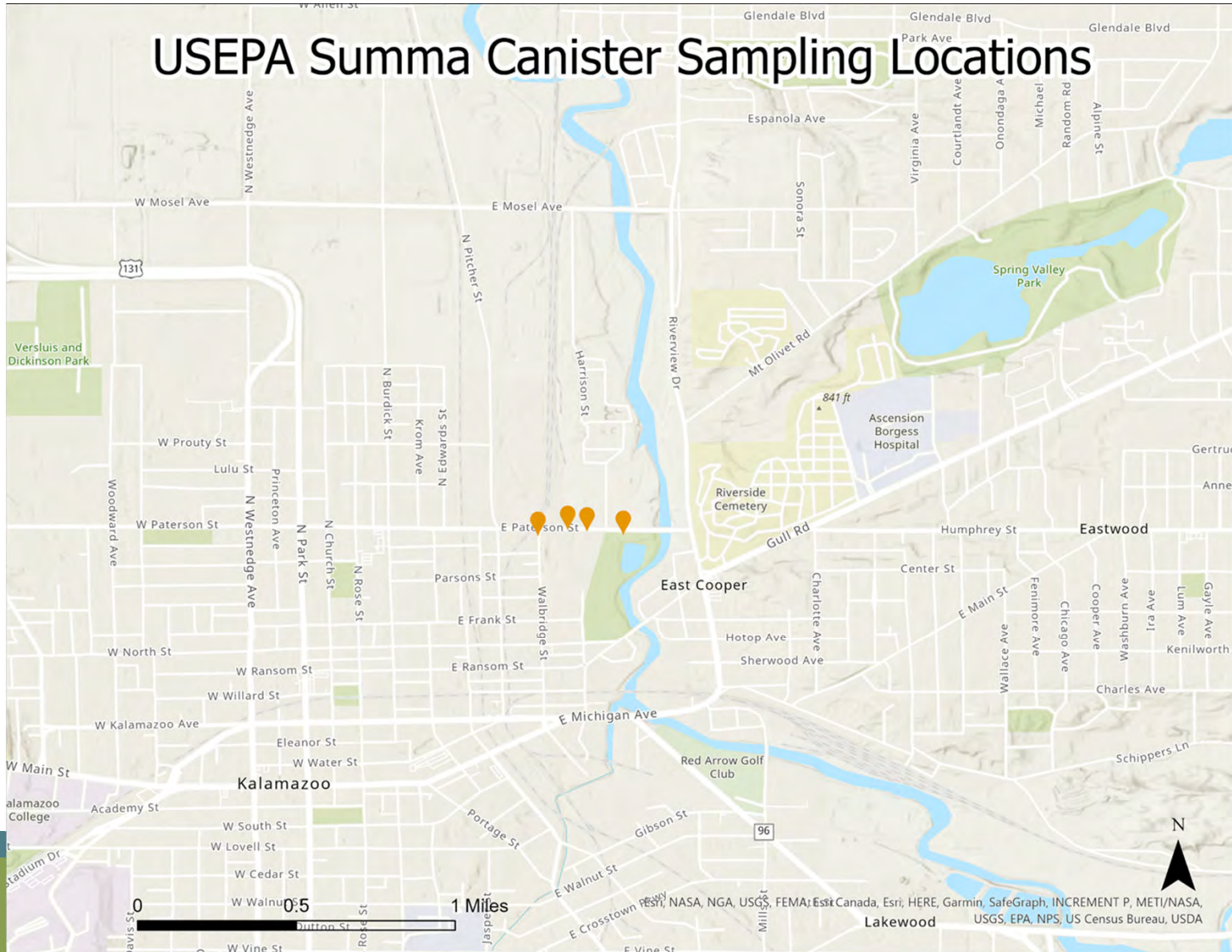
# GMAP Study: Graphic Packaging Sampling Paths



