# Hello And Welcome!

- While we're getting ready for the training, please ensure the ArcGIS Survey123 and ArcGIS QuickCapture applications are downloaded to your tablet or smart phone (whichever device you are collecting data with)
  - Non-SFWMD staff do not need to download QuickCapture
- Please clearly print your contact information on the sign in sheet that is being/will be passed around
  - Participants must sign in for verification of training completion – contact information will be used to notify participants to create South Florida Flood Information Resource Accounts for access to the 2025 Wet Season High Water Mark Survey

**ArcGIS Survey123**
(Also accessible via web browser)

**ArcGIS QuickCapture**
(SFWMD Staff only)

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

# Flood Survey And High Water Mark Training

April 2025

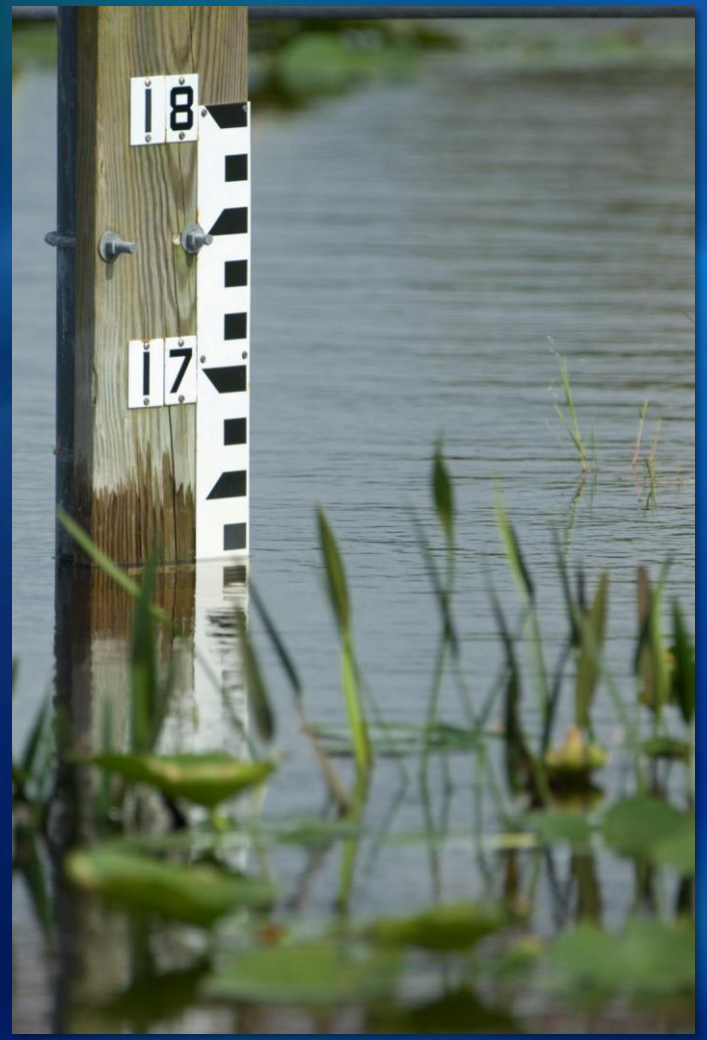
sfwmd.gov

# Introductions

- Your name, what you do, and your organization/agency
- Your experience* with flooding and/or high water marks
- Your experience* with GIS applications/mobile mapping
  - Please also mention if you have attended one of SFWMD's Flood Survey and High Water Mark training sessions in previous years

*If your answer is none or very little – that's okay! We'll cover it today.

# Objectives




- By the end of this training, our goal is that all participants:
  - Understand the importance of flood observation and high water mark (HWM) data collection
  - Know which resources to use and how to effectively capture data with them
  - Know how to safely and accurately identify and collect high water marks
  - Submit test data using the different applications to ensure users are ready and prepared for the upcoming wet season

# Agenda

- An overview of the SFWMD Resiliency Program and the importance of flood/high water mark data collection
- Training on how to use data collection resources
  - Which application to use and when
  - How to completely and properly collect data
- How to take high water marks
- Testing

# Introduction

**Ana Carolina Coelho Maran, Ph.D., P.E.**

**Chief of District Resiliency**

# SFWMD Resiliency

- **District Resiliency | South Florida Water Management District (sfwmd.gov)**

***Resiliency is the capacity for natural and manmade systems to cope with and adapt to acute and chronic stressors as climate conditions evolve.***

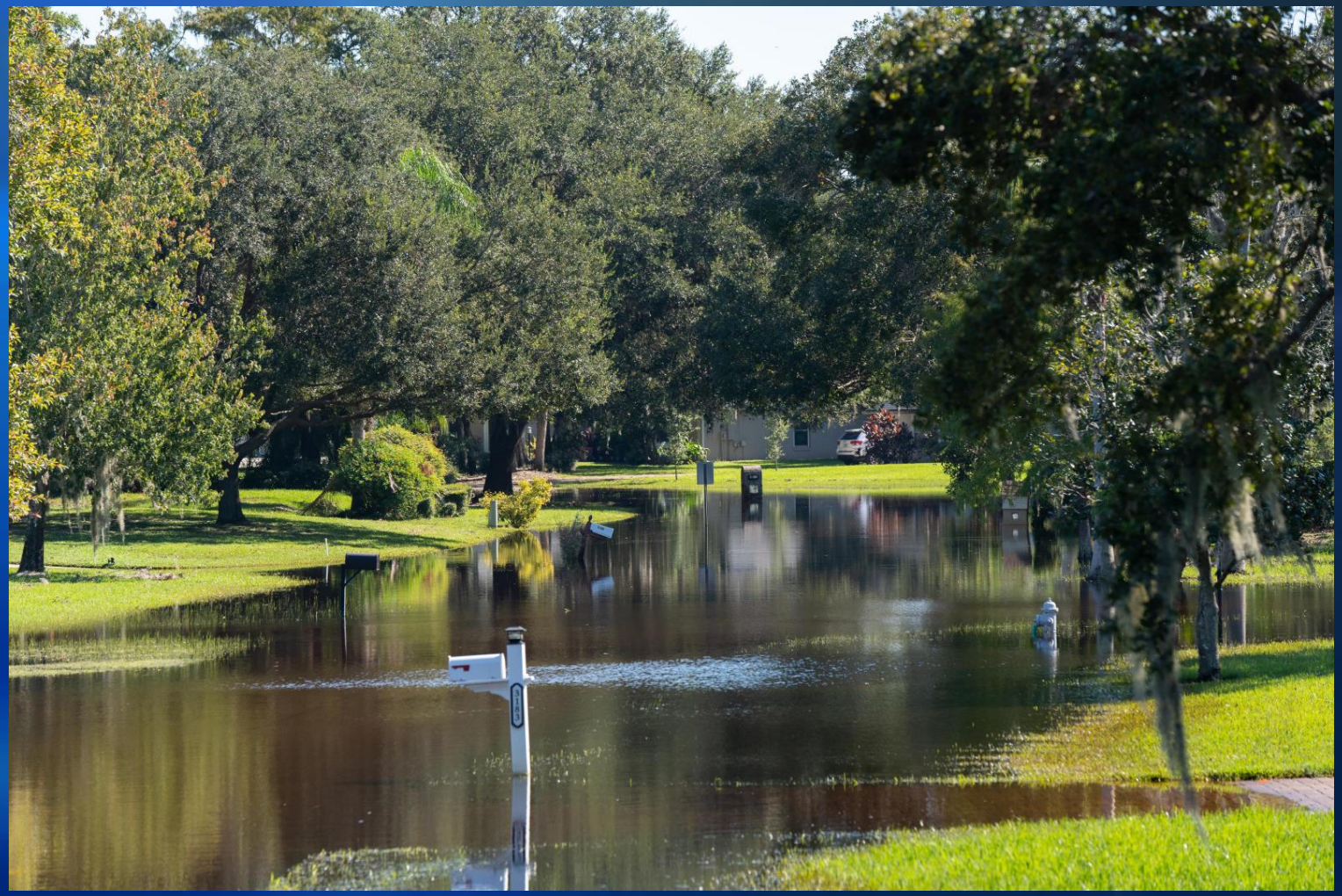
**SFWMD's resiliency efforts focus on:**

- **Assessing how sea level rise, extreme flood and rainfall events, and other evolving conditions happen today and, in the future, and how they affect water resources management.**
- **Planning for and making infrastructure adaptation investments that are needed to successfully implement SFWMD's mission of safeguarding and restoring South Florida's water resources and ecosystems, protecting communities from flooding, and meeting the region's water needs while connecting with the public and stakeholders.**
- **Implementing priority resiliency projects.**

