Wingra Proper Watershed Study
Public Information Meeting #2

Public Information Meeting
City of Madison Engineering Division
August 15, 2023

Thank you for attending. We will begin shortly…

CITY OF MADISON

Meeting Technical Housekeeping

- This meeting will be **recorded** and posted to the project page.
- All attendees should be **muted** to keep background noise to a minimum.
- Use the **"chat"** button for technical issues with meeting to troubleshoot with staff to assist.
- Use the **"Q and A"** button to type questions about presentation. Questions will be answered live after the presentation.
- Inappropriate questions may be dismissed.
- Use the **"raise your hand"** button to verbally ask your question. You will be prompted to unmute when it is your turn.

CITY OF MADISON

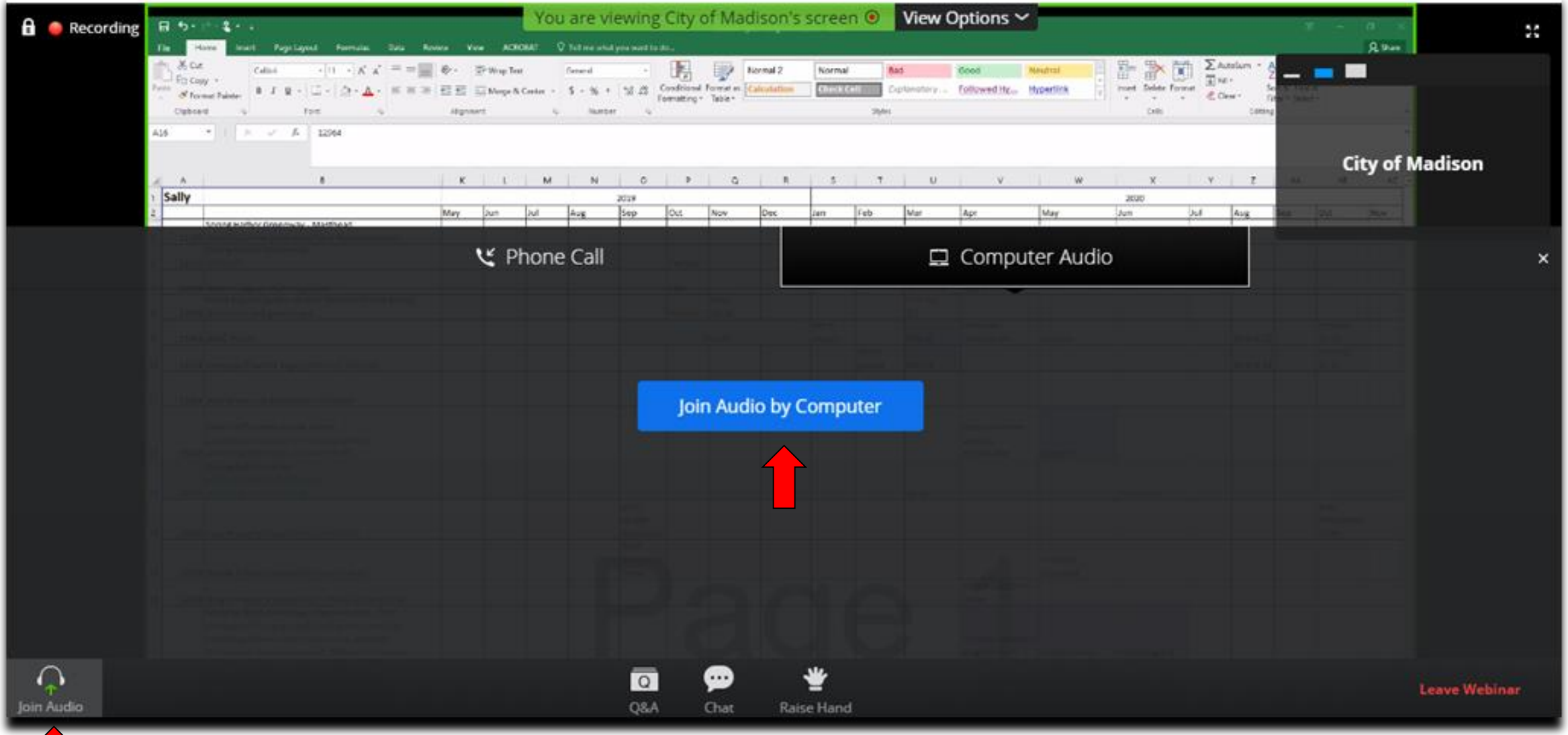
This meeting is being recorded.

It is a public record subject to disclosure.

By continuing to be in the meeting, you are consenting to being recorded and consenting to this record being released to public record requestors.

