Southeast Texas Urban Integrated Field Laboratory

Interviews for Improving Equitable Hazard Mitigation Tools in Southeast Texas

Lidia Mezei,[1]* Gianna Sorola,[2] Farzana Ahmed,[1] Mickalia Malachi,[2] Adaeze Igwenagu,[2] Noel M. Estwick,[2] Michelle Meyer[1]

[1] Texas A&M University, College Station, TX;   [2] Prairie View A&M University, Prairie View, TX   * Presenting

Introduction

- Tools for equitable hazard mitigation are typically constructed top-down with little community input.
- The people who best understand a given hazardscape are those who live within it:
  - Government officials, nonprofit leaders, community and civic leaders, general public.

What are local perspectives on hazards, community resilience, and changing risk in Southeast Texas (SE TX) in the context of flooding and air quality?

Study Area: SE TX

Fig. 1. Map of 5-county study area.

- Five contiguous counties in Southeast Texas
- Beaumont-Port Arthur Metropolitan Statistical Area (Beaumont MSA) & Jasper County
- Petrochemical and industrial hub
- Chronic air pollution & acute flood hazard
  - E.g., Hurricanes Harvey and Imelda
- Hazards expected to worsen with climate change, aging infrastructure, & continued urban expansion.
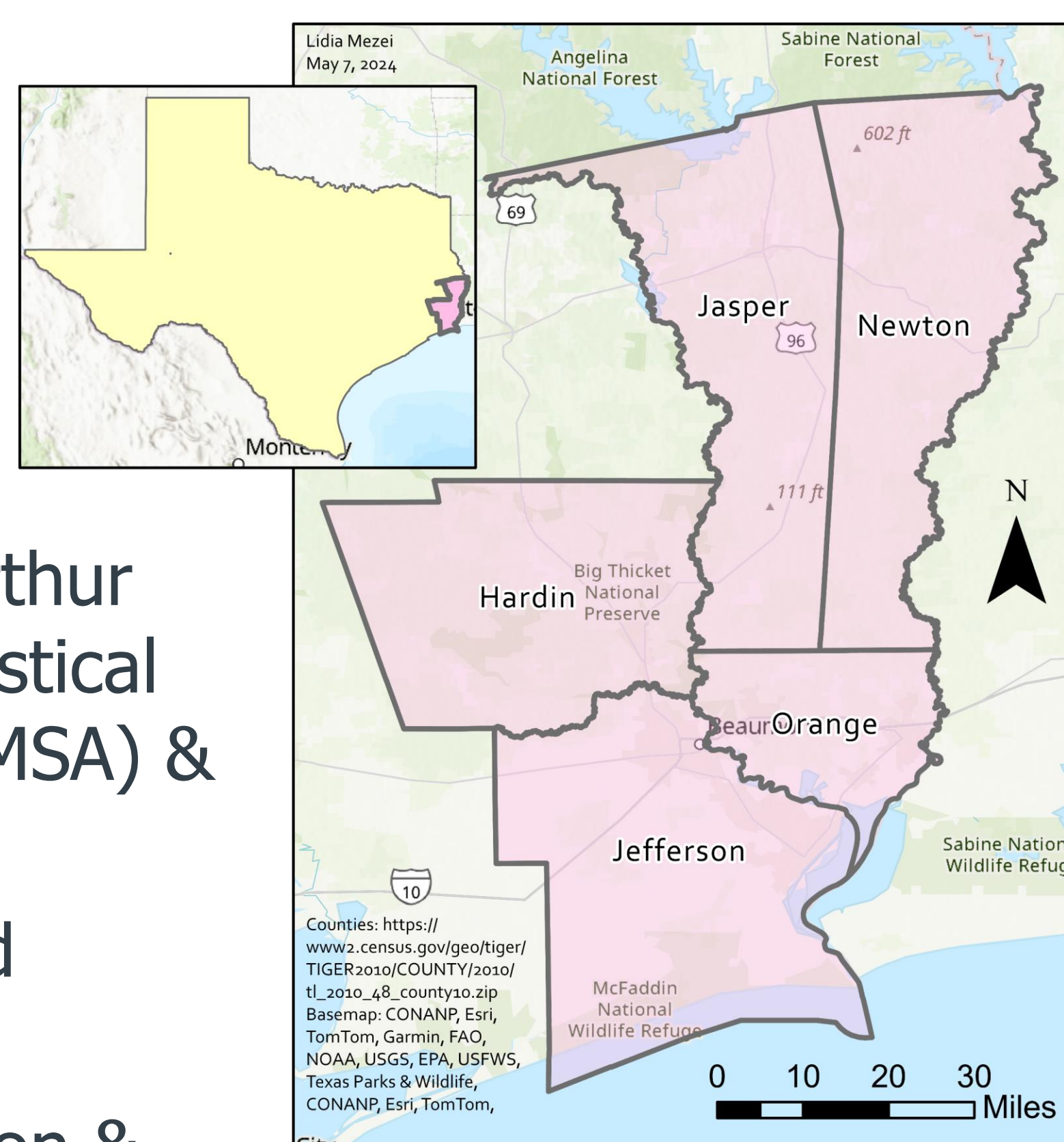
Method