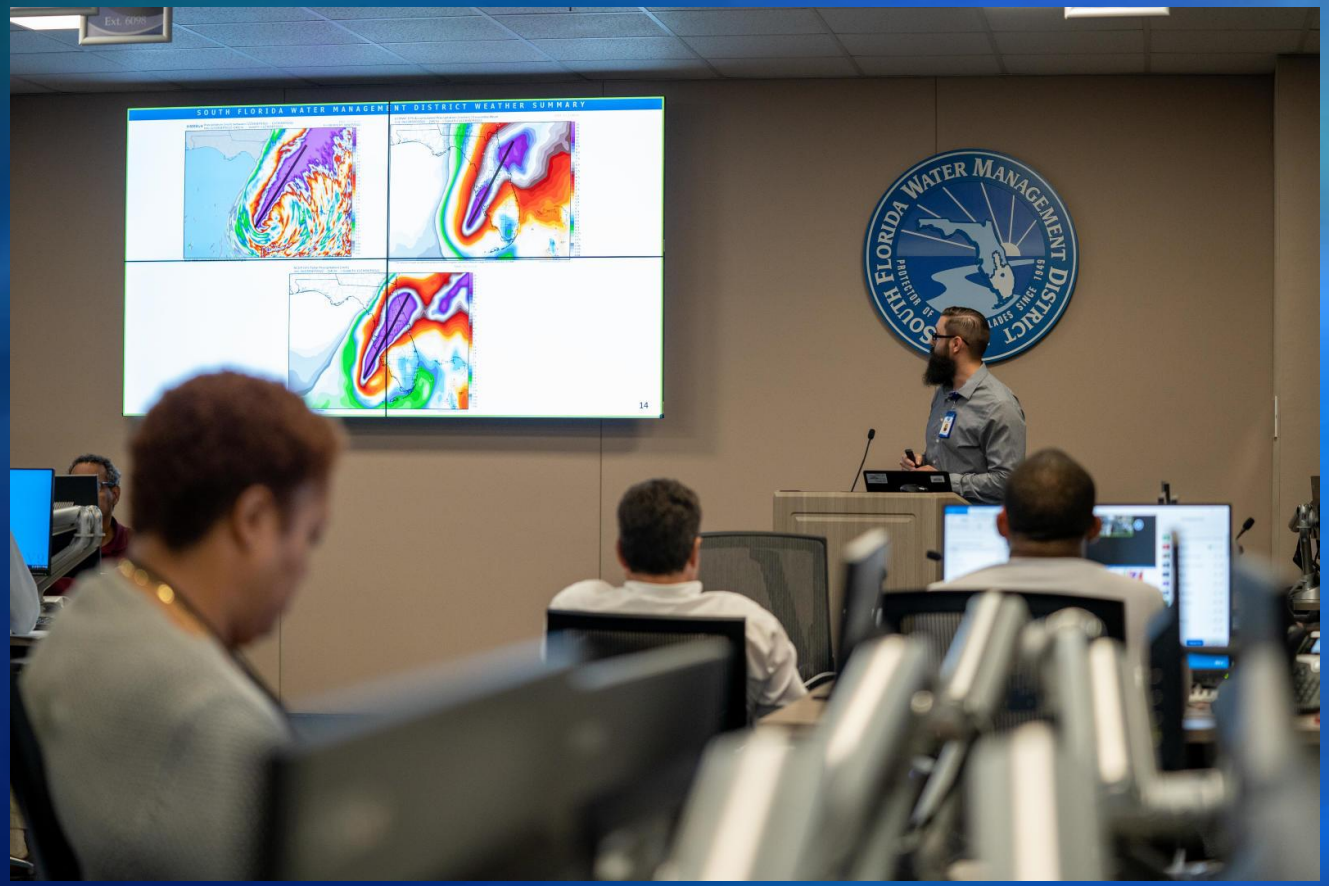
**The Office of District Resiliency collaborates District-wide resiliency activities, working closely with internal stakeholders on resiliency initiatives and jointly develop resiliency projects, as well with local, state, and federal partners.**

# Objectives And Importance Of Data Collection

- Data collected in these applications
  - Gives SFWMD and our local government partners critical information about flooding – when and where it occurs, and the severity of impacts
  - Provides insights into vulnerable areas and root causes



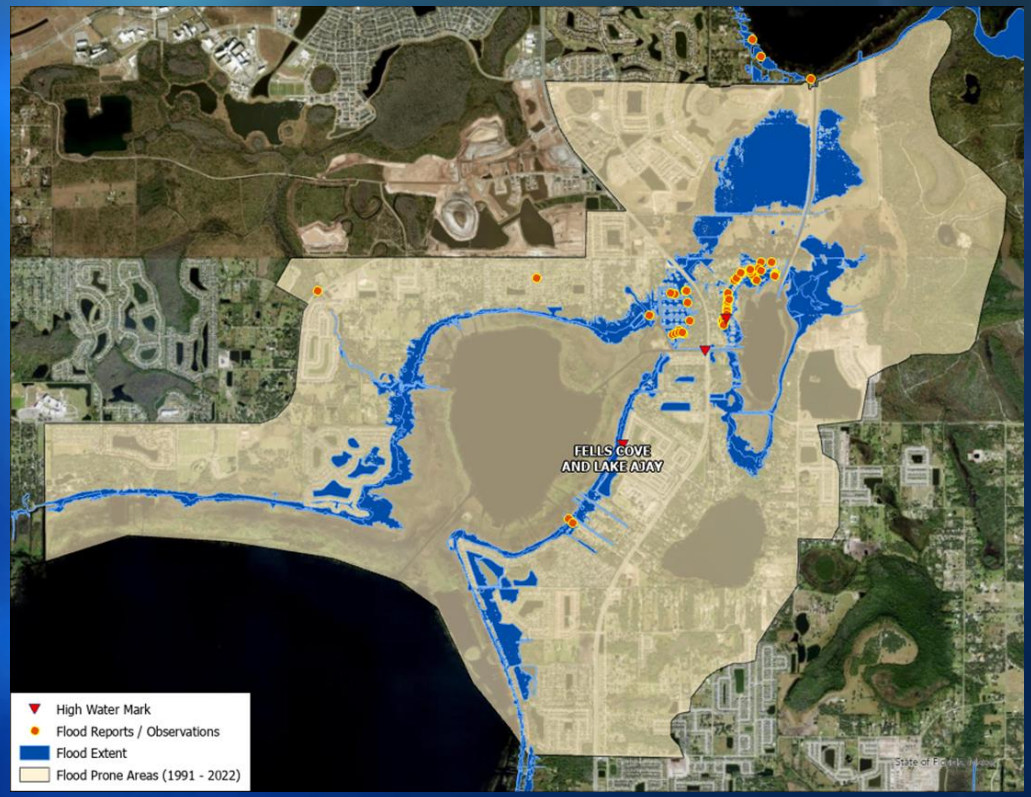
# Objectives And Importance Of Data Collection




- During heavy rainfall events and EOC activations, this data will provide increased understanding of conditions on-the-ground, improve awareness of local impacts, and inform water management operations.

# Objectives And Importance Of Data Collection

- **Determination of flood extents is critical to understanding the root causes of flooding, which are needed for effective operations response and adaptation planning.**
  - **Flood observations tell us where flooding is occurring and where to deploy teams to mark and measure high water marks**
  - **High water marks are used to estimate flood extents and validate remote sensing and model results**

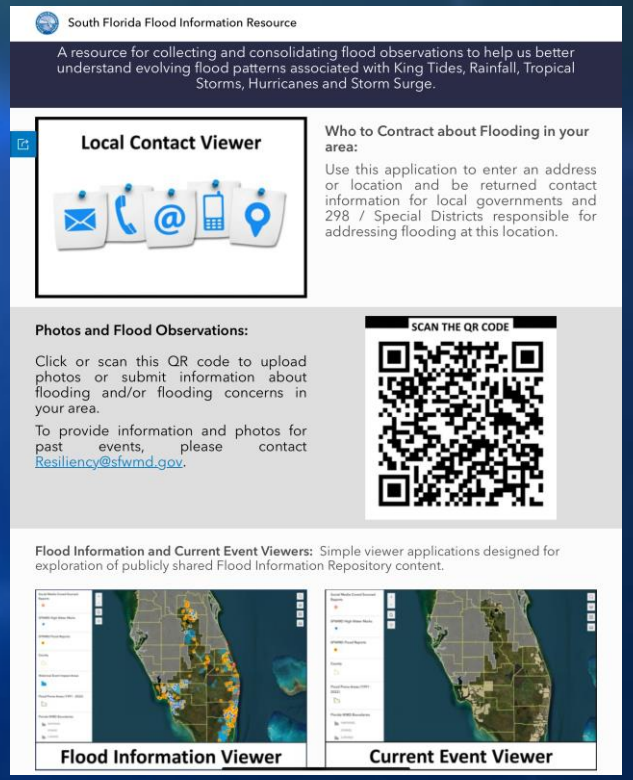



Hurricane Ian September 2022, East Lake Tohopekaliga / Fells Cove

# SFWMD South Florida Flood Information Resource

## South Florida Flood Information Resource

- Find local contacts
- View flood observations
- View event data


Additional information can be found at [Resiliency and Flood Protection | South Florida Water Management District]