CITY OF MADISON

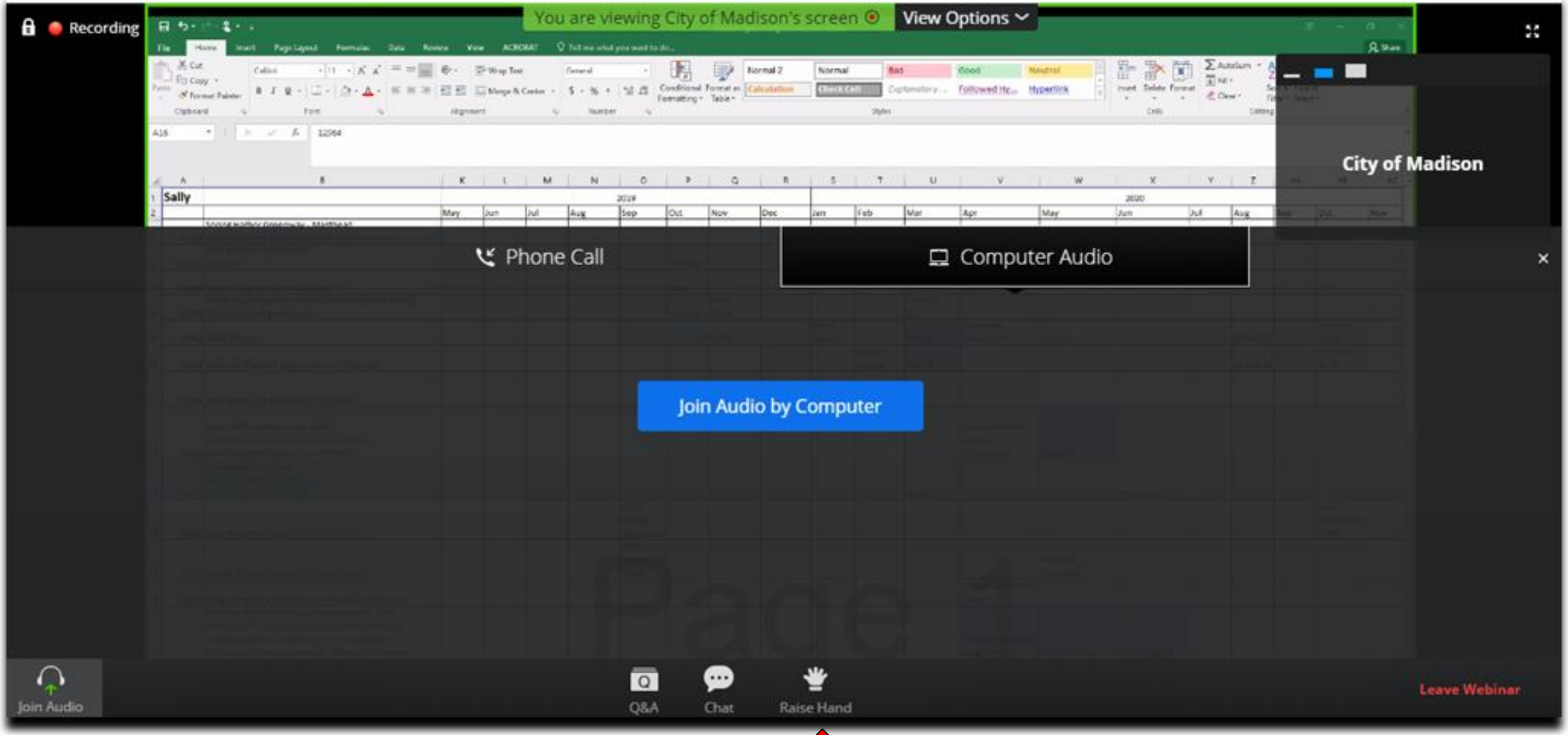
How to Participate



Make sure to join audio

CITY OF MADISON

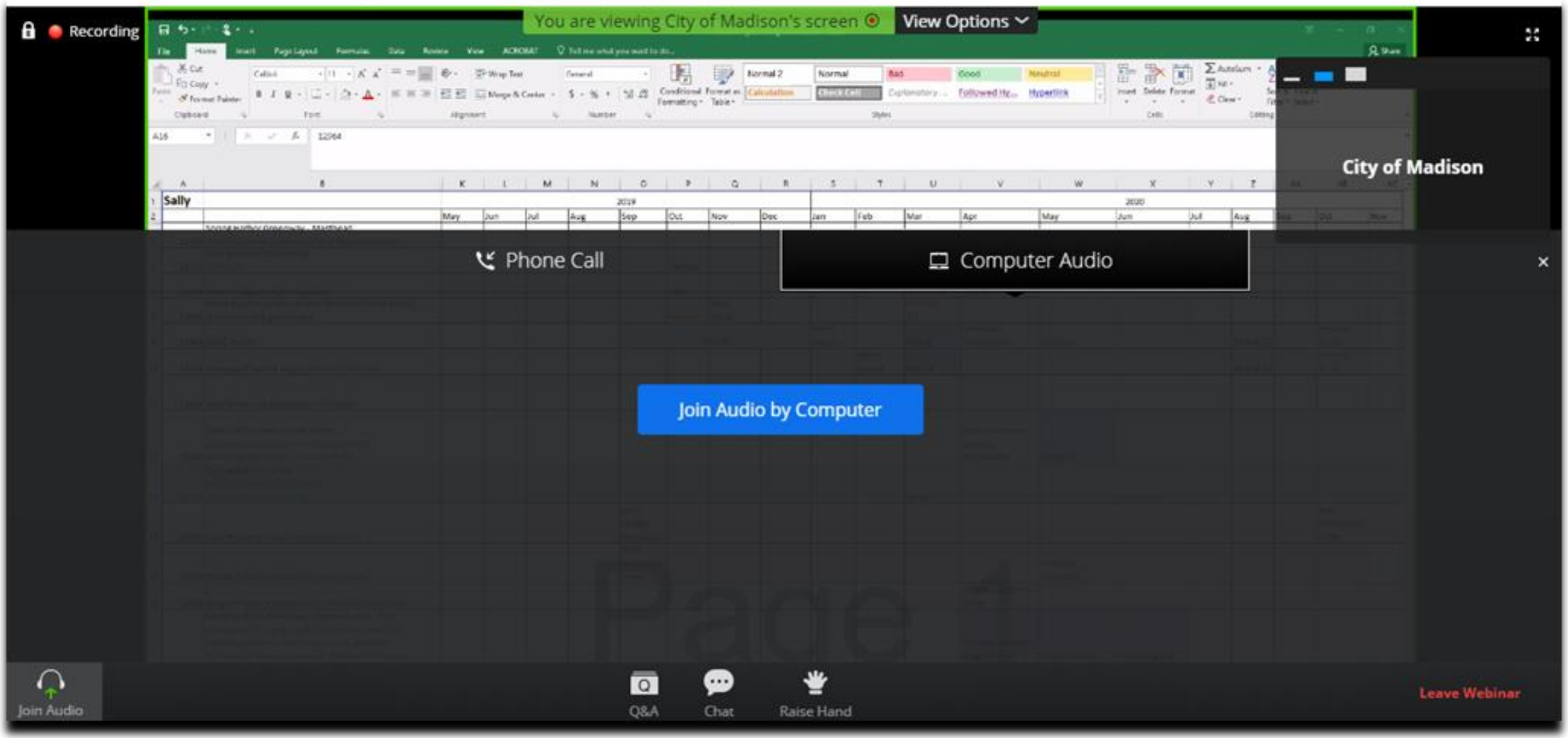
How to Participate



Raise your hand to be unmuted
For comments or ask additional questions.