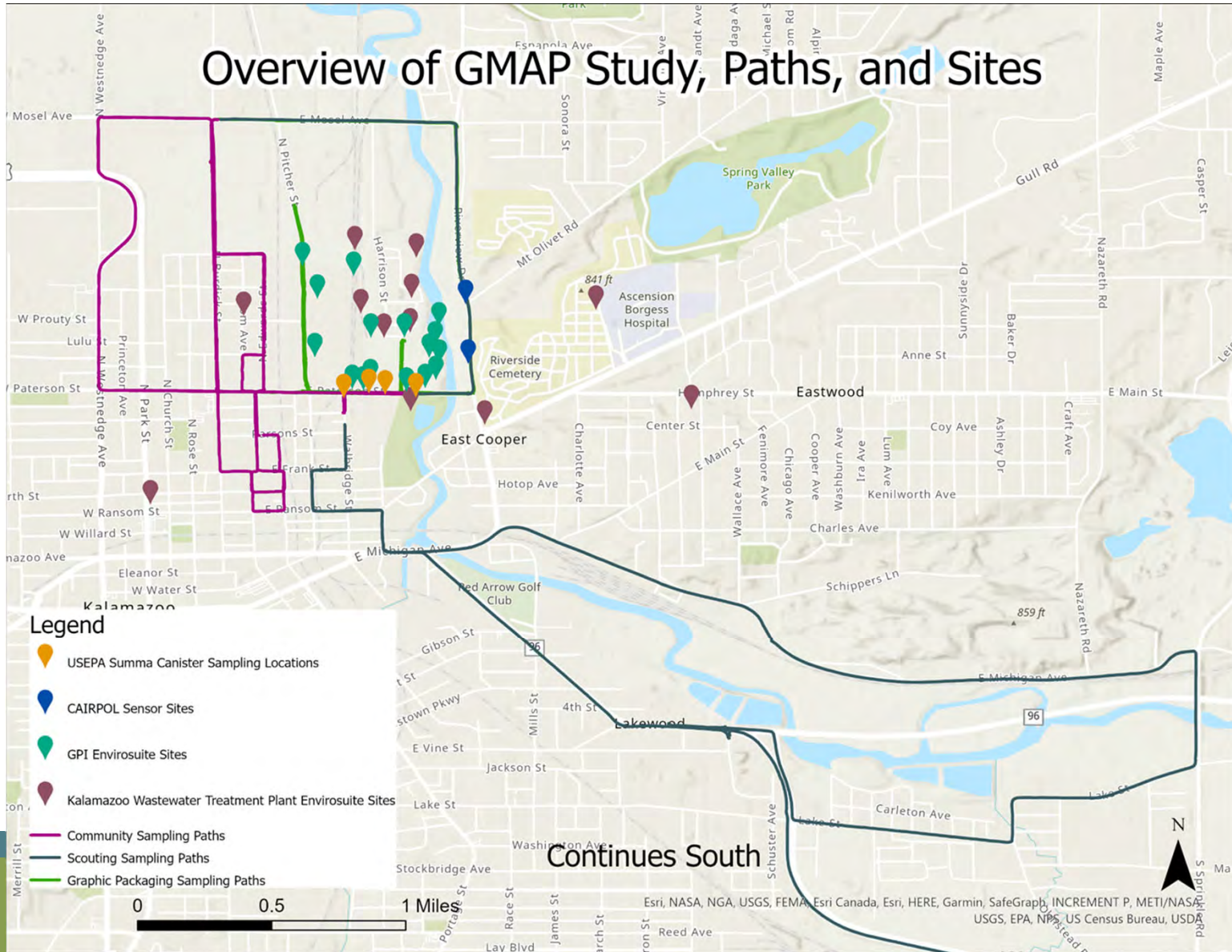




# USEPA Summa Canister Sampling Locations



# Overview of GMAP Study, Paths, and Sites



# EPA R5's GEOSPATIAL MONITORING OF AIR POLLUTION (GMAP)



Marta A. Fuoco  
U.S. EPA R5  
312.886.6243  
[Fuoco.Marta@epa.gov](mailto:Fuoco.Marta@epa.gov)



# R5 GEOSPATIAL MONITORING OF AIR POLLUTION



## 1-second measurement

hydrogen sulfide ( $\text{H}_2\text{S}$ )

methane ( $\text{CH}_4$ )

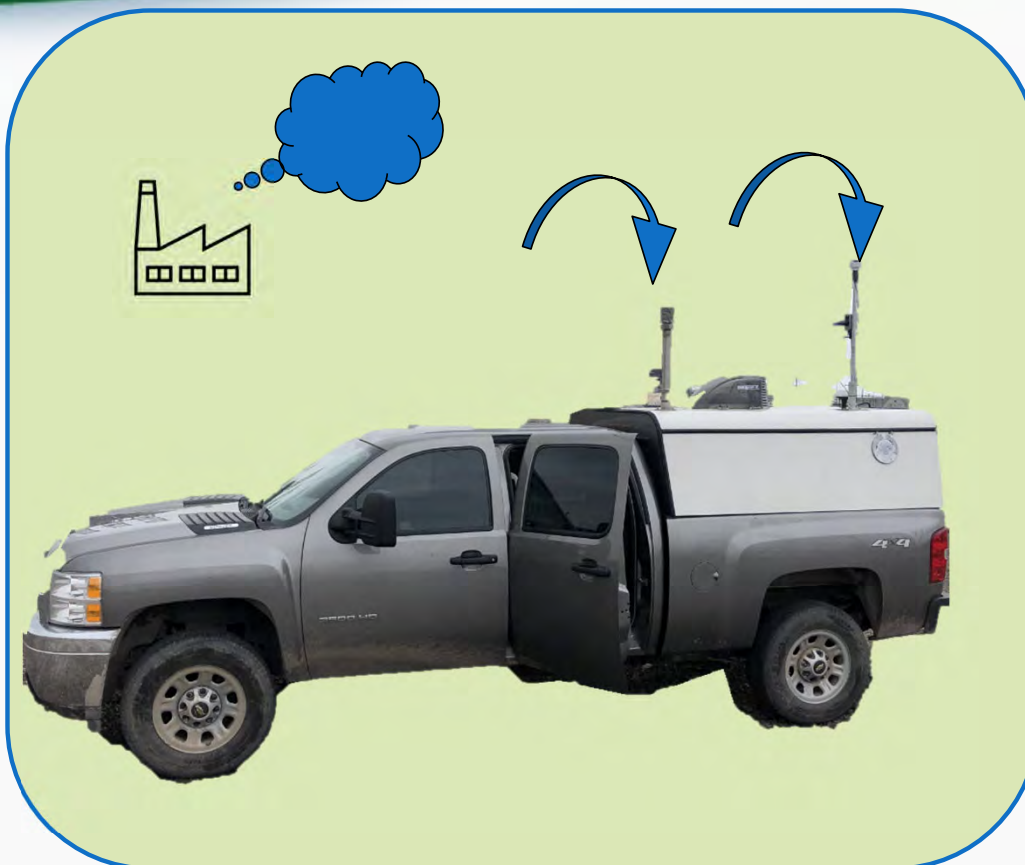
benzene ( $\text{C}_6\text{H}_6$ )