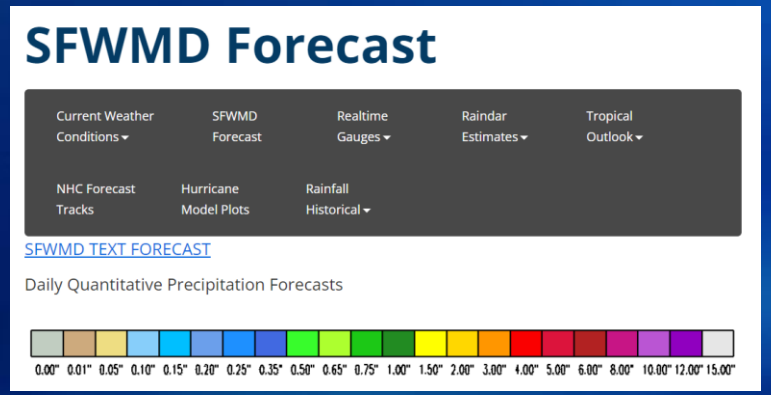
# Local Contact Notification System

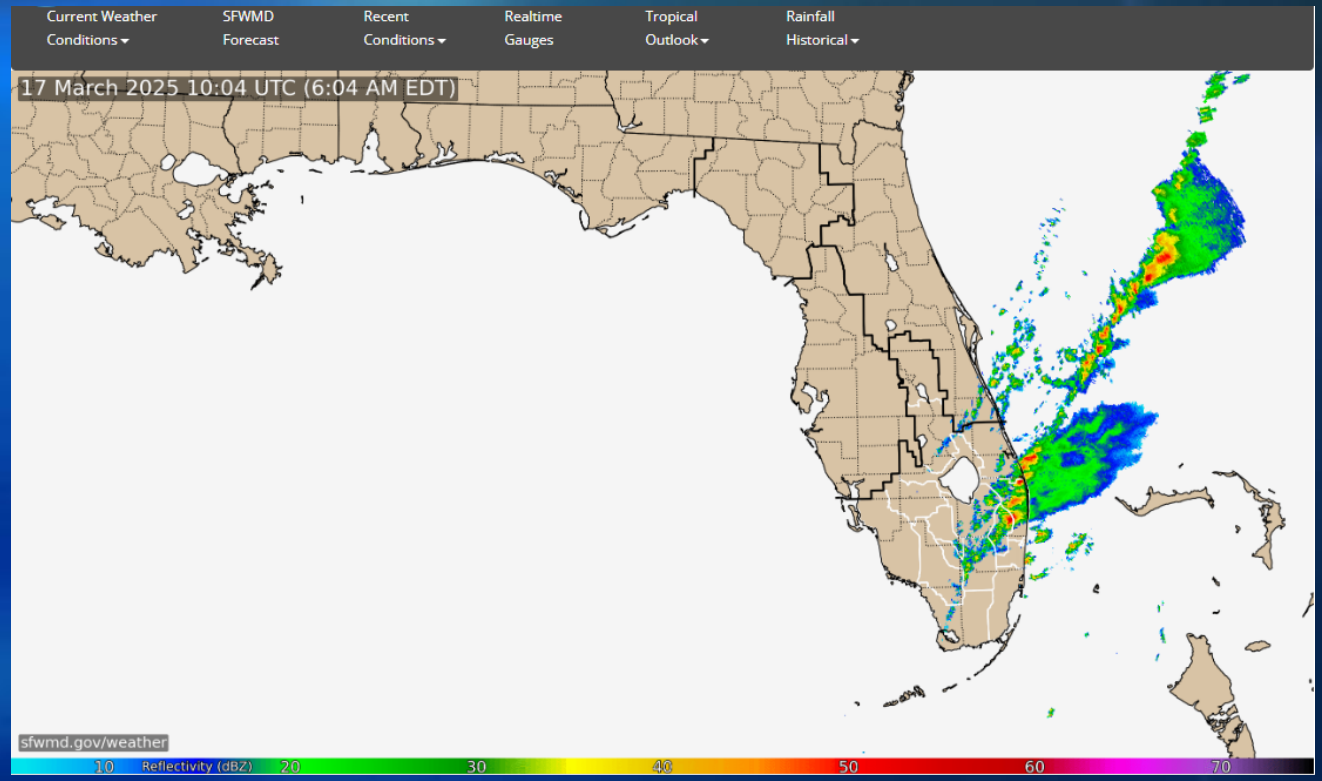
- SFWMD is implementing a “Local Contact Notification System” to alert flood control partners in South Florida.
- System will notify County, City, and Local Drainage District contacts via email when flooding is reported in their area.
- Notifications will include a URL to the South Florida Flood Information Resource application for report access.
- Local contacts must have a South Florida Flood Information Resource account to view reports.
- Training on account creation and application use will be provided in May 2025.
- Local contacts encouraged to participate in the annual Flood Observation and High-Water Mark training in April.
- Local contacts are urged to respond to flood notifications using SFWMD-provided tools.

Additional information can be found at Resiliency and Flood Protection | South Florida Water Management District

# SFWMD Weather

- Current Weather Conditions: Florida Radar Loop | South Florida Water Management District (sfwmd.gov)
- Site Status Reports (sfwmd.gov)
- Stay informed on regional and local conditions



# SFWMD Tidal Outlook

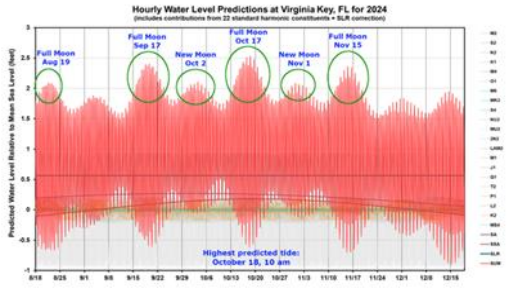
- **sfwmd.gov/HighTidePredictions**
  - Stay informed on high tide events and flooding risks
  - 2025 King Tide Season: September – December
  - Weekly Tidal Outlooks

## Weekly King Tide Forecast

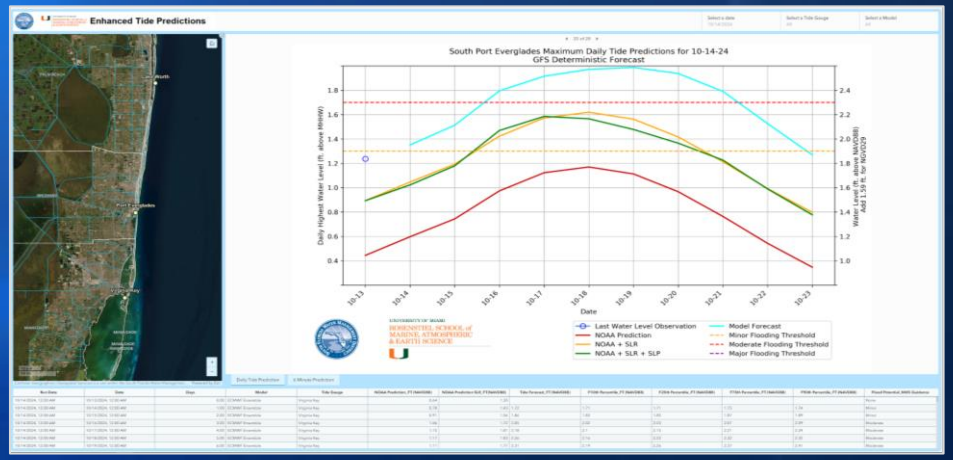
**The South Florida Water Management District's Tidal Outlook for the forecast period of November 12, 2024 through November 21, 2024, is now available.** Tidal water levels along Florida's southeast coast and the Florida Keys are expected to reach or exceed the National Weather Service (NWS) "Moderate Flooding" threshold. On Florida's southwest coast, tidal water levels are expected to exceed the NWS "Minor Flooding" threshold.