CITY OF MADISON

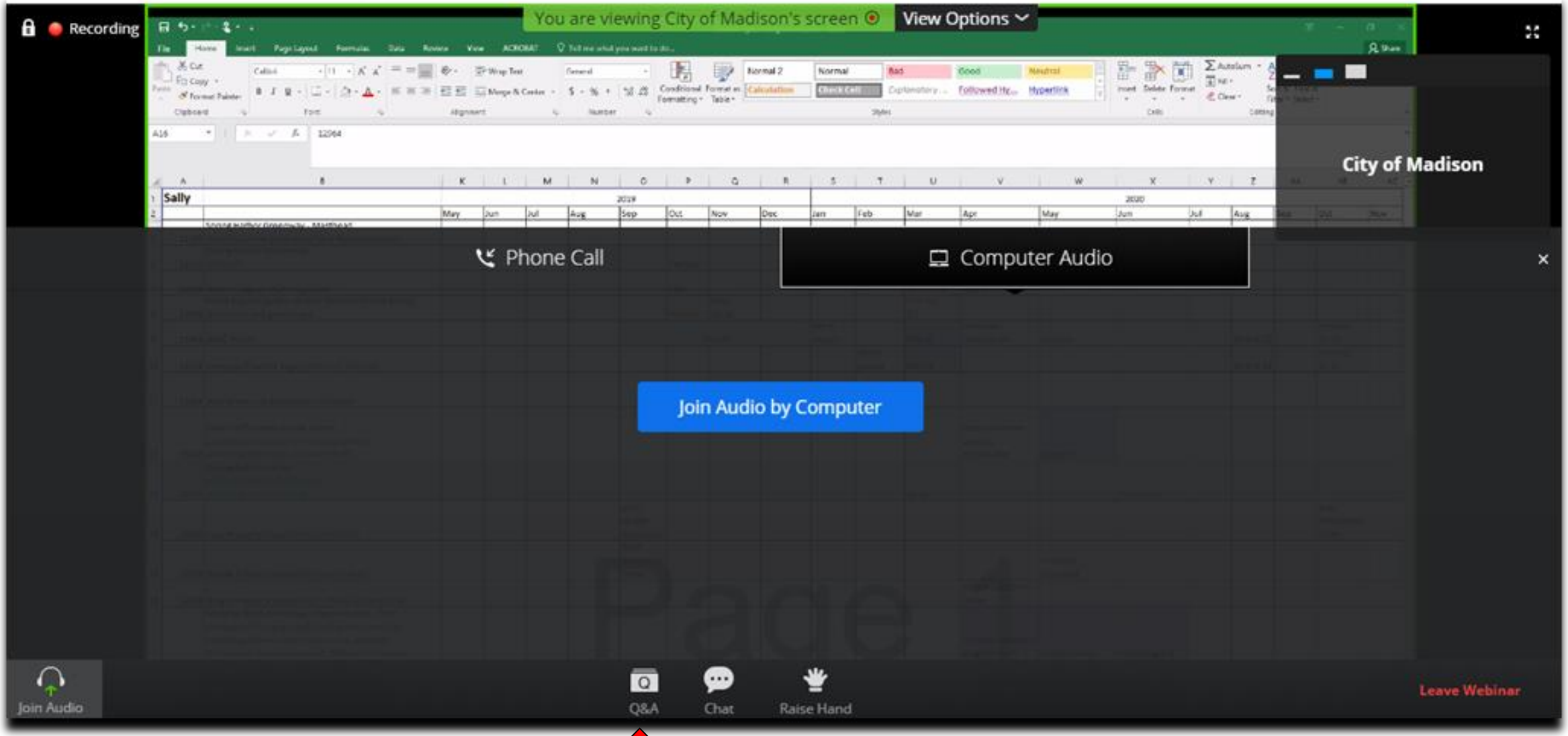
How to Participate



Use chat if you have technical issues or a question for the panelists

CITY OF MADISON

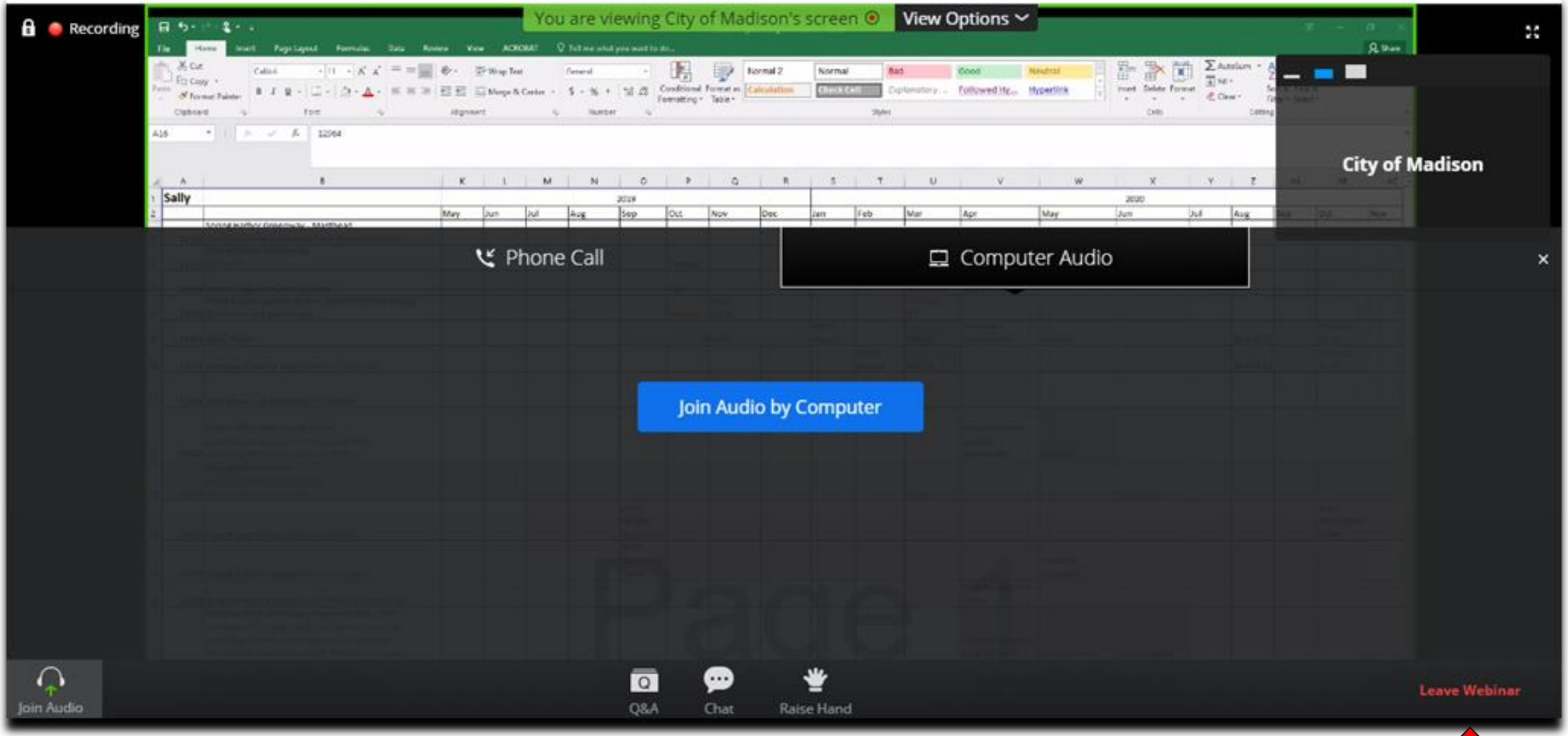
How to Participate



Use Q/A if you have questions.
We will answer after the presentation

CITY OF MADISON

How to Participate



To leave the meeting click here

CITY OF MADISON

Presentation Overview

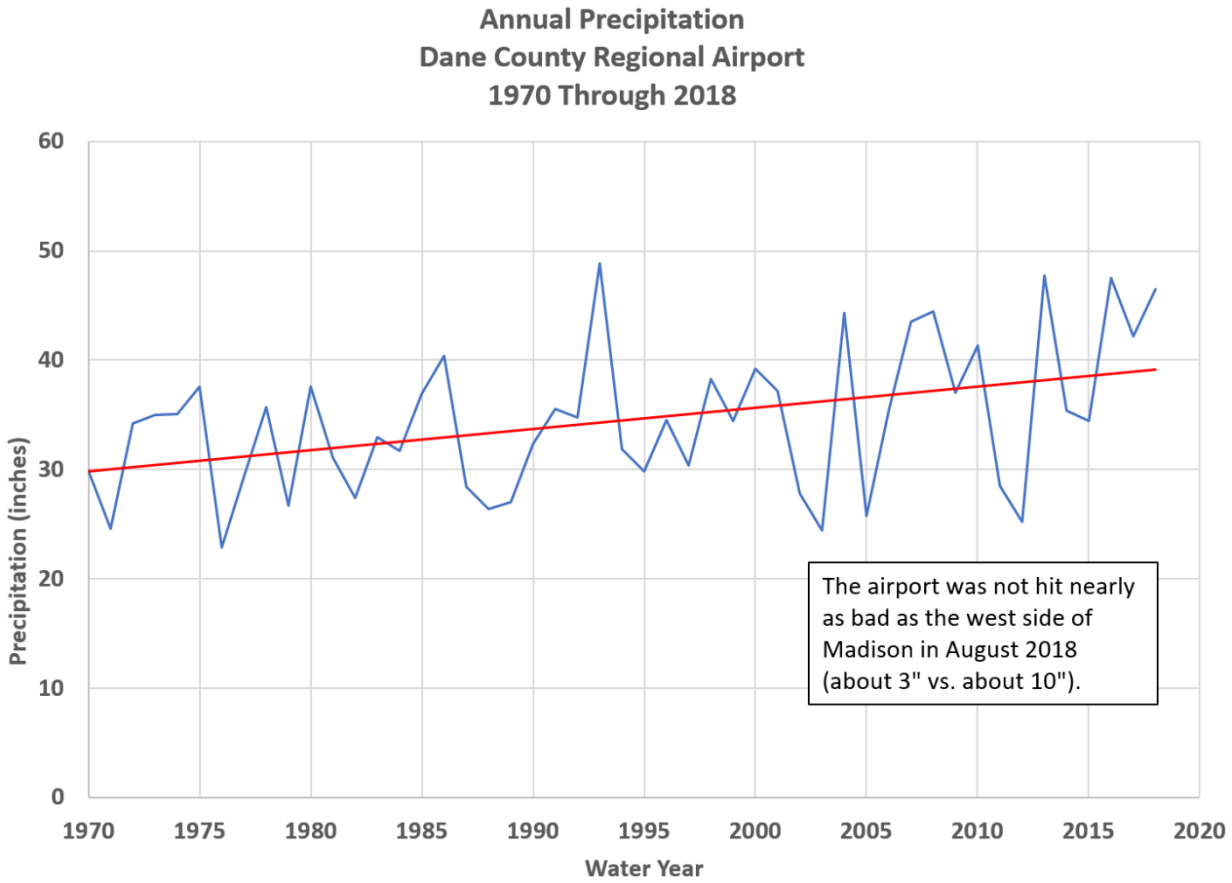
- Welcome – Phil Gaebler, City of Madison
- Presentation – Mike Wegner, Brown and Caldwell
  - Definition of commonly used terms
  - Why are we here
  - Project location
  - Progress to date
  - Inundation mapping
  - Flood mitigation targets
  - Next steps
  - Watershed study limitations
- Q&A – facilitated by Phil Gaebler, City of Madison
  - Submit questions through Zoom Q&A
- Flood map feedback—facilitated by Phil Gaebler
- Wrap Up – Phil Gaebler, City of Madison

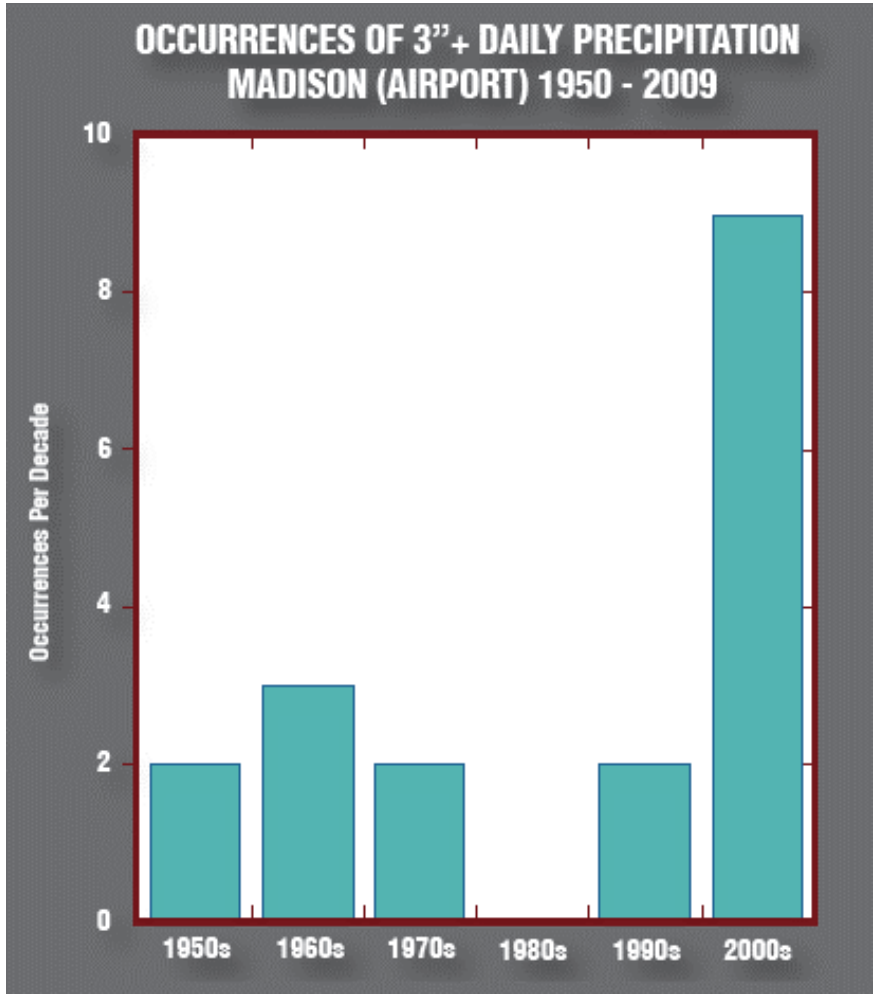
Definitions of commonly used terms

- **Stormwater:** rainwater produced from a rain event
- **Stormwater runoff:** the portion of the rainwater that does not soak into the ground
- **Stormwater inlets:** grates in the ground that take in stormwater runoff; connected to the stormwater conveyance system
- **Detention ponds:** ponds designed to hold stormwater runoff to improve water quality and/or help prevent flooding
- **Model:** computer software that is used to evaluate the stormwater conveyance system
- **Local Sewer Projects:** storm sewer that is reconstructed with another already-scheduled project – typically street reconstruction
- **Stand-alone Projects:** flood mitigation projects that will be constructed on their own – not tied to another already-scheduled project

Why We Are Here: Historic Events

- More rain
- More rain events greater than 3”

