MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Advanced Air Mobility Challenge

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The Core Problem EGLE wants to Solve

Accessibility	Difficult-to-reach locations (urban corridors, rivers, industrial zones)
Labor intensity	Staff time, travel, manual deployment
Timeliness	Delayed results limit real-time decision-making

Two Focus Areas for EGLE

Water Quality Sampling

- Rivers, lakes, and outfalls
- Nutrients, bacteria, HAB indicators
- Manual sampling & lab delays
- Limited sampling frequency
- Staff time, travel, safety constraints
- Data gaps between samples
- Ecosystem and public health impacts

Odor Complaint Response

- Dense urban and industrial areas
- Objectionable orders and air pollutants
- Require onsite staff investigation
- Pollutant of concern identification
- Source of origination
- Limited pollutant-specific real time data
- Community trust and EJ concerns

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Water Quality Sampling

Case Study 1

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Water Quality Sampling

Current Need

- Nutrient and bacteria sampling
- Indicators tied to harmful algal blooms, ecosystem health, and public safety

How We Do It Today

- Established sampling protocols
- Multiple staff per site
- Significant travel time
- Manual deployment and retrieval
- Lab services and delayed results
- High cost per data point

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Water Sampling Challenges

Sampling targets include:

- Nutrients, bacterial growth
- Harmful algal blooms

Delays reduce ability to:

- Detect emerging risks
- Respond quickly
- Inform local partners and the public

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Water Quality Future State

- Drone equipped with modular water-sampling technology
- Ability to:
  - Deploy probes safely into water
  - Capture multiple data points quickly
  - Support near real-time data availability
- Ensure sample integrity

Proposed Test Area

Test Location: **Grand River**

- Known nutrient pressures
- Active stakeholders
- Clear management relevance

Odor Complaint Response

Case Study 2

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Odor Complaint Response

Primary Issue

Specific point source and pollutant identification can be time consuming

Investigating objectionable odors in urban environments

Current Reality

- **Most common air quality complaint**, requiring in-person investigation by qualified air quality staff.
  - Odor investigation process:
    - Travel to location
    - Evaluate odor intensity using odor scale
    - Determine duration of odors
    - Document: frequency and cause and origin, if known
    - Determine if a violation occurred

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Odor Investigation Challenges

Pinpointing the cause or origination point of odors

Complex urban environments

Community trust and complaint fatigue

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Enhanced Odor Investigation Future State

- Drones equipped with sensors for:
  - Pollutants known to cause odors at low concentrations
  - Multi-chemical detection
- Ability to:
  - Identify type of odor or chemical
  - Estimate intensity
  - Support source attribution
  - Operate in near real time

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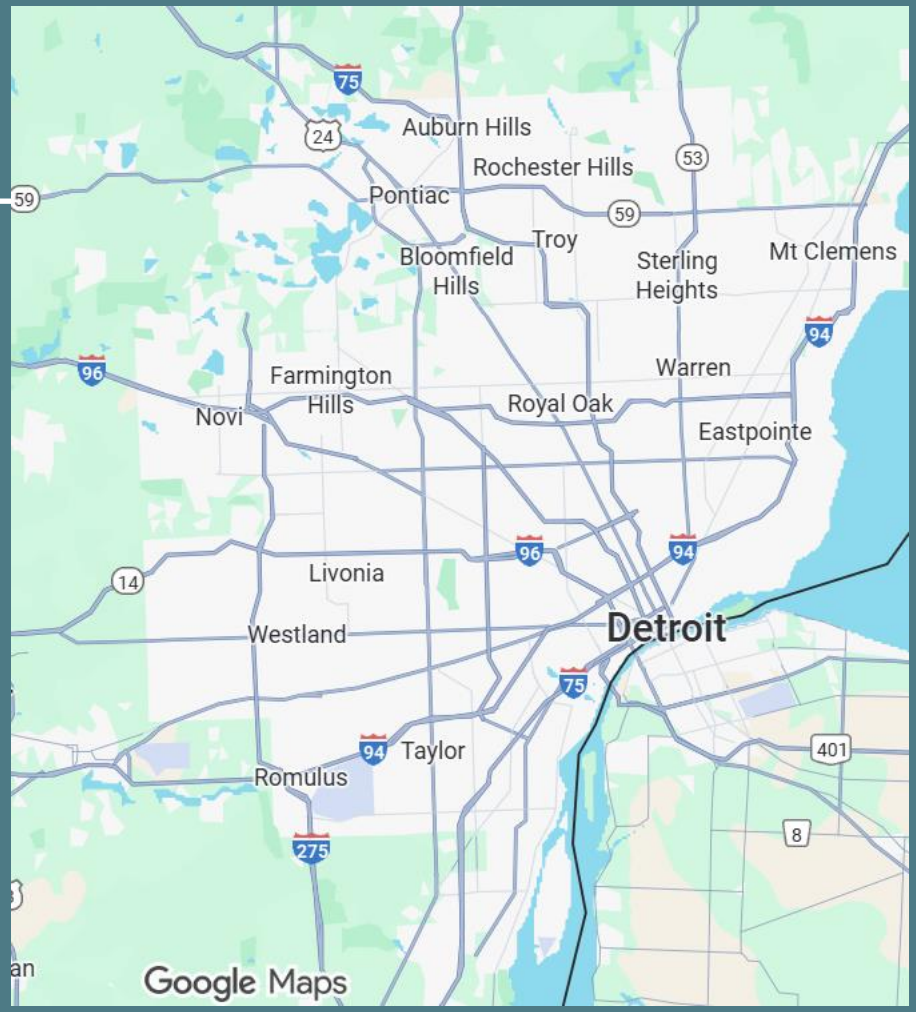
Proposed Test Area