**View the daily forecast HERE.**

SFWMD is continuing efforts for the monitoring, operational response and documentation of these events. These weekly updates are intended to be informational for interested stakeholders and the public. If conditions warrant, additional updates may be issued throughout the forecast period.

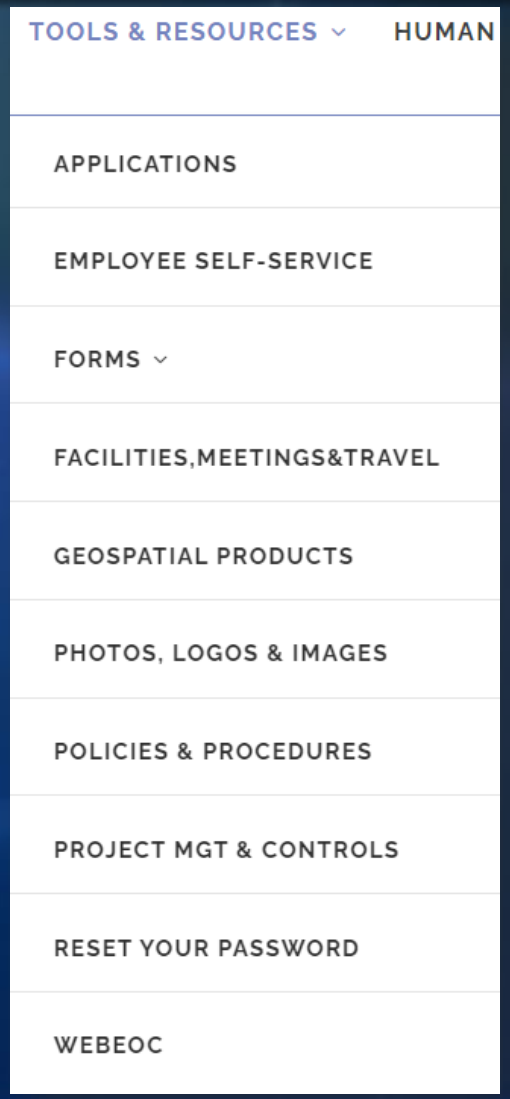




# Geospatial Products Site, Internal And External Resources

- Geospatial Products Site (sfwmd.gov)
  - Mobile GIS | Geospatial Products Site (sfwmd.gov)
- South Florida Flood Information Resource
- | South Florida Water Management District (sfwmd.gov)
  - Geospatial/Geographic Information Systems (GIS) | South Florida Water Management District (sfwmd.gov)



# Overview Of Flood And High Water Mark Data Collection

- **Flood Survey**
  - Survey123 or browser
  - Public Tool for Agency Use and Public Distribution
- **High Water Mark Survey**
  - Survey123 or browser
  - Requires a Flood Information Resource Account
  - Florida Division of Emergency Management-Derived
- **Damage/Flood Assessment**
  - QuickCapture
  - Internal SFWMD tool for post event preliminary damage assessment from vehicle or helicopter

ArcGIS Survey123

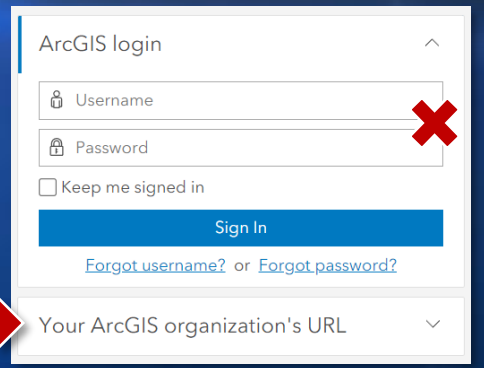
ArcGIS QuickCapture

# Signing Into Survey123

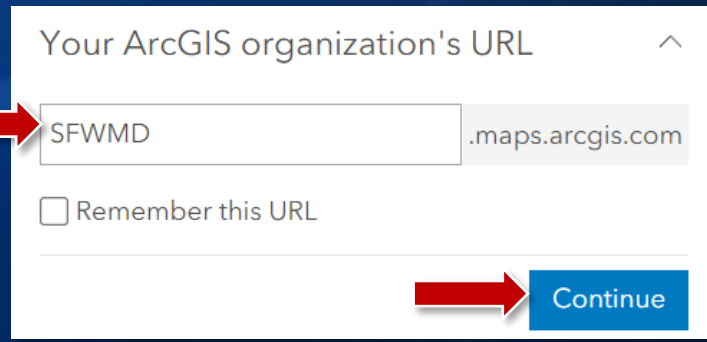
- Sign in is not required to access the Flood Observation Survey, but is required for the High Water Mark Survey
  - The Flood Observation Survey is open to the public
  - The High Water Mark Survey is restricted to trained individuals with Flood Information Resource Accounts
- For today's training, you will not have to sign in to the High Water Mark Survey
  - We've made temporary updates to the sharing permissions to allow this
  - Non-SFWMD participants should have received information about setting up their Resource Accounts, and will receive a follow up email
  - For SFWMD staff, we will go through the sign in process on the following slides

# Signing Into Survey123 (SFWMD Staff)

- Choose “Sign in with ArcGIS Online”
- Choose to login with the ArcGIS organization URL
- Type in SFWMD
- Sign in using your District credentials
  - Use your full email (@sfwmd.gov) and regular password
- If prompted, go to the Microsoft Authenticator application on your trusted device and enter in the code to authenticate
  - If you don’t have the MFA app, please let us know after the presentation, and follow the instructions on the next slide


Do not type Account info in these boxes, it will not work.



# Signing Into The App

- If you do not have the Microsoft Multi-Factor Authentication (MFA) application or are not SFWMD staff:
- For now, choose “Continue without signing in”
  - You can <u>always</u> choose this option if you’re collecting data in the Flood Observation Survey
- SFWMD staff
  - Please let us know after the presentation/before the testing time if you don’t have the MFA app

# Signing Into The App

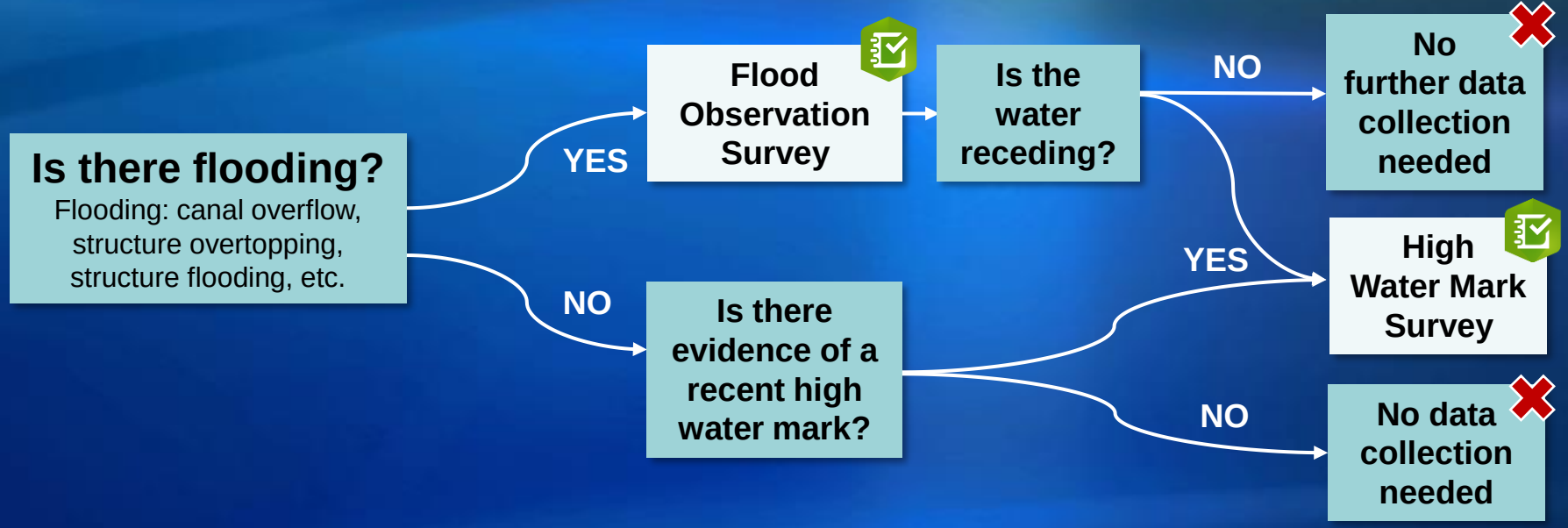
- SFWMD Staff: Please be sure you have signed in using the sign in sheet so we can look into your license level and permissions in ArcGIS Online.
- Non-SFWMD Staff: You should have already received instructions detailing how to create your Flood Information Resource Account, which will be required for submitted the High Water Mark Survey beyond this training. Please speak with a member of the Resiliency team if you need assistance or email Resiliency@sfwmd.gov.