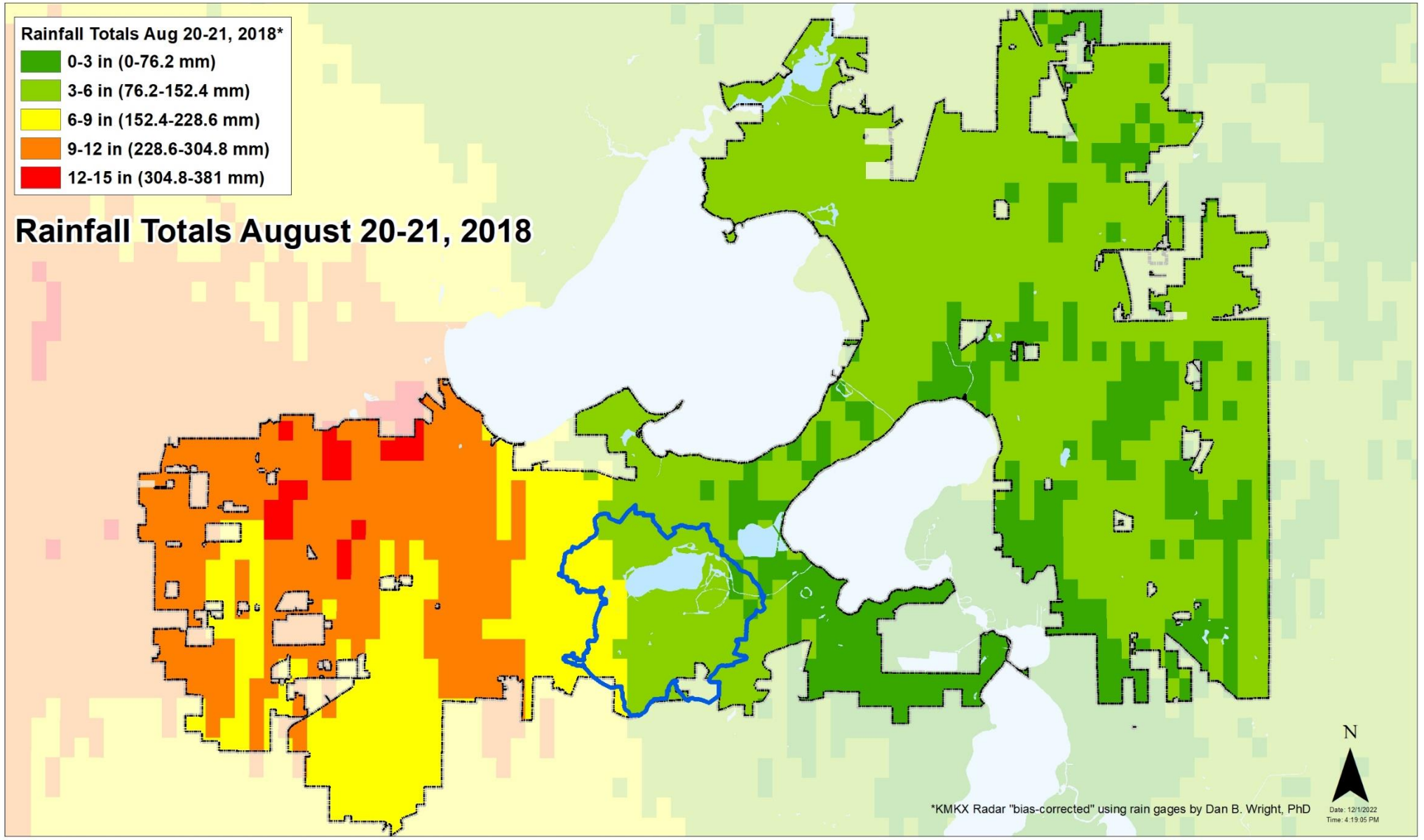




Wisconsin's Changing Climate: Impacts and Adaptation. 2011. Wisconsin Initiative on Climate Change Impacts. Nelson Institute for Environmental Studies, University of Wisconsin-Madison and the Wisconsin Department of Natural Resources, Madison, Wisconsin.

CITY OF MADISON

Rainfall Totals August 20-21, 2018



KMKX Radar that was "bias corrected" using rain gauges by UW Professor Dan Wright

MADISON

Why We Are Here: Historic Rain Events

- Recent storms have
  - amplified known inadequacies
  - revealed new storm sewer deficiencies
- Result: flood damage

August 20, 2018, event: substantial damage
- Public infrastructure: $4 million
- Private property: reported $17.5 million, estimated $30 million

- City's plan
  - Complete watershed studies of impacted areas
  - Develop solutions from watershed studies

Deming Way, Madison, WI

CITY OF MADISON

100-Year Storm Definition

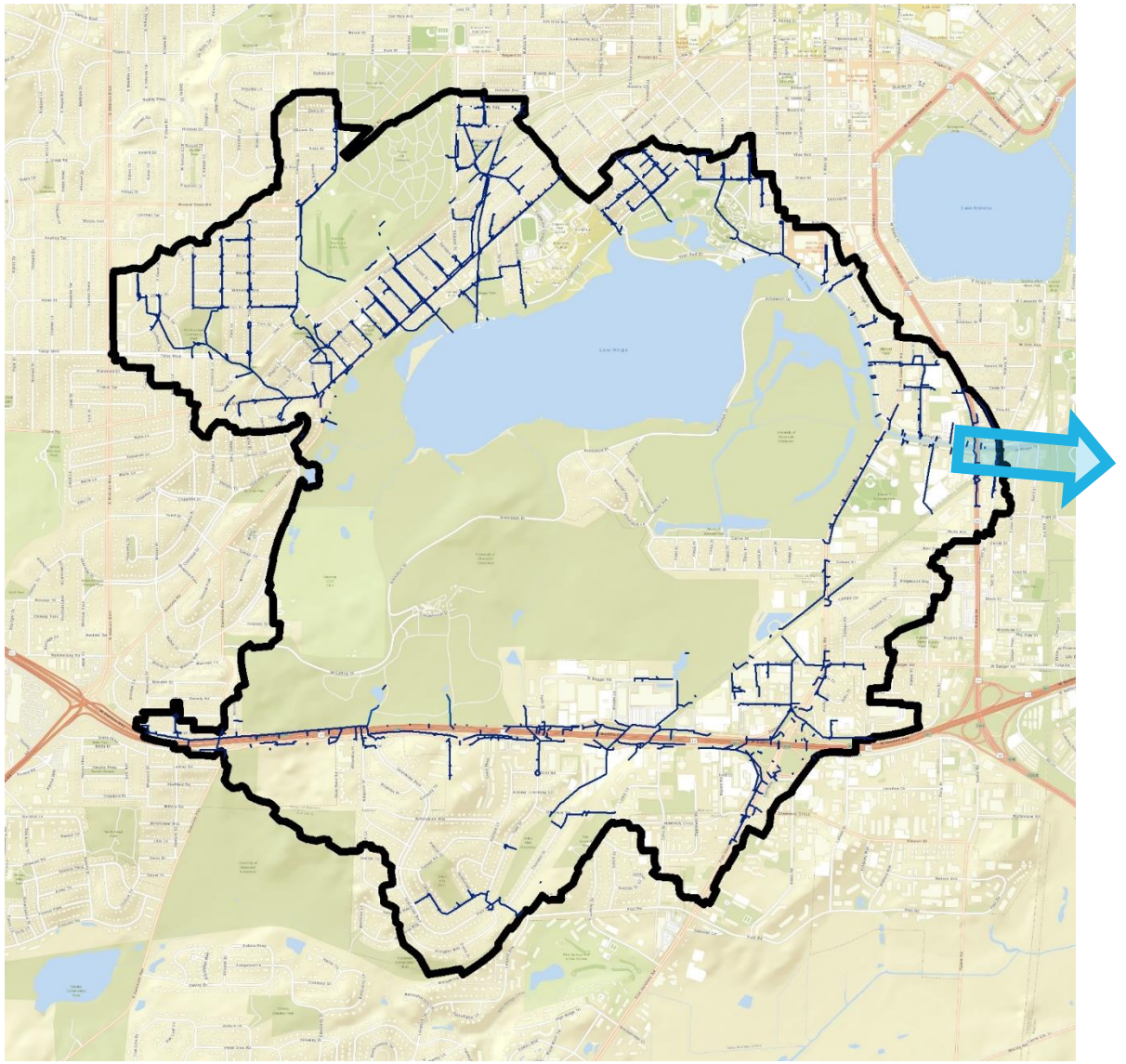
- % Chance Storm Definition: chance that a rainfall event will occur each year
- 1% chance storm is also known as the 100-yr storm
  - 6.66-inches of rain in 24-hours
  - Does NOT mean that a storm will only occur once in 100 years.
  - During a 30-year mortgage, there's a 26% chance of experiencing a 100-year (1%) event
- Also referred to as the "Annual Exceedance Probability" (AEP)

% Chance Storm	Chance of occurring in 1 Year	Return Period or Average Recurrence Interval (ARI)
100%	1 in 1	1-year
50%	1 in 2	2-year
10%	1 in 10	10-year
4%	1 in 25	25-year
1%	1 in 100	100-year
0.10%	1 in 1000	1000-year

Where the Water Goes

What's a watershed?

- A watershed is the area of land that drains precipitation (rain, snow, etc.) to a common low point, such as an inlet, stream, or lake.
- Determined by surface terrain and underground pipe system.



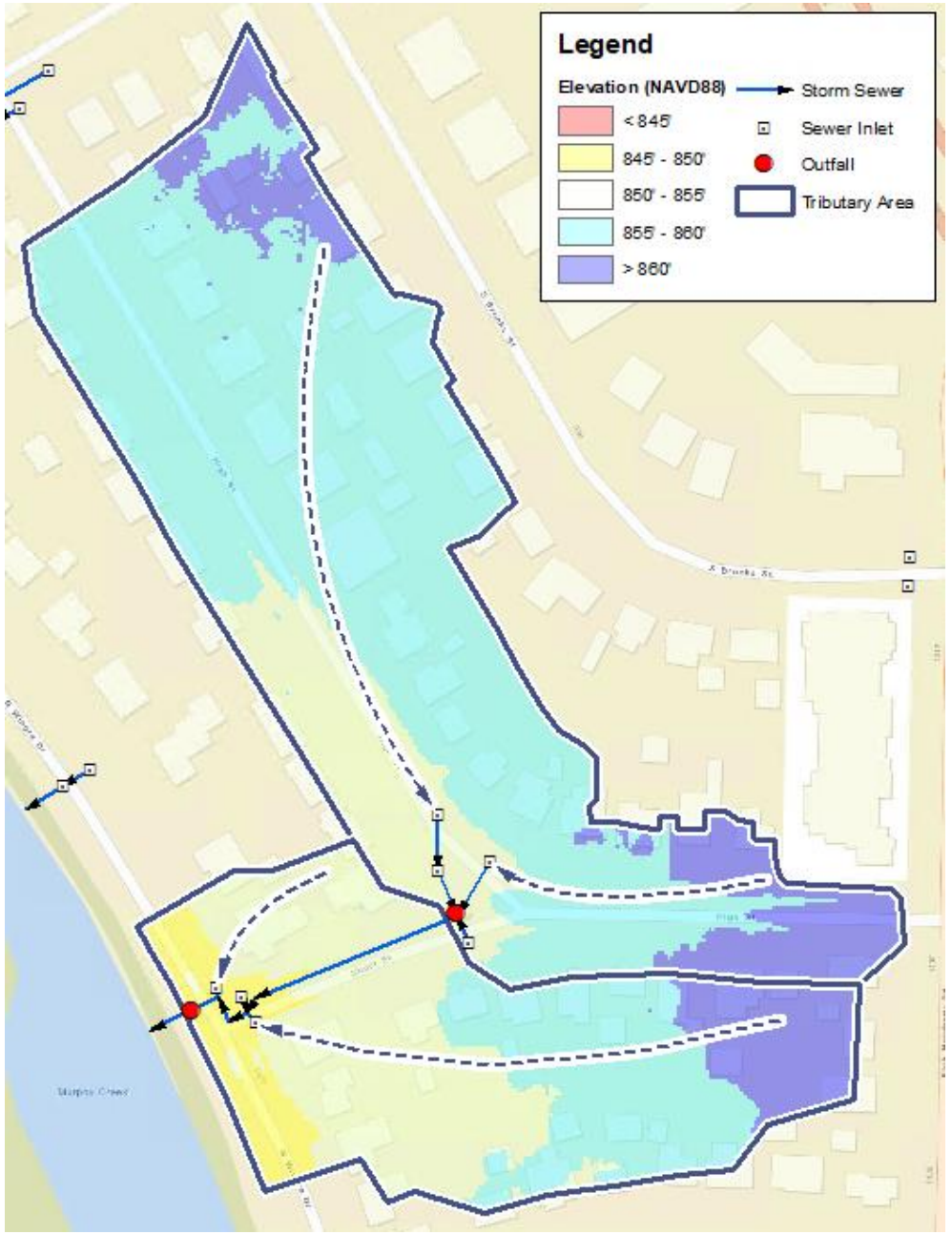
CITY OF MADISON

Where the Water Goes

What's a watershed?