toluene ( $\text{C}_7\text{H}_8$ )

p-xylene ( $\text{C}_8\text{H}_{10}$ )

wind speed/wind direction

latitude/longitude



# EPA R5 MONITORING



- R5 EPA monitored in Kalamazoo:
  - Spent 3 days in May 2021 under ideal monitoring conditions
  - Monitored using very specialized equipment
  - Dawn to dusk when conditions are ideal to measure heavy gas such as H<sub>2</sub>S
  - Field staff observed odors
- Analyzed > 100,460 data points
  - Most values below reporting limits
    - Background levels of methane observed
- Although we observed odor in the field, we did not measure any concentrations of the parameters that we could monitor for

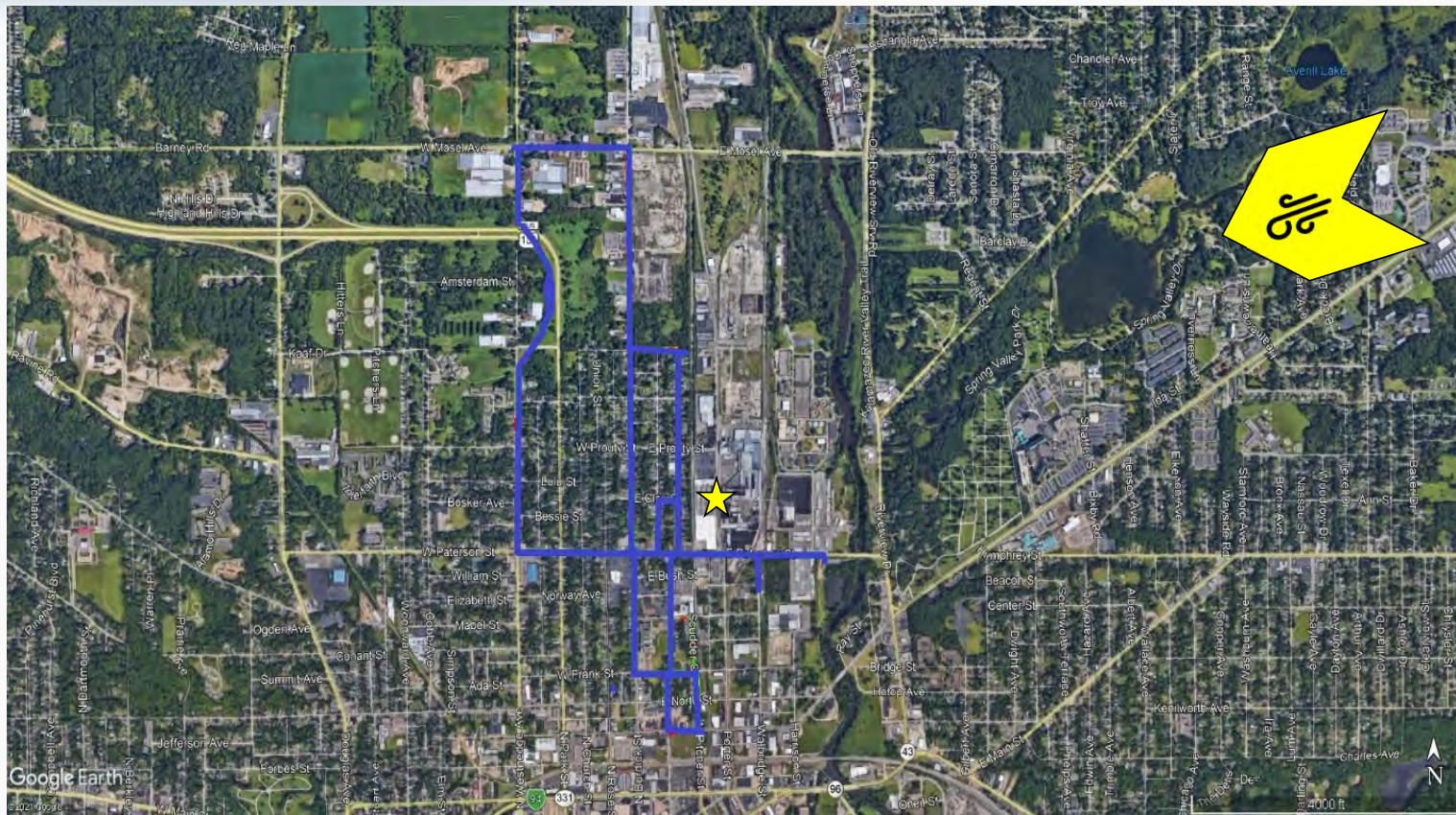
## CANISTER SAMPLING



**Canister** air sampling and analysis method provides procedures for **measuring a subset of VOCs** included in the 189 hazardous air pollutants (HAPs) listed in Title III of the Clean Air Act Amendments of 1990