# Defining Flooding

- Flooding is water in areas that are not designed to hold it or where it is not normal for it to occur
  - *Not* water in swales, wetlands, or retention ponds, unless it is rising quickly or there is cause for other concern

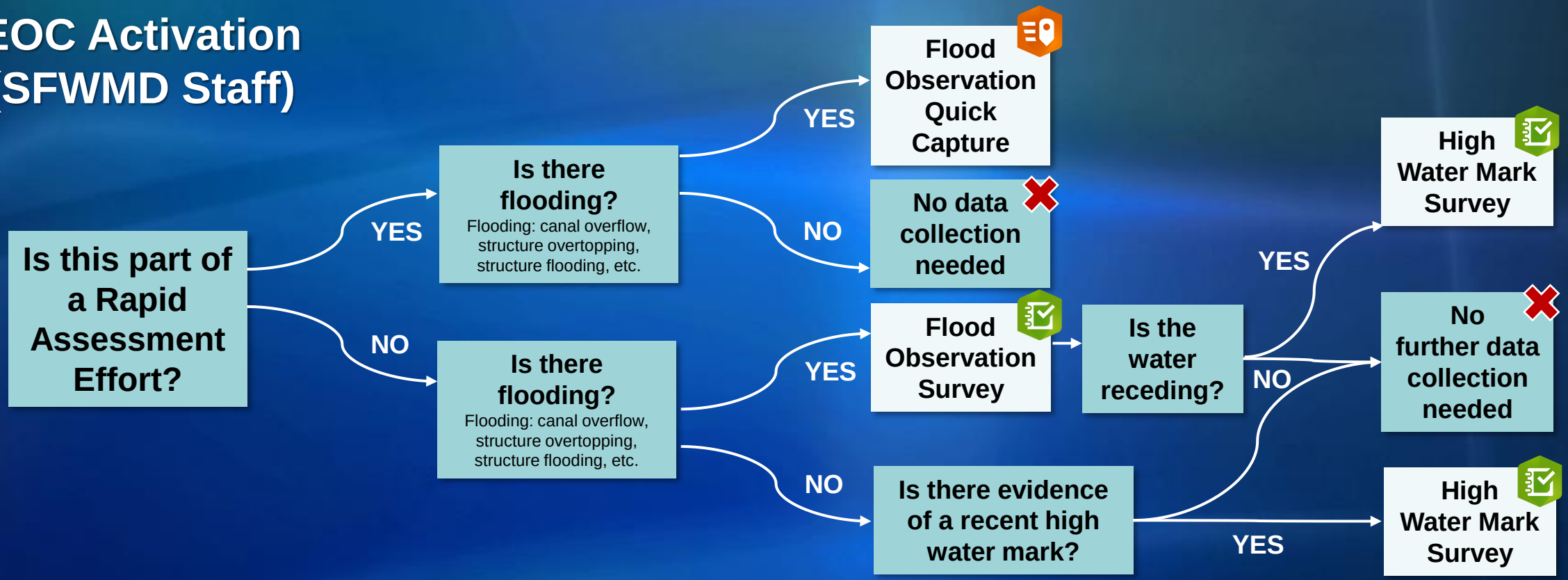
# Which Survey Should I Use, And When?

## Non-EOC Activation / King Tide



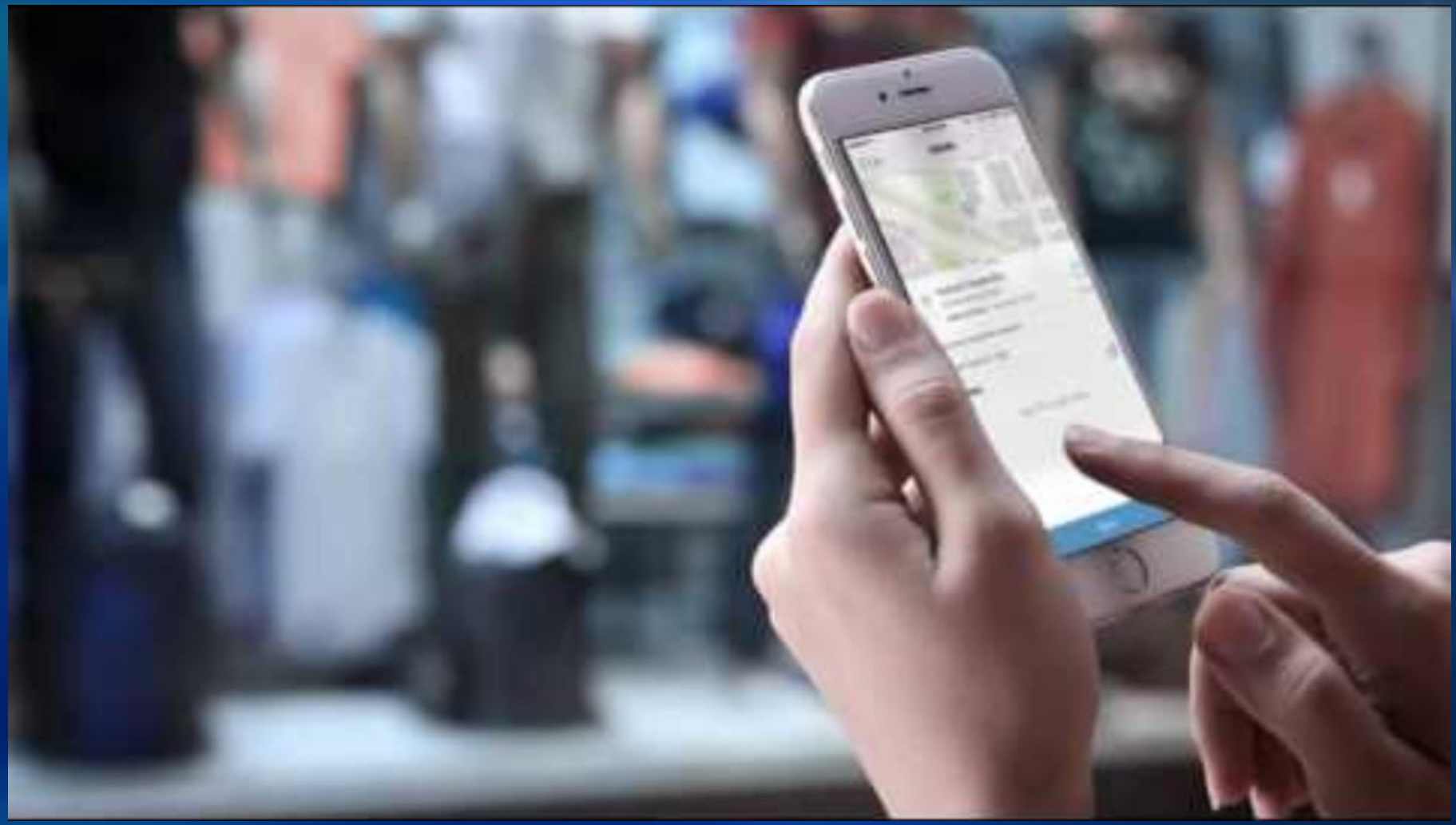
# Which Survey Should I Use, And When?