- Semi-structured interviews with organizational and community leaders using participatory GIS.
- Combined different project interests: flooding, air quality, equitable mitigation.
- Guide was tested with a local leader.
- Iterative process: continuously revising based on participant suggestions, interviewer observation.
- Interviews were transcribed and preliminary coding completed.
- Locations were mapped as flood or air risk.

Topics covered by interview guide

- Flooding participatory mapping:
  - What areas tend to or tend not to flood
  - Perceived actions to reduce flooding
- Air quality participatory mapping:
  - What areas tend to have better air quality
- Spatial recovery from extreme events:
  - What areas have or have not recovered
  - Common characteristics of these locations
- Infrastructure challenges
- Improving resilience activities

Fig. 3. Interviewing timeline.

Fall 2022 — Ethics approval + training
- Coordination across six institutions
- Ethics training for entire team – stress importance of confidentiality

Developing the interview guide (Fall 2023)
- Combined different interests across the themes

Aug. 2024 — Interviewer training
- Protocol
- Audio equipment
- Practice interviews

Revising the interview guide (Sept. 2024)
- Beta testing

Sept. 2024 — Participant recruitment & scheduling
- Task Force members
- Snowball sampling
- Community organizations

Revising the interview guide
- Participant suggestions
  - Questions, wording
- Question order

Interviewing
- Interviews began Oct. 2024

Preliminary Observations

- Participant priorities: improving quality of life, post-disaster recovery
- Participant concerns: aged storm sewer infrastructure, lack of safe and affordable housing, limited access to and affordability of flood insurance

Participants	Contacted	Declined	No response	Interviewed
	35	1	15	19

Participatory GIS Results

- Interviewees involved in the collection, analysis, and representation of spatial data.
- Enhanced the relevance and accuracy of the data while ensuring that local perspectives and knowledge are integrated into future spatial planning and management decisions.