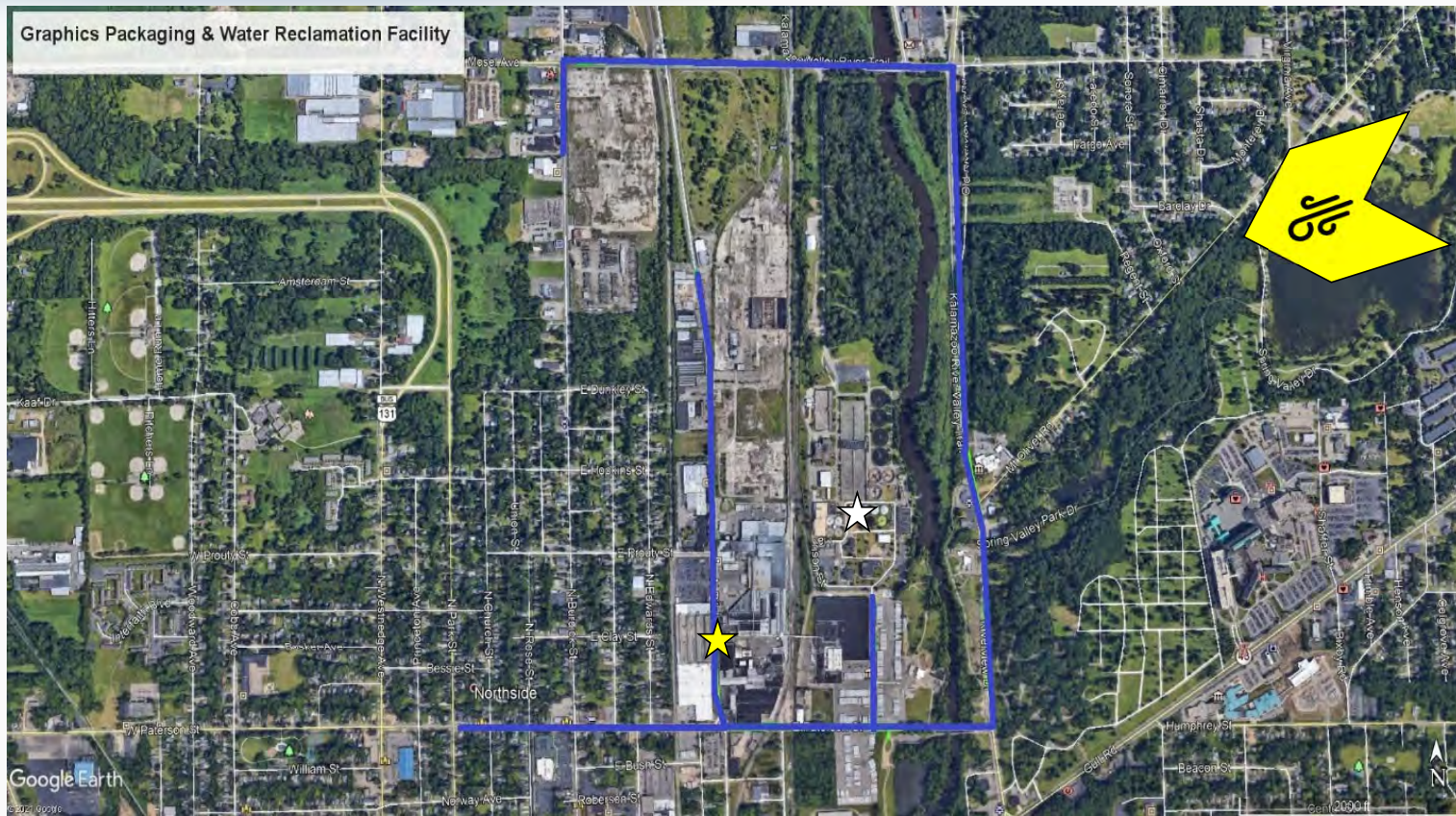


# MOBILE MONITORING

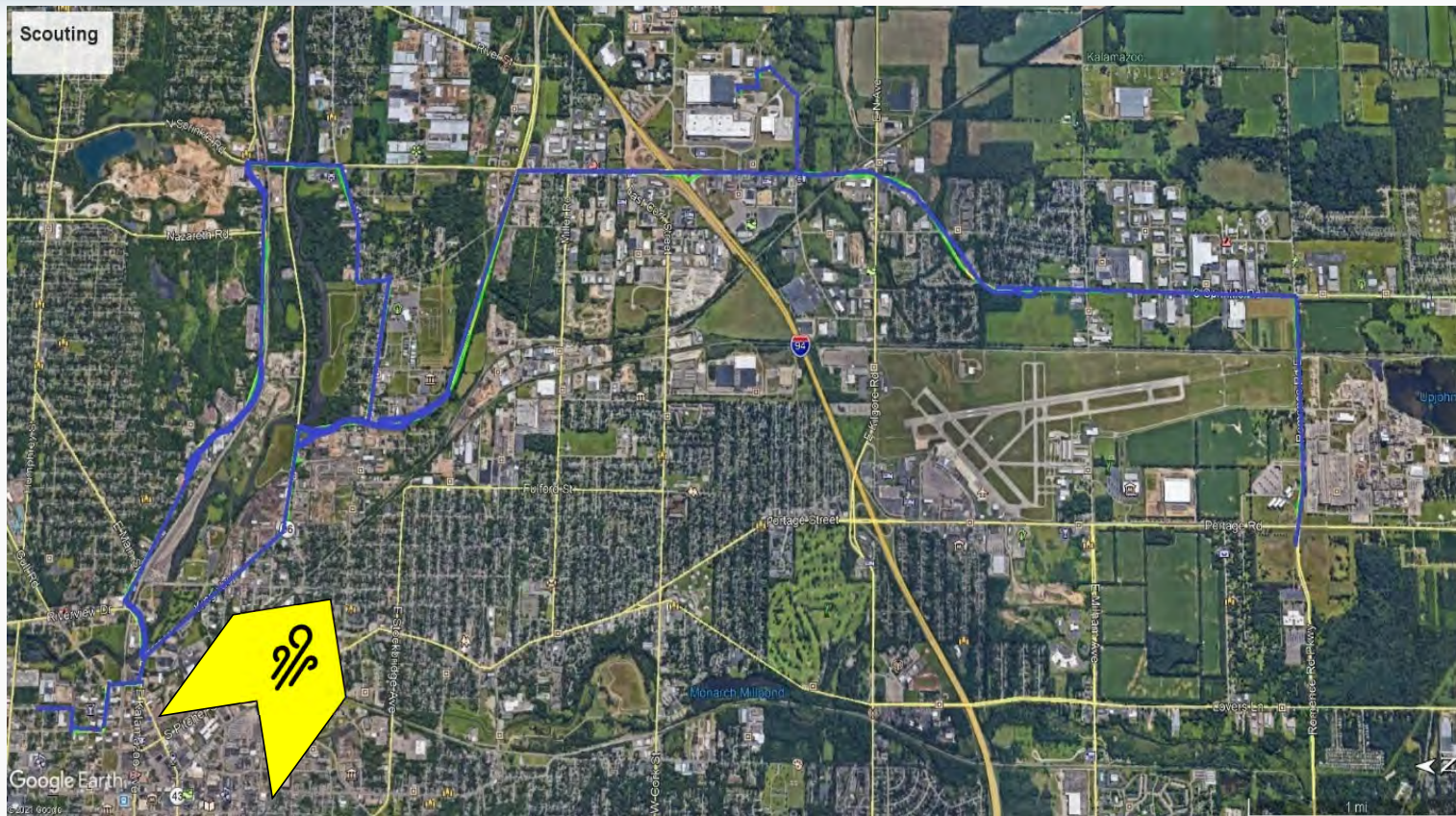




# MOBILE MONITORING



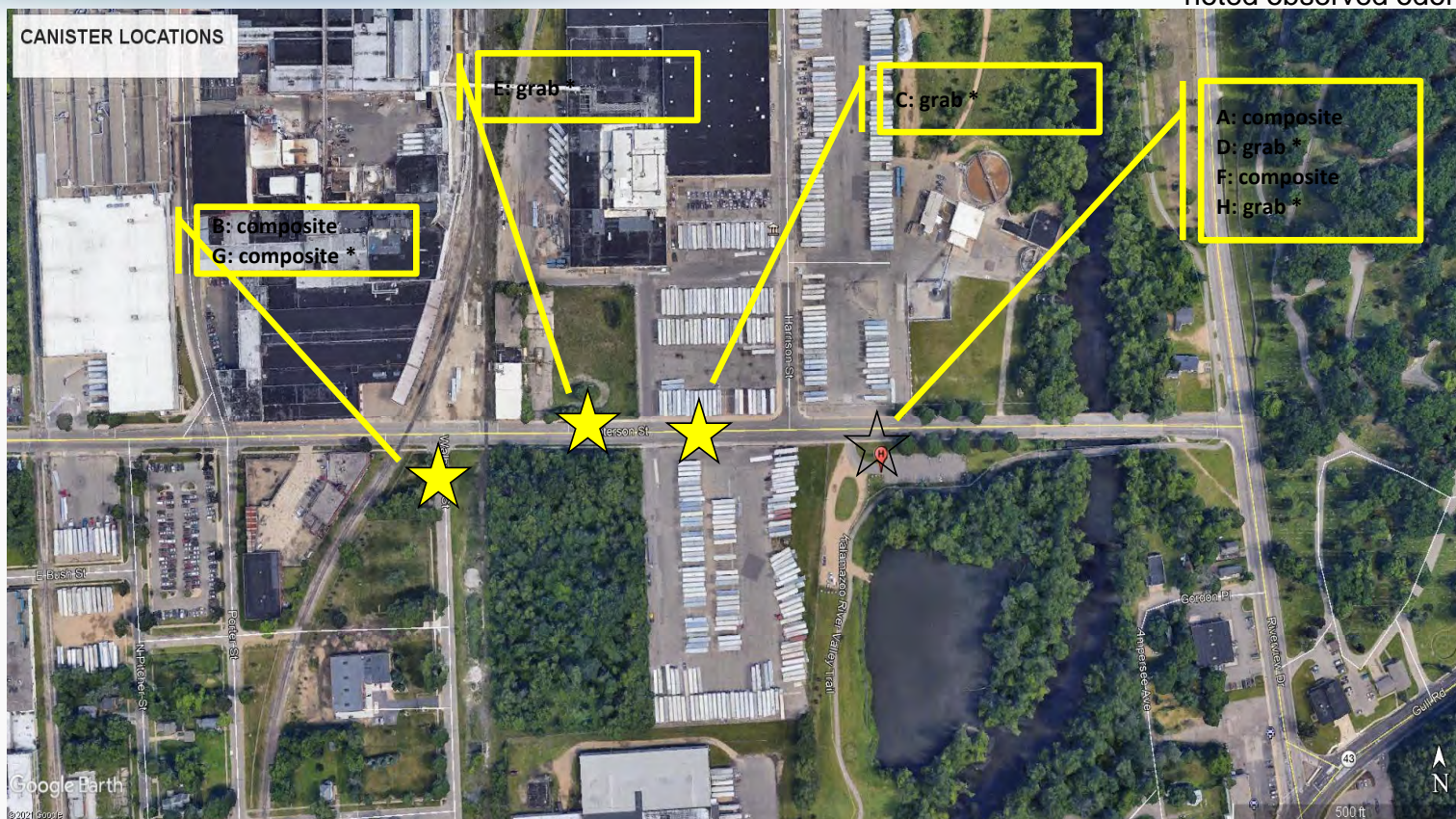
# MOBILE MONITORING



# CANISTER SAMPLES



\* noted observed odor



# BENCHMARKS



MOBILE MEASUREMENTS – MAY 11-13, 2021	H <sub>2</sub> S (PPB)	CH <sub>4</sub> (PPM)	BEN (PPB)	TOL (PPB)	XYP (PPB)
ATSDR ACUTE (≤14 DAY) MRL	70	-	9	2000	2000
ATSDR INTERMEDIATE (15-364 DAYS) MRL	20	-	6	-	600
ATSDR CHRONIC (≥365 DAYS) MRL	-	-	3	1000	50
<b>GMAP MINIMUM DETECTION LIMIT</b>	7.86	0.00	4.80	3.69	4.05