## EOC Activation (SFWMD Staff)



# ArcGIS Survey123

# ArcGIS Survey123

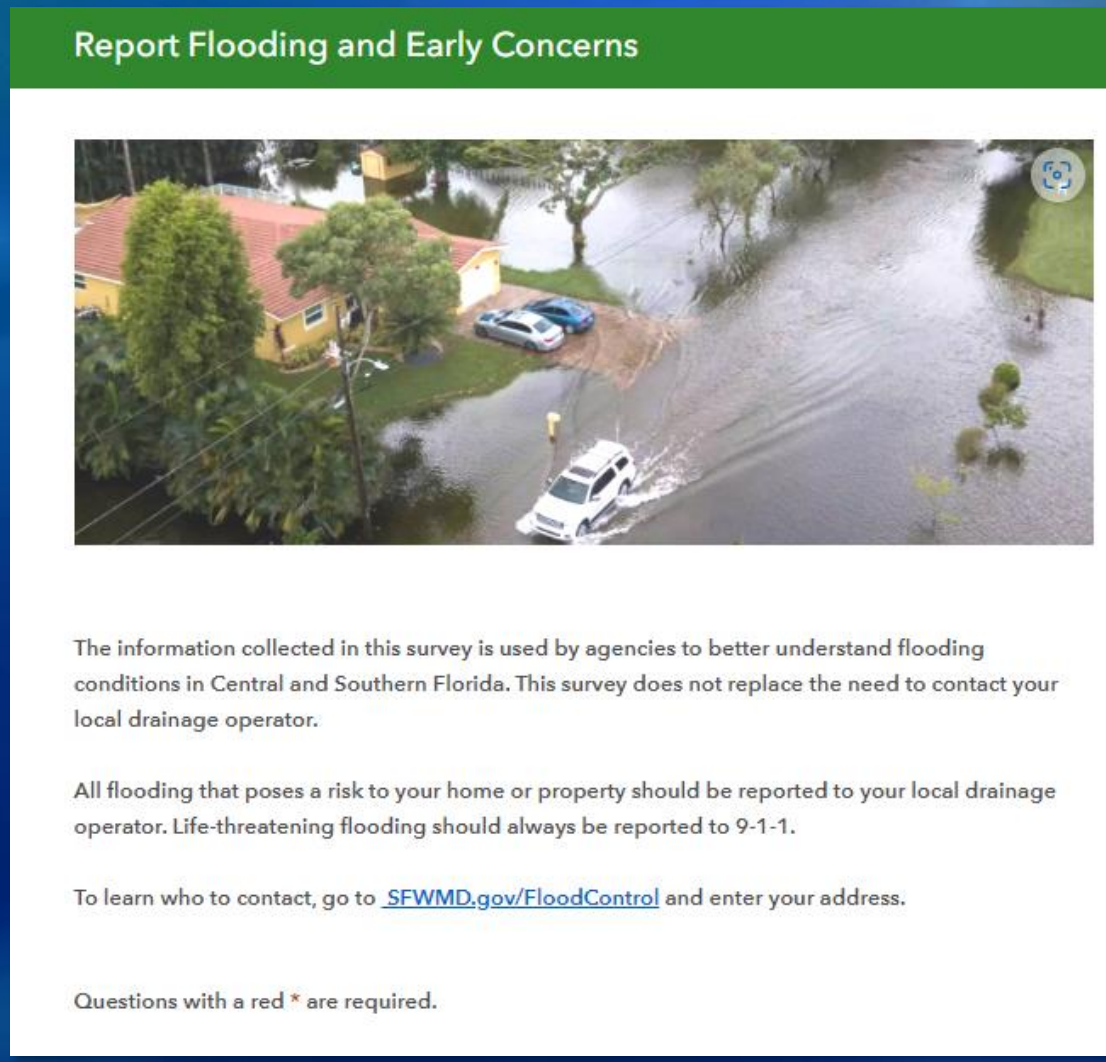


Introduction to ArcGIS Survey123 (youtube.com)

# Flood Observation Survey

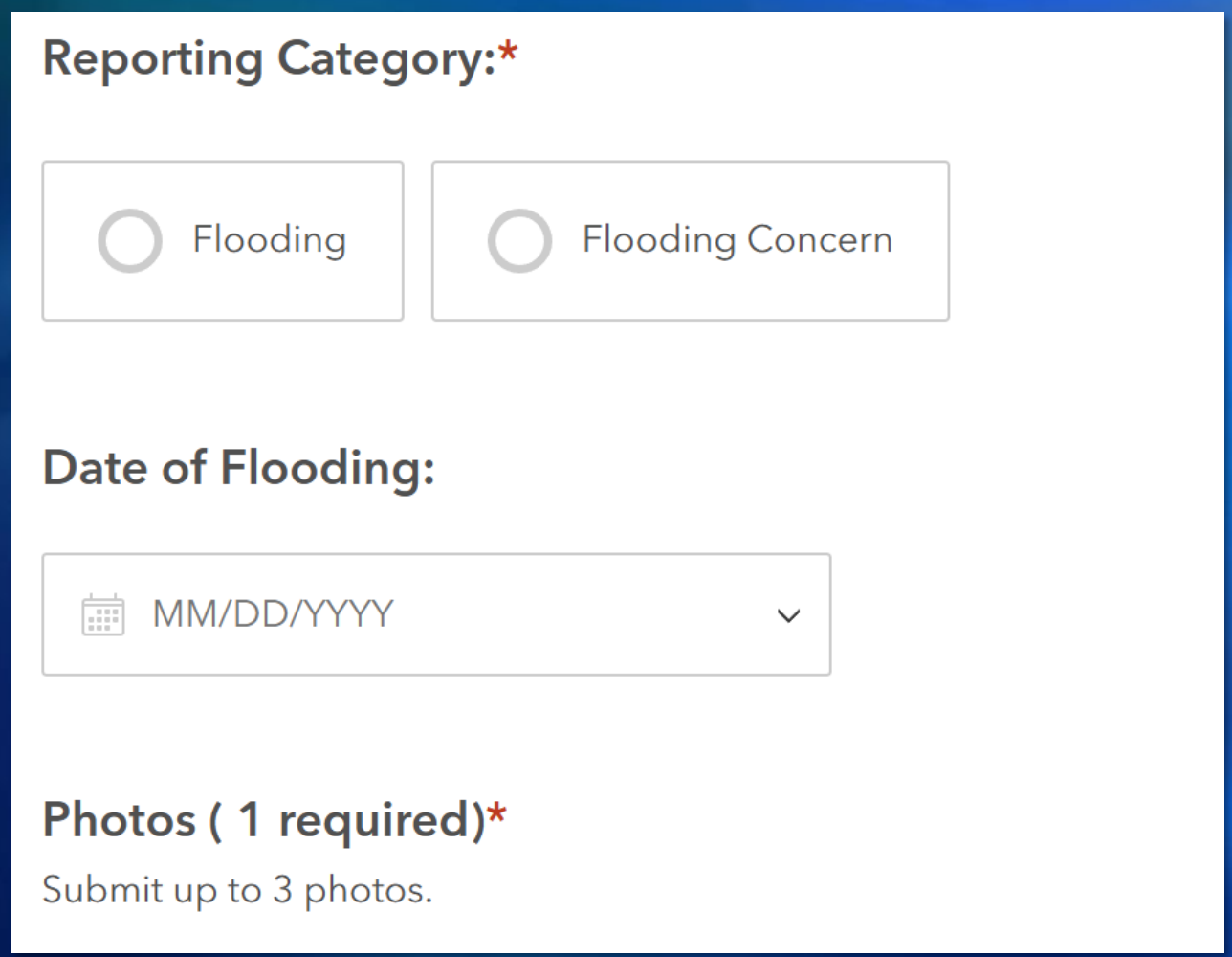
- SFWMD.gov/floodingapp
  - This survey is open to the public and will not require a sign in