- Street Flooding in Beaumont:
  - Parkdale Mall
  - Lamar University
  - Martin Luther King Jr. Pkwy
  - Charlton-Pollard neighborhood
  - Interviewee: **"Oak Gardens (neighborhood). You know, they're flooded because it's essentially a bowl."**
- Street Flooding in Port Arthur:
  - El Vista neighborhood
  - Highway 87 / Gulfway Dr
  - Rev Dr. Ransome Howard St
  - Interviewee: **"You're accustomed to when it's a heavy rain, avoid Jimmy Johnson [Blvd] or your car is gonna get stuck."**
- Street Flooding in Lumberton:
  - FM 421 Rd
  - Village Creek Pkwy
  - Fresenius Rd
  - Interviewee: **"And it ends up flooding, going out of their banks and flooding these homes [in Lumberton]."**
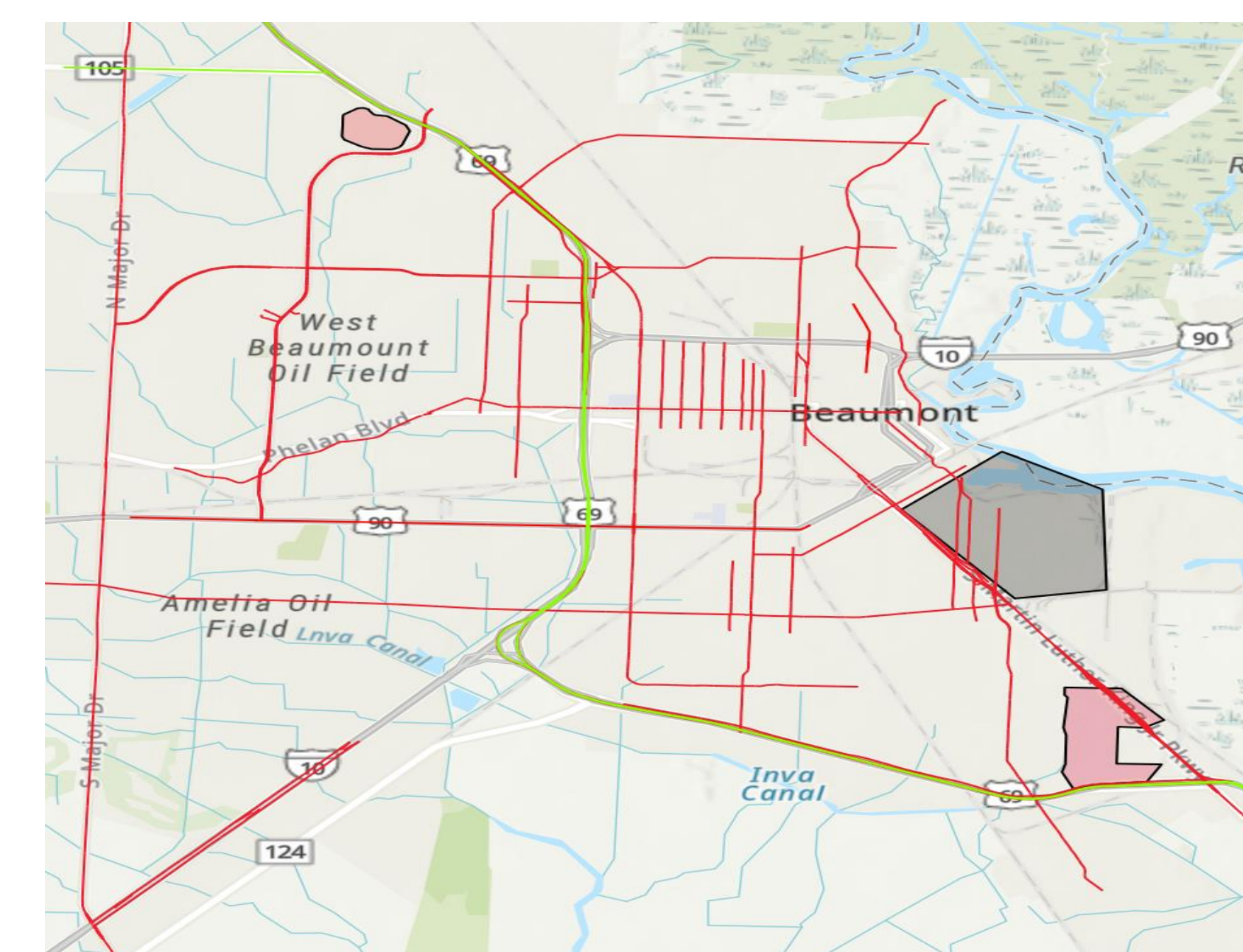