<b>GMAP REPORTING LIMIT</b>	23.58	0.00	24.00	18.45	20.25

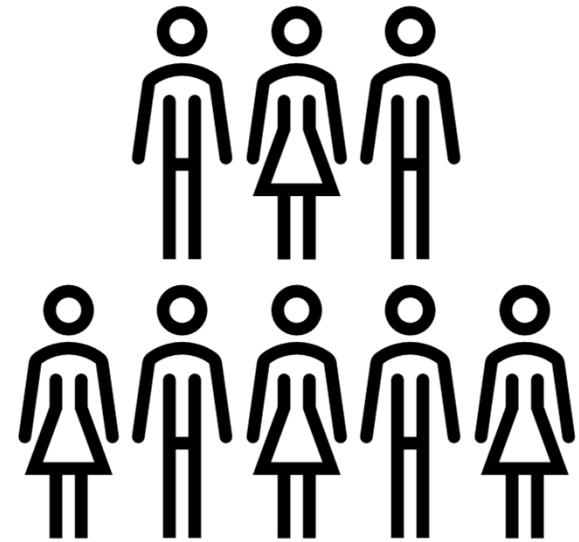
EPA's GMAP Reporting Limit for H<sub>2</sub>S is higher than ATSDR's intermediate H<sub>2</sub>S MRL  
 EPA's GMAP Reporting Limit for benzene is higher than ATSDR's acute, intermediate, and chronic MRL

## EPA MONITORING CONCLUSION



1. Although the field operators observed a distinct odor, EPA did not detect reportable concentrations of H<sub>2</sub>S, benzene, toluene, or p-xylene using the GMAP during this campaign. Methane was detected at background levels.
2. The TO-15 canister analysis measured for compounds EPA is concerned about; these additional canister samples taken during odor events and sent to the laboratory identified five compounds, but all concentrations were below levels of health concern.
3. It is possible that the odors are not caused by pollutants measured by the GMAP or TO-15 canister analysis or are present at low concentrations below their detection thresholds.
4. EPA has not been able to identify the odors that field operators encountered during this monitoring campaign.