# Flood Observation Survey



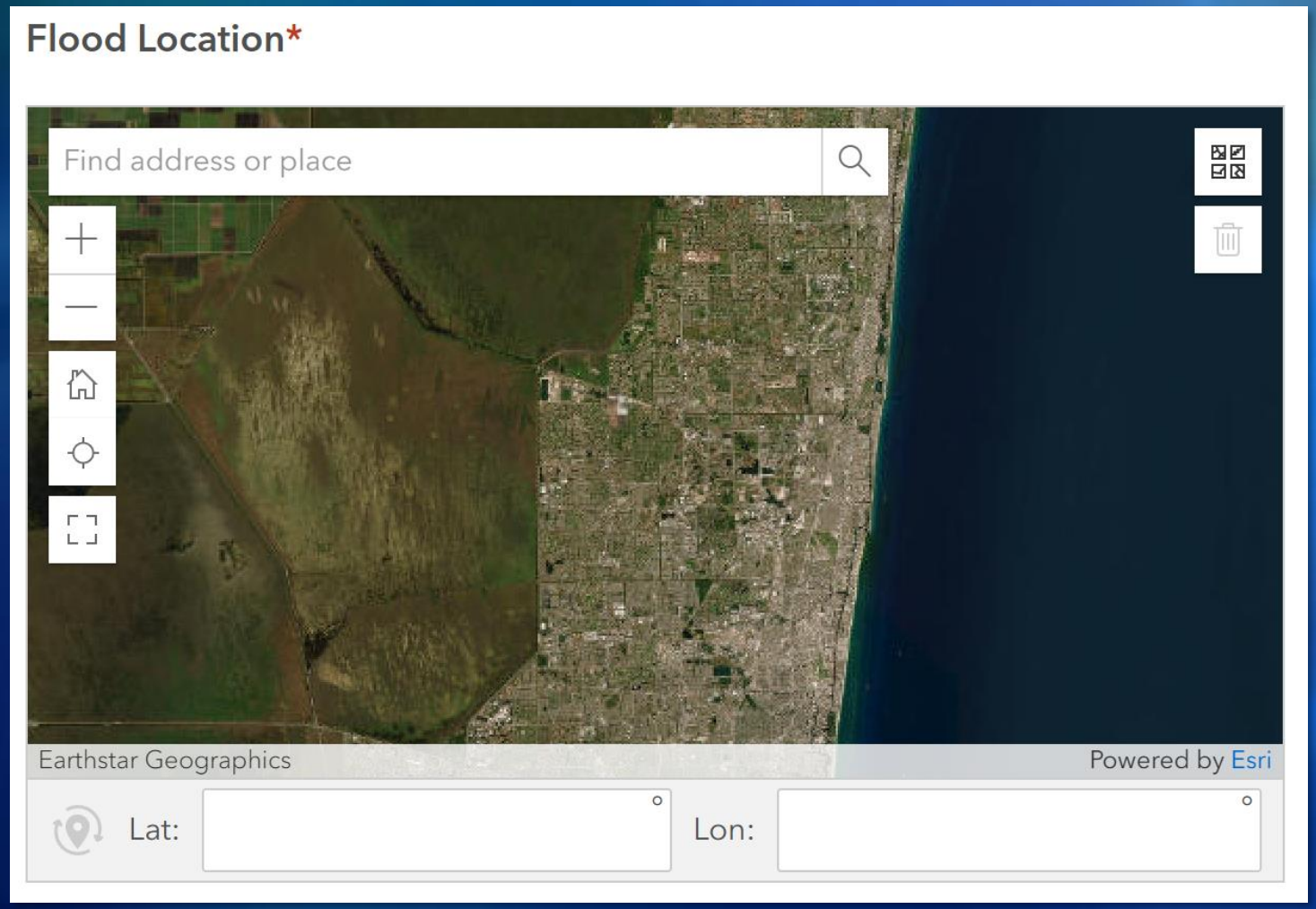

- If you've already submitted or saved data, you may see other options/folders in addition to "Collect" at the bottom of your screen.

# Flood Observation Survey




- **Reporting Category**: Flooding or a Flooding Concern
  - A flooding concern may refer to water rising around a control structure
- Date of Flooding
- **Photos** of the flooding or flooding concern (at least one photo is required)

# Flood Observation Survey

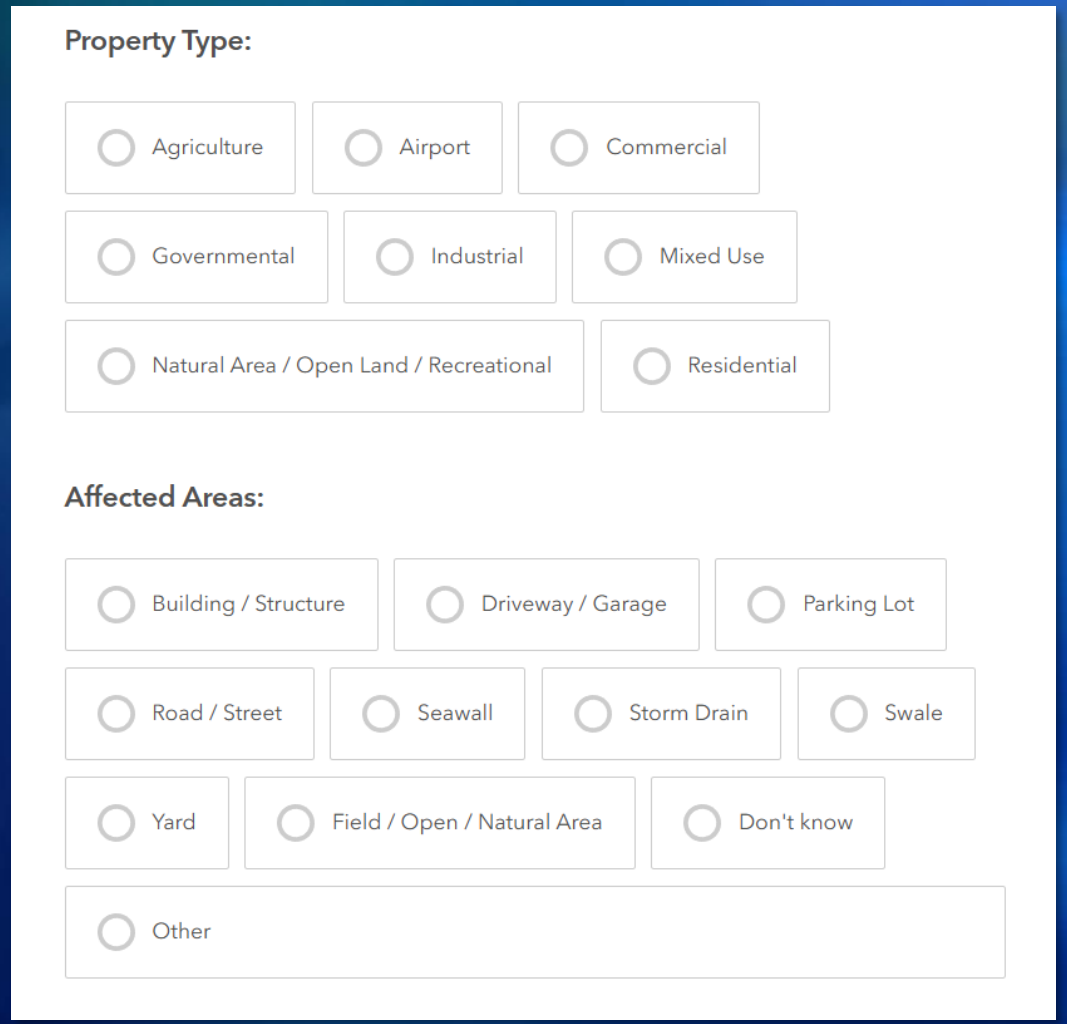



- **Flood location**: choose the location of the flooding on the map
  - Either find an address in the search bar, type in coordinates, use the map to select the location, or select the “find my location” button (under the “home” icon) to zoom to your location

# Flood Observation Survey

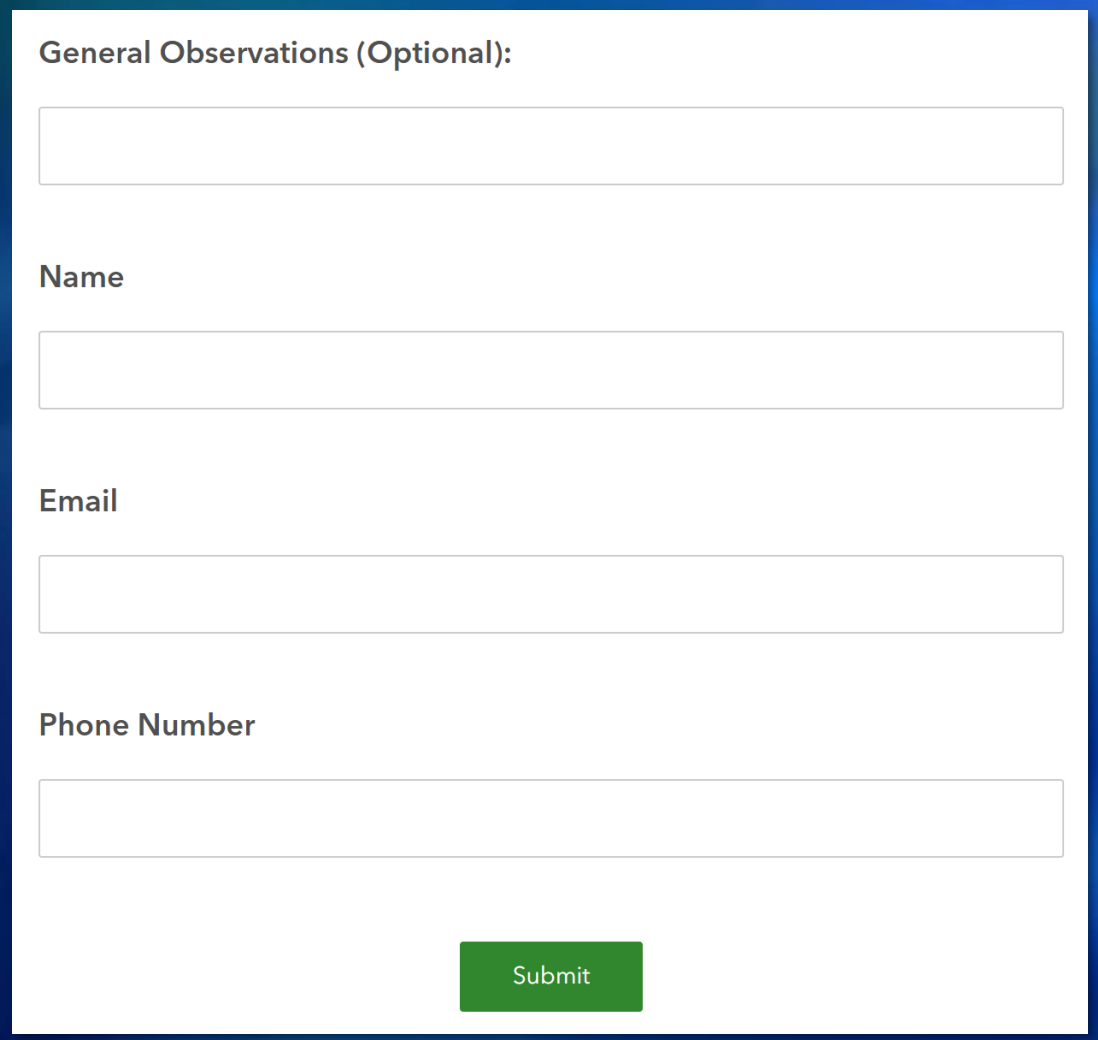
- Select the appropriate button for the water depth and previous flooding information