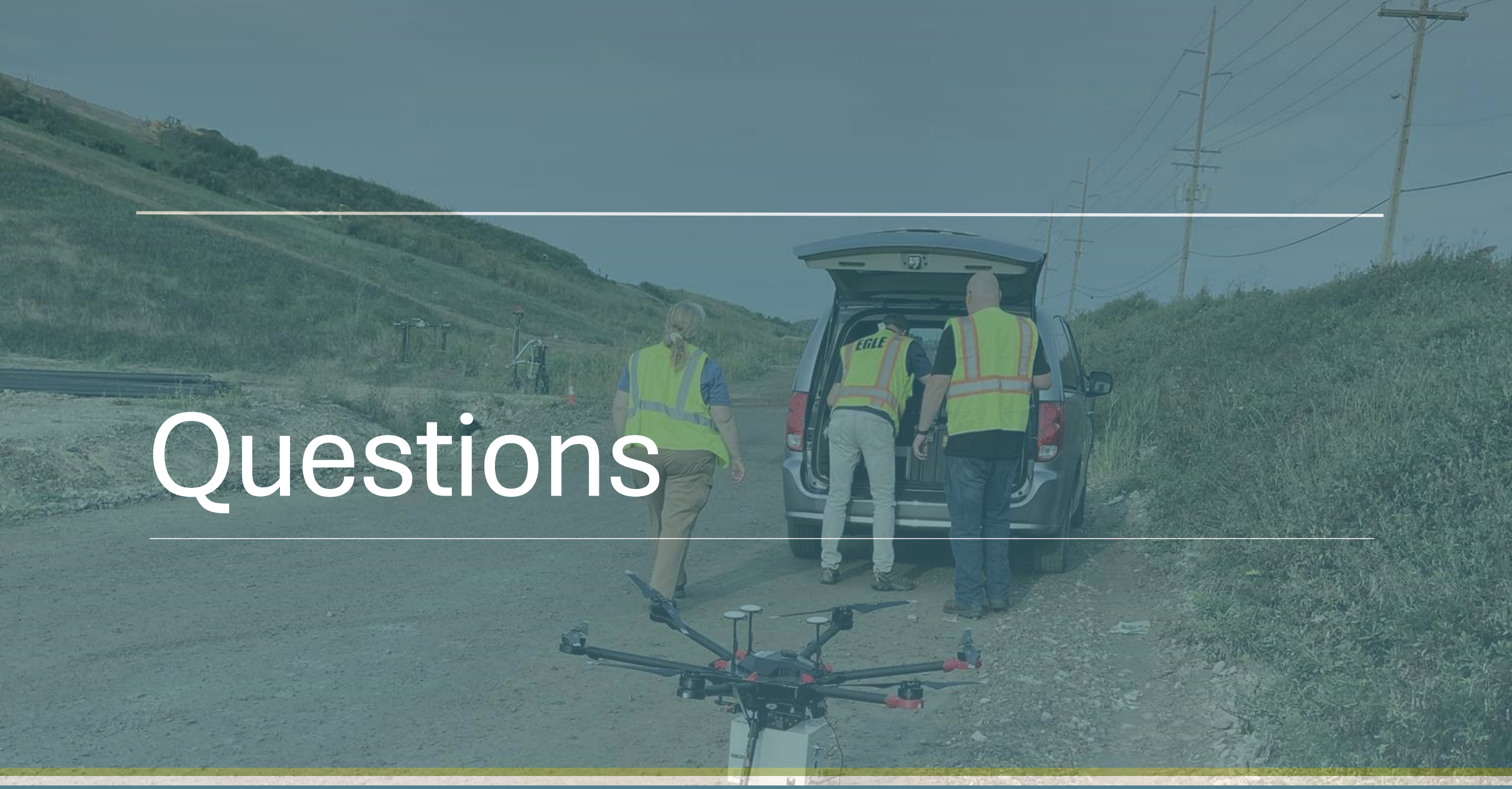
Test Location: **Southwest Detroit**

- Dense industrial activity
- Transportation corridors
- Community concerns



EGLE's Challenge to Solve

Expand	Expand real-time odor and water sensing
Enable	Enable flexible, on-demand deployment
Automate	Automate data collection
Improve	Improve speed, coverage, and decision readiness
Integrate	Integrate calibrated, geo-tagged data into EGLE systems



Questions

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THANK YOU

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