Community Update:  
AIR QUALITY AND HEALTH

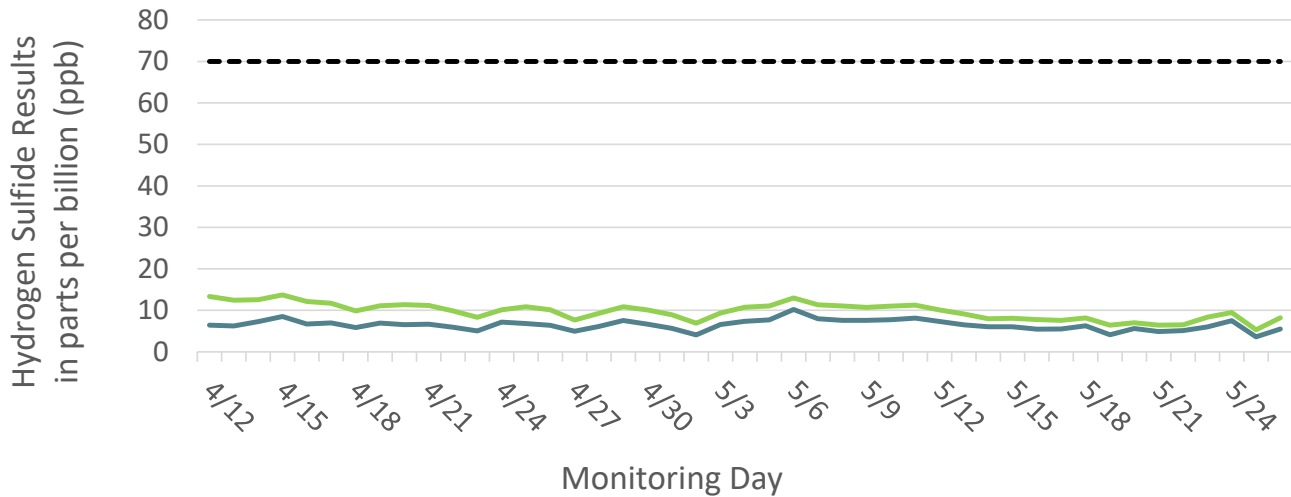


# Estimating if Air Quality will Affect Health

- Air monitoring results were compared to health comparison values
  - Health comparison values (or health benchmarks) are developed from research studies and set at levels for specific timeframes that are not expected to cause a health concern
  - Health comparison values are often developed for two main health effects:
    - Risk of developing cancer
    - Noncancer effects
  - For hydrogen sulfide, health comparison values are for noncancer effects
    - Research studies have not shown that hydrogen sulfide causes cancer

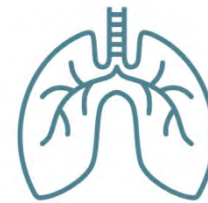
# Hydrogen sulfide air monitoring results are not a short-term health concern

Daily Average Hydrogen Sulfide Results



— North site — South site - - - Health Comparison Value for 1-14 day exposure

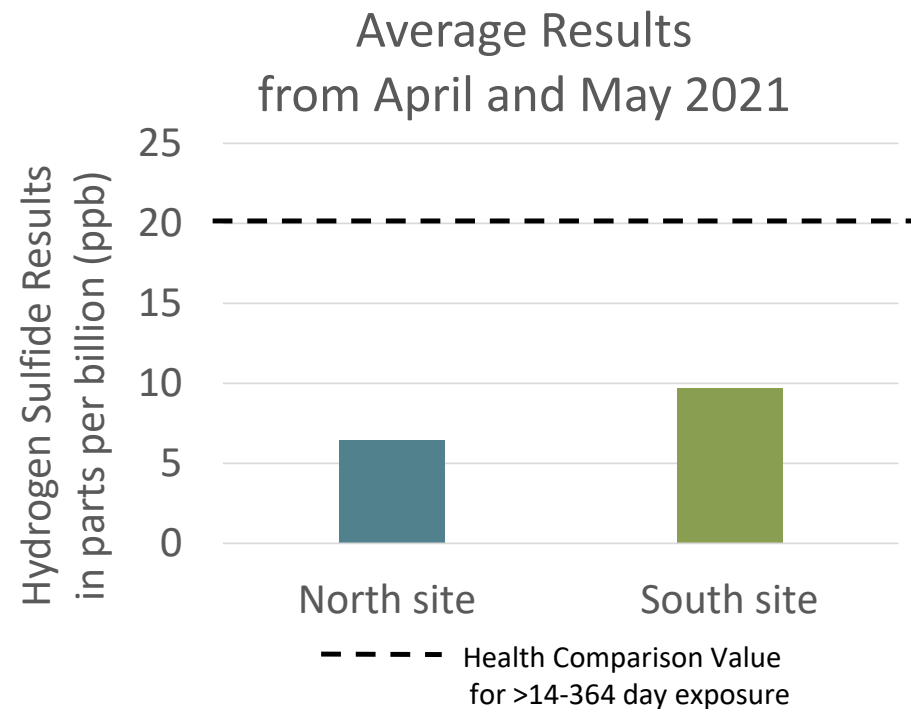
A health comparison value for 1-14 days of exposure is set where respiratory and nervous system health effects are not expected to occur





# Hydrogen sulfide air monitoring results are not a short-term health concern

A health comparison value for > 14-364 days of exposure is set where respiratory health effects are not expected to occur



## What about health problems from long-term exposures or for vulnerable groups?

If these shorter time frame results are the same over the long-term, hydrogen sulfide results are above long-term health comparison values.

- Exceeding health comparison values is cause for further review; it does not mean that health problems will occur from monitored results.

Further review is being done by the state health department to understand the long-term health concern, as well as the health concern for vulnerable groups in this area.

## Summary:

The Air Quality Division conducted air monitoring for hydrogen sulfide downwind of suspected major sources.

Comparing to health comparison values, the hydrogen sulfide results are not a short-term health concern.

- This is a snapshot of time compared to knowing air quality over long periods of time.