- A watershed is the area of land that drains precipitation (rain, snow, etc.) to a common low point, such as an inlet, stream, or lake.

- Determined by surface terrain and underground pipe system.



CITY OF MADISON

Where the Water Goes: Sewer Systems

- Madison has separate storm and sanitary sewers
- Storm sewer system is NOT the same as the sanitary sewer system

https://www.azstorm.org/stormwater-101/storm-vs-sanitary-sewer

Reasons for Flooding Issues
Flash Flooding

- Flash flooding: when storm sewer system cannot handle high amounts of rain
- Comparative example: a traffic jam
  - Too many cars on the Beltline during rush hour → backups happen
- During a storm, more water tries to move through the storm sewer system → backups happen

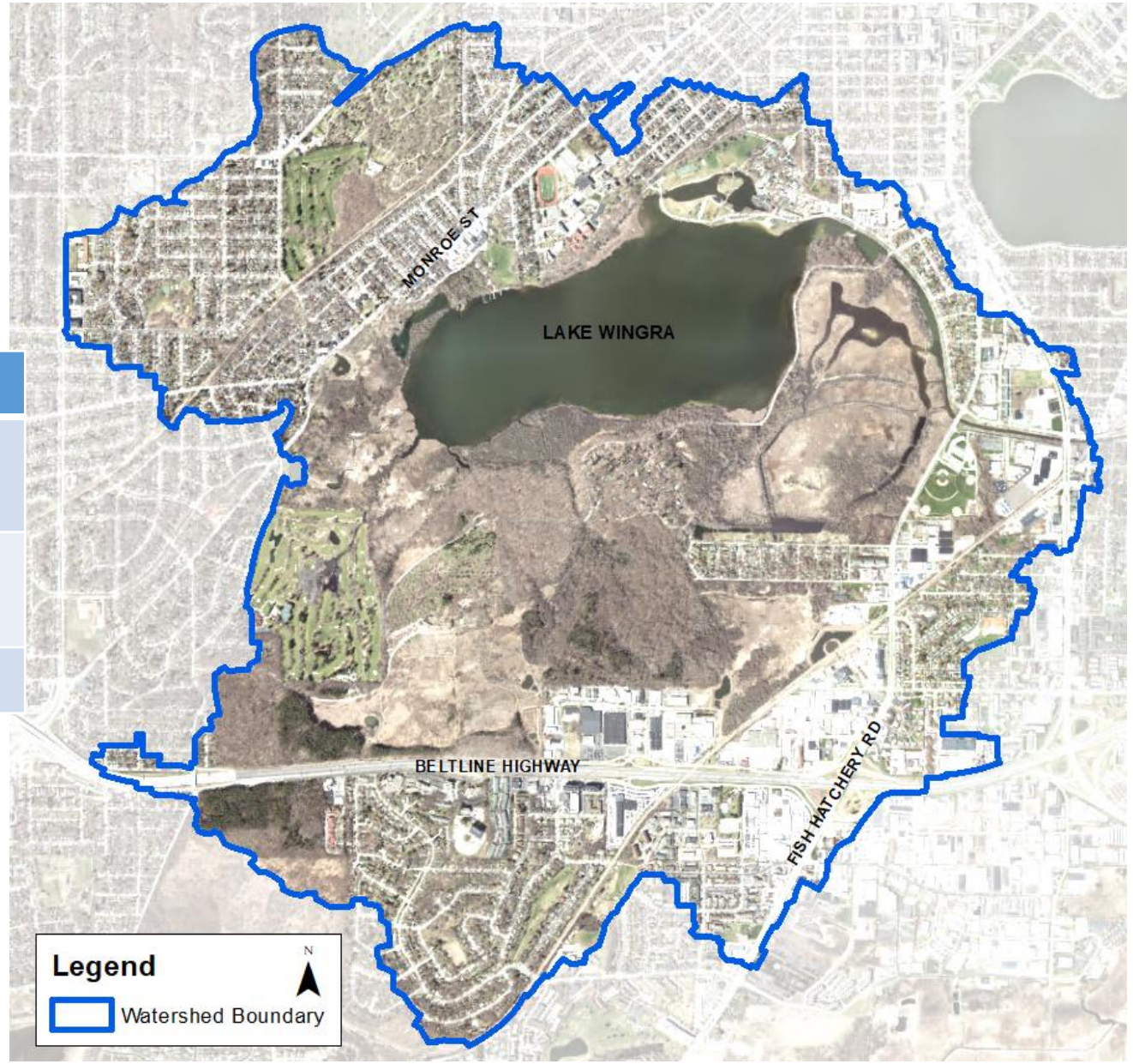
Beltline, looking west from Park Street, WisDOT

CITY OF MADISON

Project Location

WINGRA PROPER WATERSHED

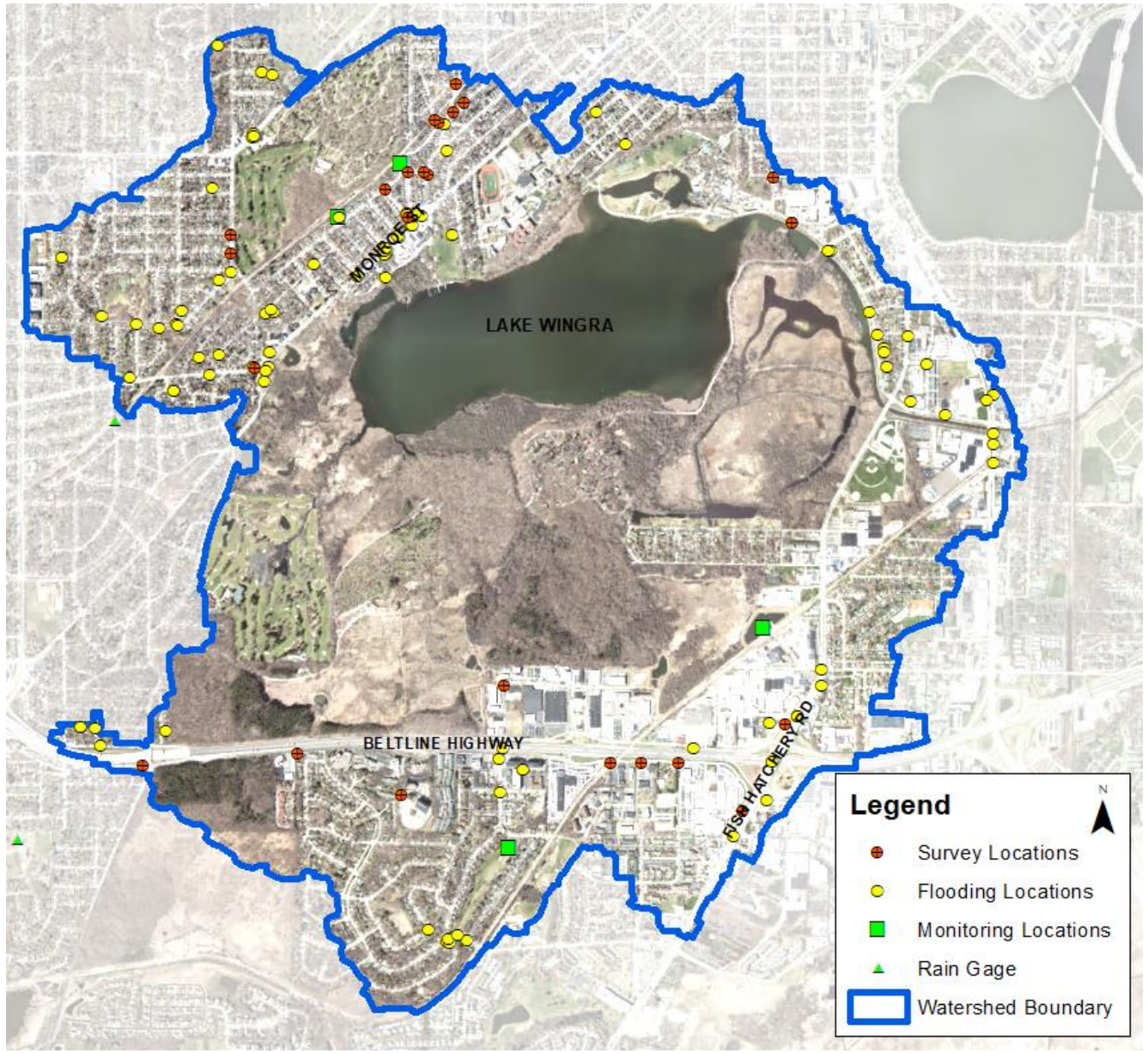
Item	Quantity
Watershed Area	3,480 acres
Public Stormwater Inlets and Access Structures	2,448
Storm Sewer Pipes	35.5 miles



CITY OF MADISON

Progress To Date
DATA COLLECTION

- Ground/storm sewer survey
- Monitoring
  - 2 years (2021-2022)
  - Rainfall
  - Storm Sewers (depth and flow)
  - Pond & Greenway Level
- Flood reports