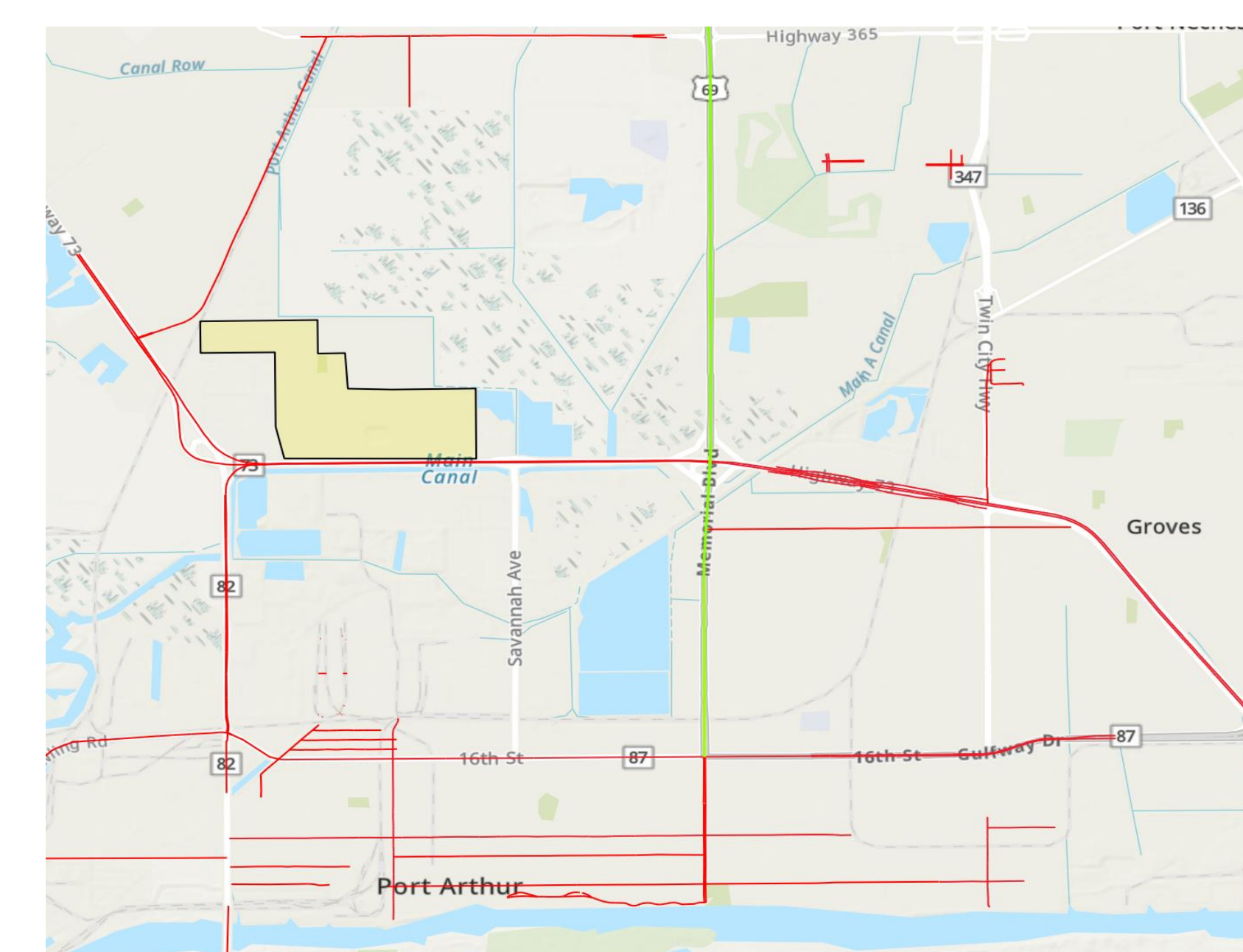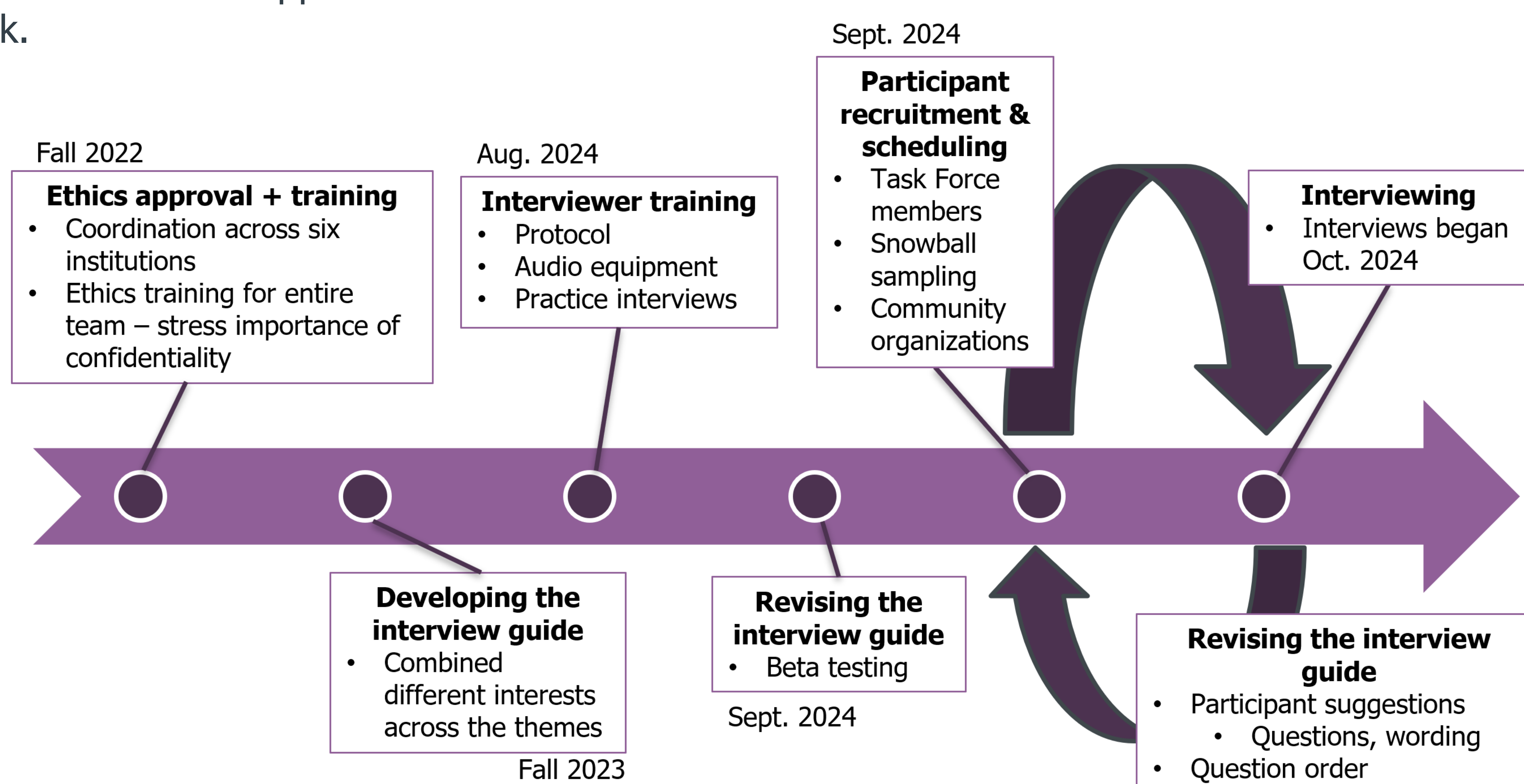Fig. 4. Locally Reported Flood Streets– Beaumont, TX

Fig. 5. Locally Reported Flood Streets– Port Arthur, TX

Next Steps

- Collect additional interviews until we reach interview data saturation in study area.
- Add demographic and environmental data to understand how PGIS locations align with secondary data.
- Complete interview analysis to identify additional variables to add to secondary datasets based on PGIS outcomes.