Evaluation of health concerns from long-term exposures and for other factors is still being investigated.

# Kalamazoo Community Update: MDHHS

Brandon Reid, Toxicologist

Michigan Department of Health and Human Services

October 5, 2021



# Overview

- MDHHS is preparing a Health Consultation to evaluate potential health concerns related to hydrogen sulfide in the community near the Kalamazoo Water Reclamation Plant (KWRP) and Graphic Packaging International (GPI) facility.
- MDHHS is supported by the Agency for Toxic Substances and Disease Registry (ATSDR) and our methods follow their guidance.
- In addition to our partners at EGLE, ATSDR, and EPA, we are working with MDHHS epidemiologists to investigate asthma rates in the community around KWRP and GPI.

# Which chemicals are we investigating?

## Hydrogen Sulfide (H<sub>2</sub>S)

- Clear, colorless gas
- Has a characteristic rotten egg odor that can be smelled at very low levels in the air
- Health effects depend on how long and how much you breathe:
  - Eye, nose, and throat irritation
  - Headaches and tiredness.
- H<sub>2</sub>S is not known to cause asthma, but it can cause difficulty breathing in people with asthma.
- There is no evidence that H<sub>2</sub>S can cause cancer.

## Additional chemicals

- Reduced Sulfur Compounds (RSCs)
- Volatile Organic Compounds (VOCs)
- Ammonia

# What data has been collected?

Study	Chemicals measured	How long were samples collected?
Graphic Packaging Odor Study*	Hydrogen Sulfide (H <sub>2</sub> S)	One minute
City of Kalamazoo Monitoring Study*	H <sub>2</sub> S; Reduced Sulfur Compounds; Volatile Organic Compounds; Ammonia	Up to 24 hours, on 3 separate days
EPA Mobile Monitoring - GMAP	H <sub>2</sub> S; Volatile Organic Compounds	Multiple hours over three days
EGLE Cairpol Sensors	H <sub>2</sub> S	Six weeks
Graphic Packaging, City of Kalamazoo Continuous Sensors	H <sub>2</sub> S	Ongoing since 2019

\*These two studies have not been previously discussed today.

# What will we do with the data once it is collected?

- We compare the environmental monitoring data against health comparison values.
  - They represent levels of chemicals in the air that may cause adverse health effects if exceeded.
- Health comparison values are set by public health agencies like ATSDR and EPA.
- Our comparison of chemical data to health comparison values is an important part of our Health Consultation.



# Our public health assessment also includes consideration of:

- Asthma
  - We know many community members are concerned about asthma.
  - People with underlying breathing conditions such as asthma may be more sensitive to hydrogen sulfide in the air.
- Odor
  - Hydrogen sulfide has a pungent odor that can be smelled at very low levels.
  - Foul odors worsen quality of life.
- Stress
  - Foul odors and adverse health effects contribute to stress, which can cause additional health effects.

# Thank you!

Please do not hesitate to contact me with any questions or concerns.

Brandon Reid, Toxicologist  
Division of Environmental Health  
Email address: [reidb1@michigan.gov](mailto:reidb1@michigan.gov)



# How to ask a question?



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bottom of your  
screen.

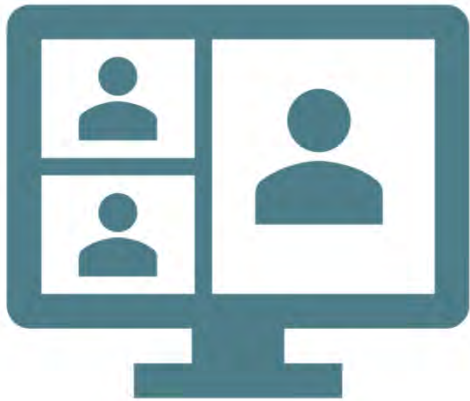


Click the  
“hand” icon at  
the bottom of  
your screen.



Type #2 into  
your phone.

**#2**



## Panel

Monica Brothers – EGLE Inspector  
Keisha Williams – EGLE Toxicologist  
Bill Farrell – DHHS  
Brandon Reid - DHHS  
Marta Fuoco - USEPA  
Jason Wolf – EGLE Enforcement  
  
Jenifer Dixon – Moderator

# Where to find other information

- Compliance information
- Permit information
- Odor Plans
- Links to meeting recordings
- More

[Michigan.gov/EGLEGraphicPackaging](https://Michigan.gov/EGLEGraphicPackaging)

# Who to contact with further questions

## EGLE Inspector

Monica Brothers  
BrothersM@Michigan.gov  
269-312-2535

## EGLE Toxicologist

Keisha Williams  
WilliamsK29@Michigan.gov  
517-582-3721

## DHHS

Bill Farrell  
FarrellW@Michigan.gov  
517-243-5350

## DHHS

Brandon Reid  
ReidB1@Michigan.gov  
517-897-3552

## USEPA

Marta Fuoco  
Fuoco.Marta@EPA.gov  
312-866-6243

## EGLE Enforcement

Jason Wolf  
WolfJ2@Michigan.gov  
517-275-0943

Pollution Emergency Number: 800-292-4706

# THANK YOU!

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We will share the slides and a recording and subtitled copy of the today's conversation via email and on our website in the next few days.