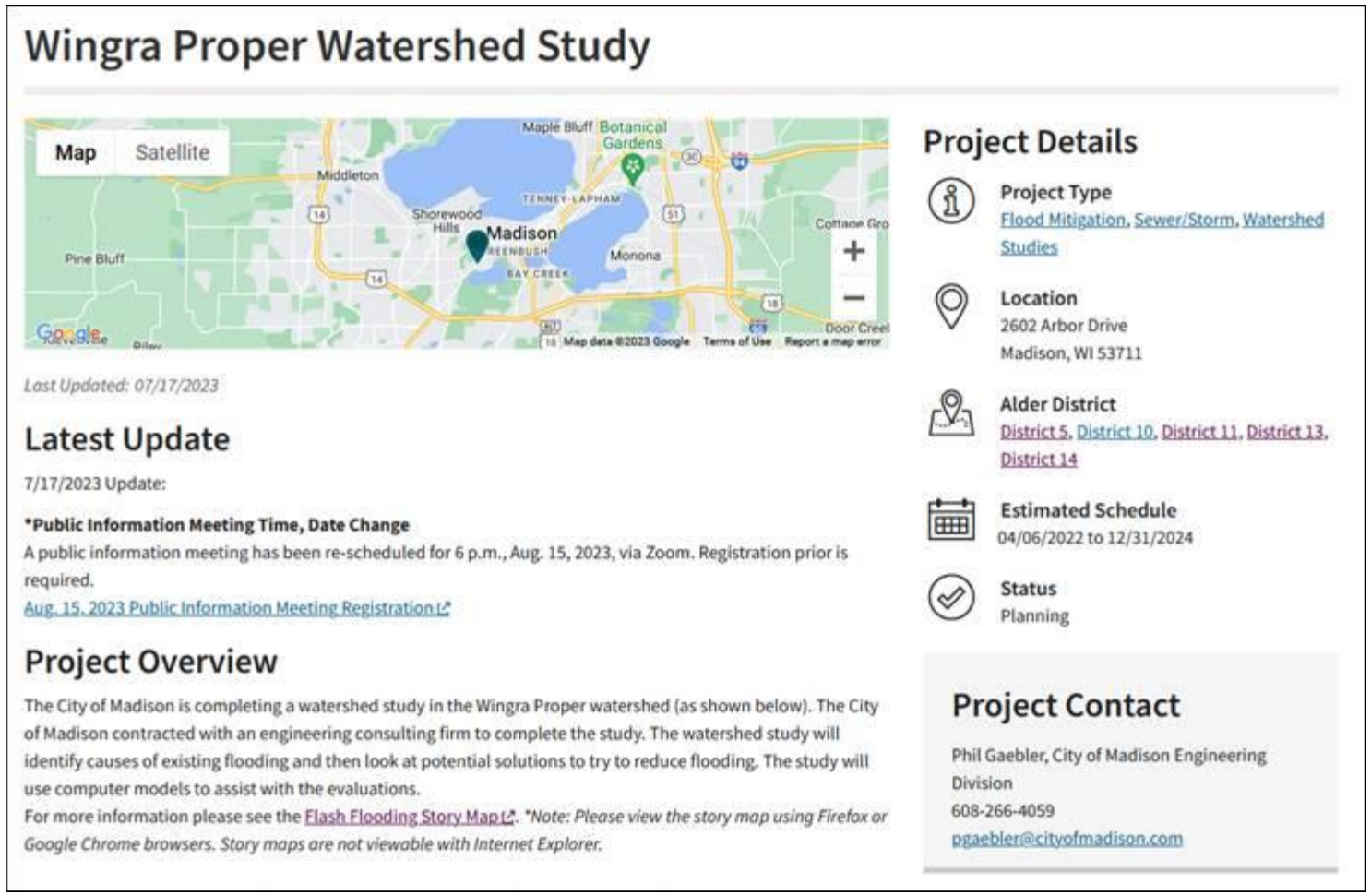


CITY OF MADISON

Progress To Date

PUBLIC INFORMATION

- Public Input Meeting #1 – December 8, 2022
- Project website creation and updates



Wingra Proper Watershed Study

Last Updated: 07/17/2023

Latest Update

7/17/2023 Update:

***Public Information Meeting Time, Date Change**

A public information meeting has been re-scheduled for 6 p.m., Aug. 15, 2023, via Zoom. Registration prior is required.

Aug. 15, 2023 Public Information Meeting Registration

Project Overview

The City of Madison is completing a watershed study in the Wingra Proper watershed (as shown below). The City of Madison contracted with an engineering consulting firm to complete the study. The watershed study will identify causes of existing flooding and then look at potential solutions to try to reduce flooding. The study will use computer models to assist with the evaluations.

For more information please see the Flash Flooding Story Map. **Note: Please view the story map using Firefox or Google Chrome browsers. Story maps are not viewable with Internet Explorer.*

Project Details

Project Type
Flood Mitigation, Sewer/Storm, Watershed Studies

Location
2602 Arbor Drive
Madison, WI 53711

Alder District
District 5, District 10, District 11, District 13, District 14

Estimated Schedule
04/06/2022 to 12/31/2024

Status
Planning

Project Contact

Phil Gaebler, City of Madison Engineering Division
608-266-4059
pgaebler@cityofmadison.com

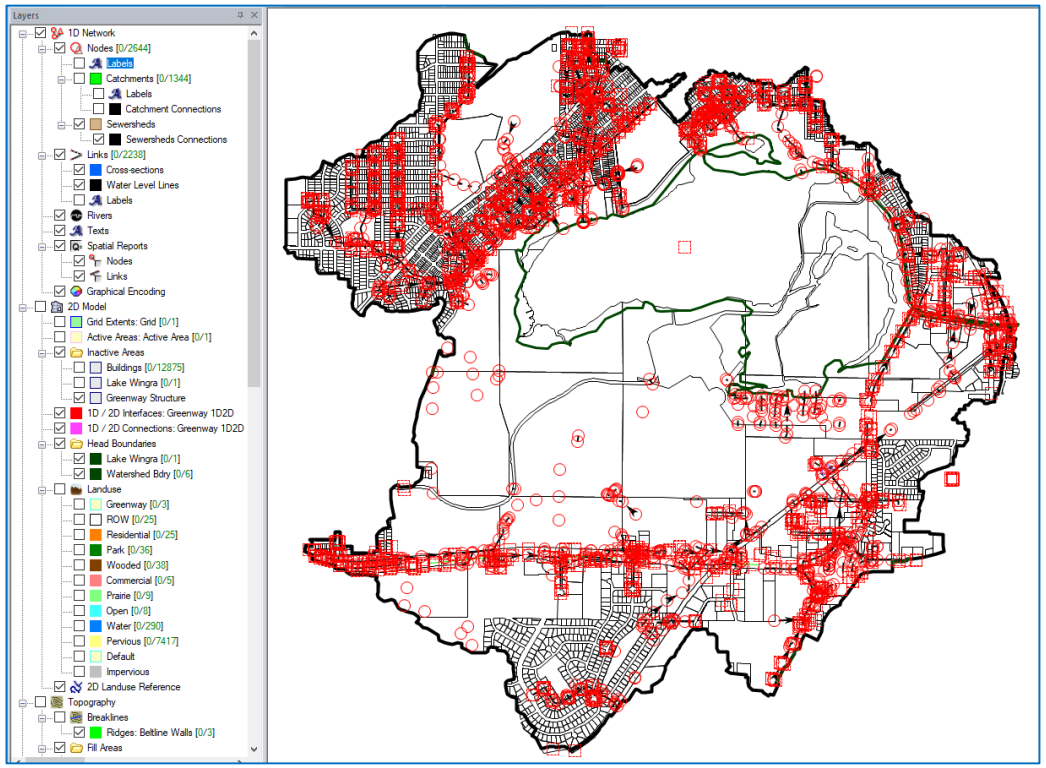
https://www.cityofmadison.com/engineering/projects/wingra-proper-watershed-study

CITY OF MADISON

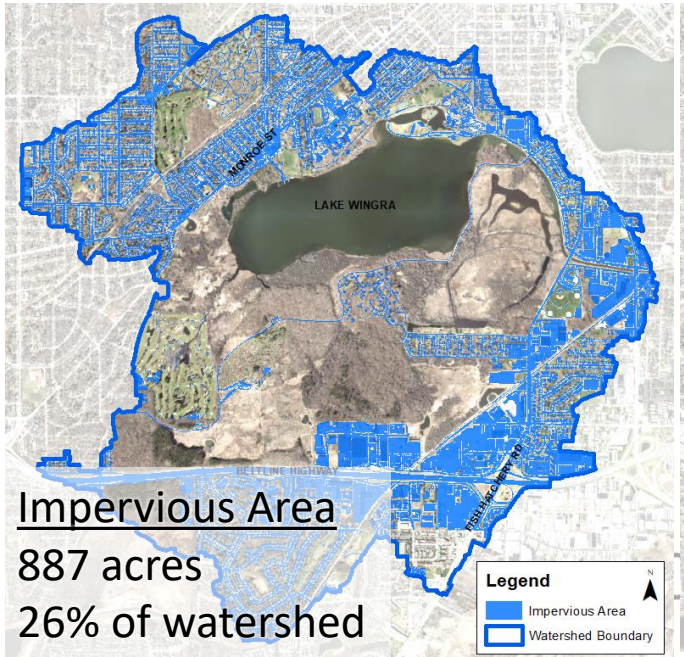
Progress To Date

MODEL DEVELOPMENT

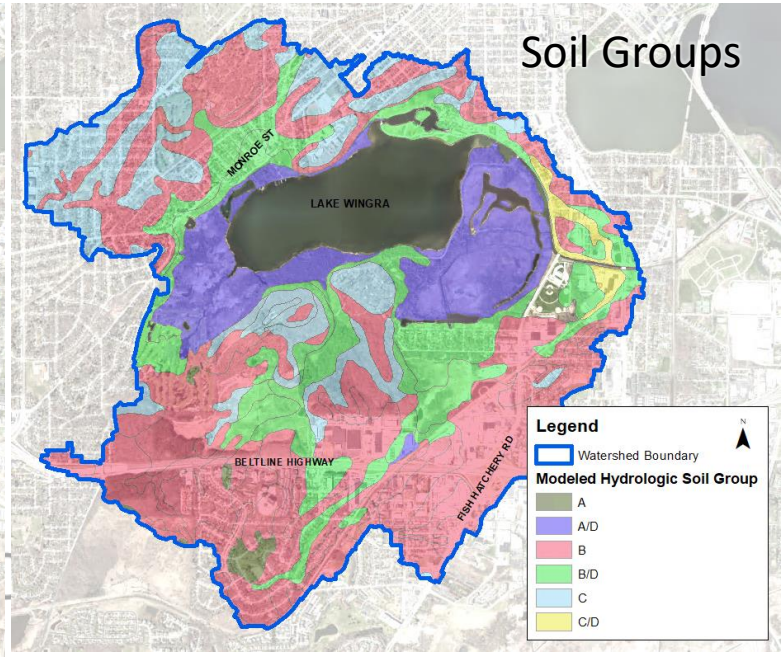
- Hydrologic and Hydraulic Computer Model (XPSWMM)
- Existing Conditions Model Construction



Item	Quantity
Watershed Area (acres)	3,478
Number of Subcatchments *(discrete drainage areas in the model)*	442
Storm sewer pipes in model	20.6 miles
Detention ponds in model	6



Impervious Area
887 acres
26% of watershed



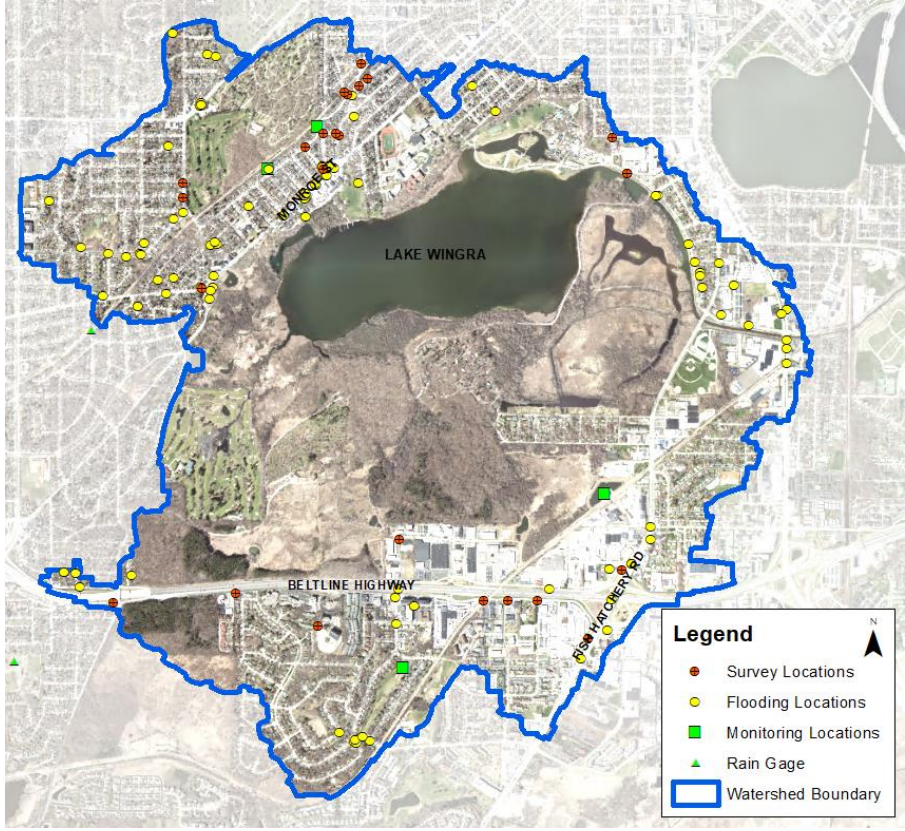
Progress To Date

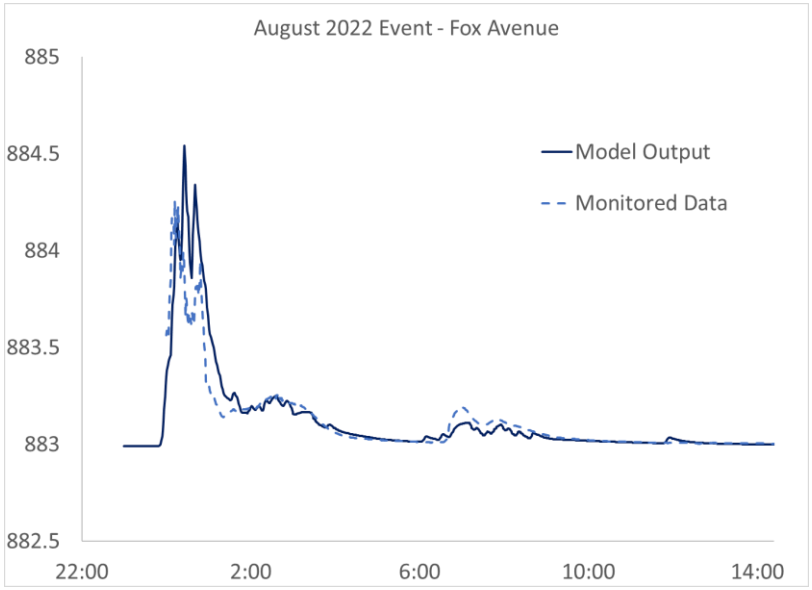
MODEL CALIBRATION

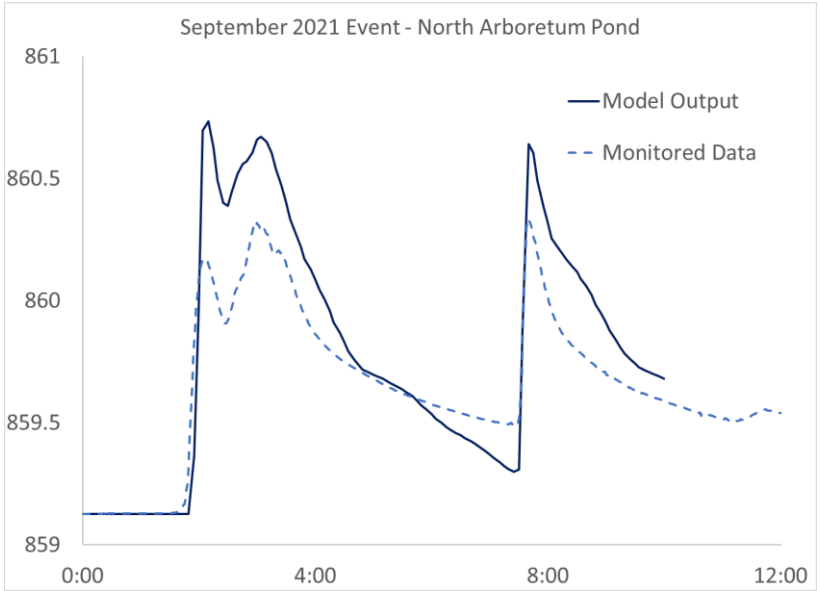
- Existing Conditions Model Calibration

  Calibration is a process of comparing the model results to monitored results and making changes so the model matches more closely

- Level loggers, flow meters, and rain gauges
- Reported flooding locations







CITY OF MADISON

Flood Mapping Disclaimer

This map exists to help you quickly get information about general flood risks. This map does not identify all areas that may flood or predict future flooding.

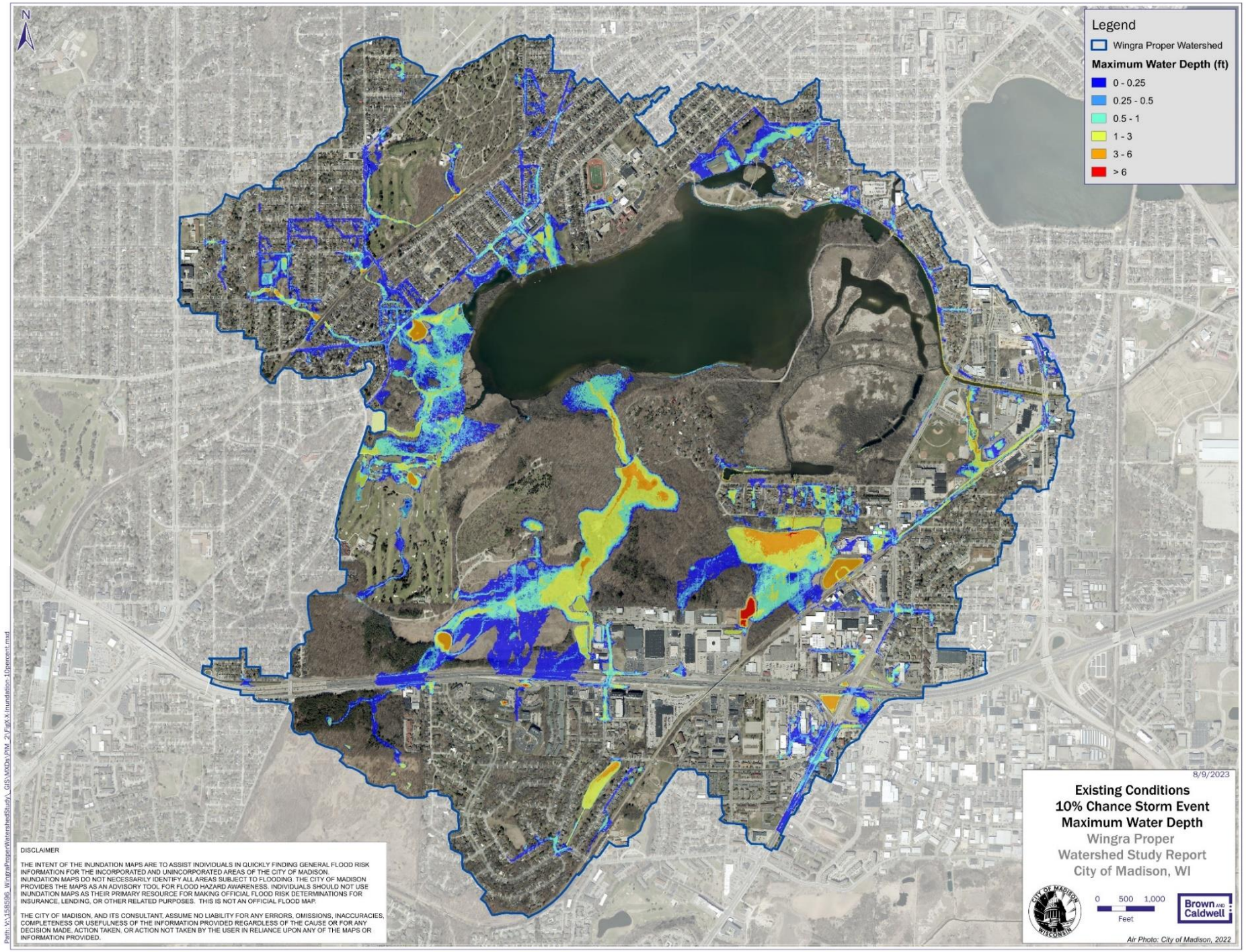
Do not use this map to make official flood risk determinations for insurance, lending, or other purposes. This is not an official FEMA federal Flood Insurance Rate Map or the state or local equivalent.

The City of Madison assumes no liability for any errors, omissions, or inaccuracies. The City also assumes no liability for any decisions or actions a user might take based on this map.

CITY OF MADISON

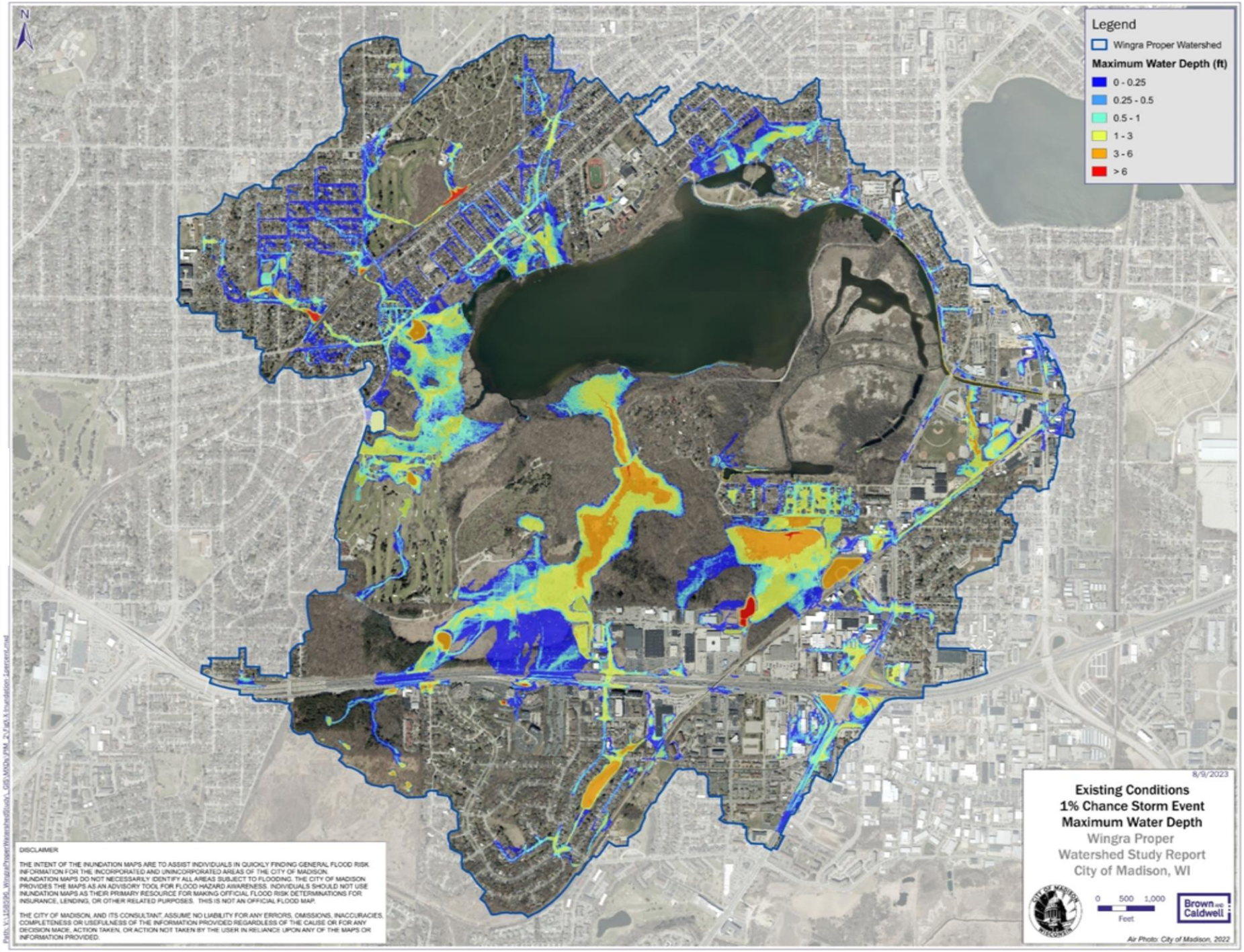
Existing Conditions Inundation Mapping

10% Chance Event
(4.09 inches in 24 hours)

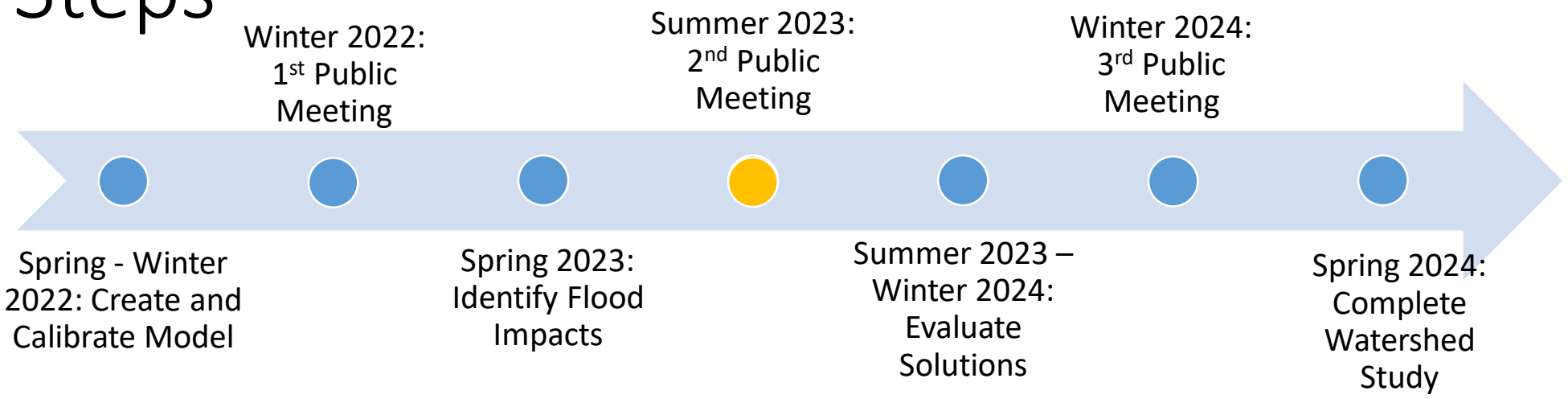


Existing Conditions Inundation Mapping

1% Chance Event
(6.66 inches in 24 hours)



Next Steps



- Identify Flooding Problem Areas
- Evaluate Solutions
- Public Meeting #3 to present solutions
- Final Report
- Begin Implementing Solutions

CITY OF MADISON

Next Steps
FLOOD MITIGATION TARGETS

- 10% Chance Event (4.09 inches in 24 hours)
  - No surcharging of storm sewer onto roadway
  - Storm sewer pipes are sized to carry storm
- 4% Chance Event (5.01 inches in 24 hours)
  - 0.2 feet at Centerline of Roads
  - Roads passable for emergency vehicles
- 1% Chance Event (6.66 inches in 24 hours)
  - No structure (home/building) flooding
  - No greenway crossing overflow (stormwater does not come out of greenway and flow over the road)
- 0.5% Chance Event (8.81 inches in 24 hours)
  - Safe conveyance of overflow

Watershed Study Limitations

- Utilizing computer models for analysis (computer models have inherent limitations, require assumptions, and are for one specific set of circumstances)
- Retrofitting infrastructure takes a lot of time and money
- Not all problems can be solved
- Repairs are not always easy, popular, or inexpensive
- Best engineering solution may not be the one chosen
- Property owners will need to create solutions too
- Solutions will need broad community cooperation
- Groundwater problems not easily addressed by infrastructure

Contact Information & Resources

- Engineering
  - Project Manager, Phil Gaebler, PGaebler@cityofmadison.com
  - Public Information Officer: Hannah Mohelnitzky, hmohelnitzky@cityofmadison.com

➢Project Website: https://www.cityofmadison.com/engineering/projects/wingra-proper-watershed-study

- Sign-up for project email updates on the website
  - Updates on study status will be posted to the project website
  - Recording for this meeting will be posted on project webpage

- Facebook – City of Madison Engineering
- Twitter – @MadisonEngr
- Engineering Podcast: Everyday Engineering on iTunes, GooglePlay

CITY OF MADISON

First: General Q&A

- Please type general questions in Q&A box or “raise hand”

Next: Specific feedback on flood maps

- Please save specific comments on flood maps for the end of the presentation. We will stay on and gather your feedback, but we’d like to address general questions with the whole group first.

Breakout Group Areas

- Alder District 10
  - Janet Schmidt, City of Madison
- Alder Districts 5 & 11
  - Doug Joachim, Brown and Caldwell
- Alder District 13 (West)
  - Greg Fries, City of Madison
- Alder District 13 (East)
  - Phil Gaebler, City of Madison
- Alder District 14
  - Mike Wegner, Brown and Caldwell