# Flood Observation Survey




- **Property Type: select the type of affected property from the options**
  - Agriculture, Airport, Commercial, Governmental, Industrial, Natural Area/Open Land/Recreational, or Residential
- **Affected areas: choose the option that is representative of the area that has been flooded**
  - Building/Structure, Driveway/Garage, Parking Lot, Road/Street, Seawall, Storm Drain, Swale, Yard, Field/Open/Natural Area, Don't Know, or Other (if other, type in more information)

# Flood Observation Survey




- Use the General Observations field to report additional information, explain the flooding situation, share details about the photos or location, etc.
- Enter in Name, Email, and Phone Number

# Break

# What is a High Water Mark?

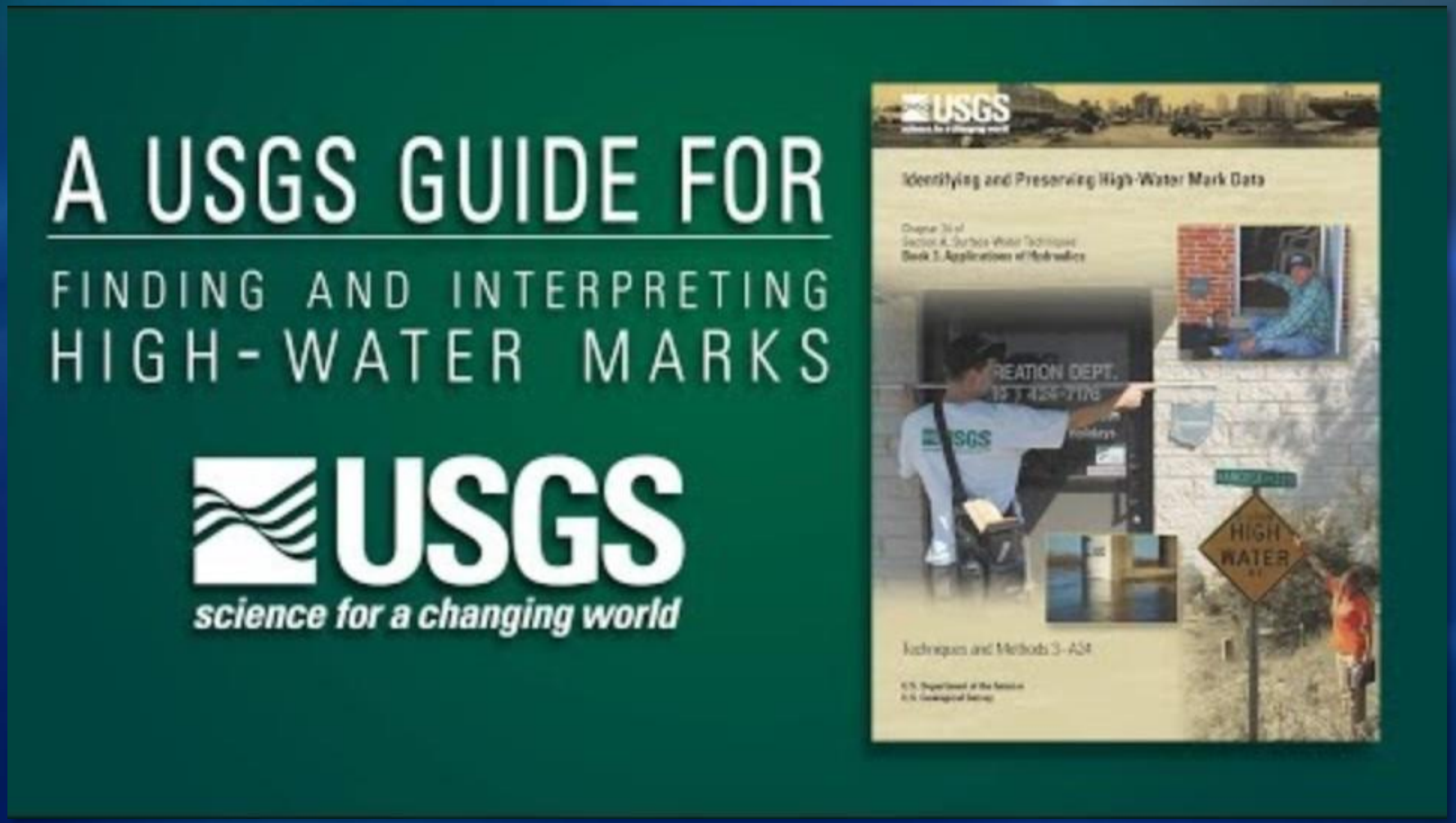
- A high water mark (HWM) is physical evidence that indicates the highest water level that was present during a flooding event
  - This may be in the form of debris, mud, seed lines, stain lines, or vegetation lines
  - High Water Marks are used to understand flooding extents

Hurricane Ian – September 2022

# What is a High Water Mark?

Hurricane Ian – September 2022

# High Water Mark Guide (Source: USGS)




**Timestamps:**

**0:00-2:00**

**4:08-5:50**

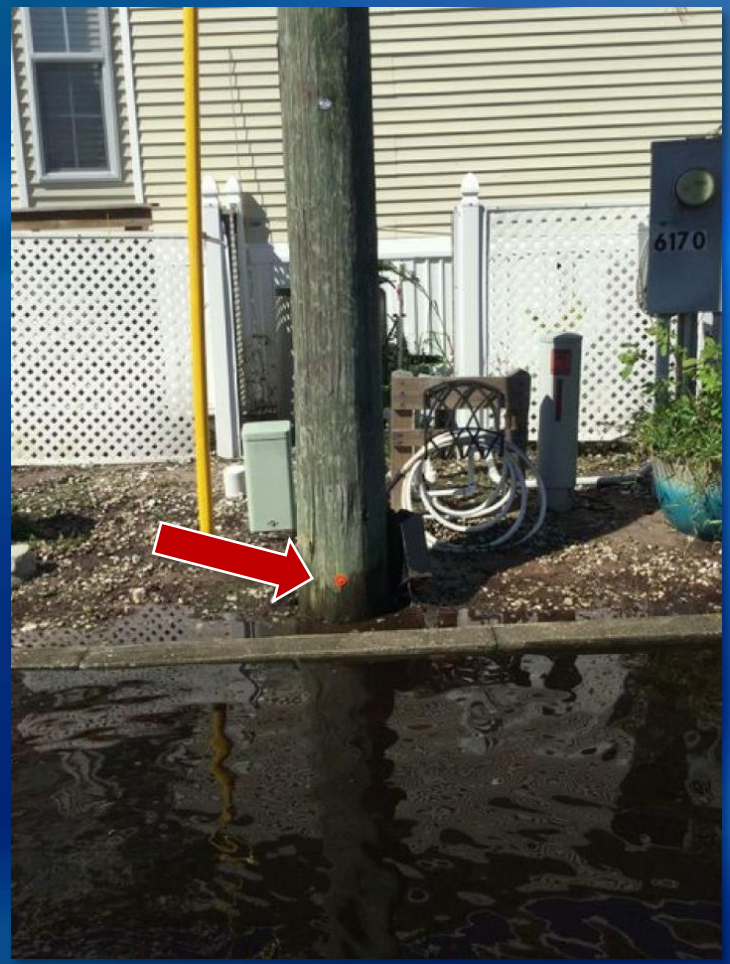
**14:30-15:45**

*A USGS Guide for Finding and Interpreting High-Water Marks*

# Collecting High Water Marks


Note: High water marks/ tags should not be placed on roadways or private property

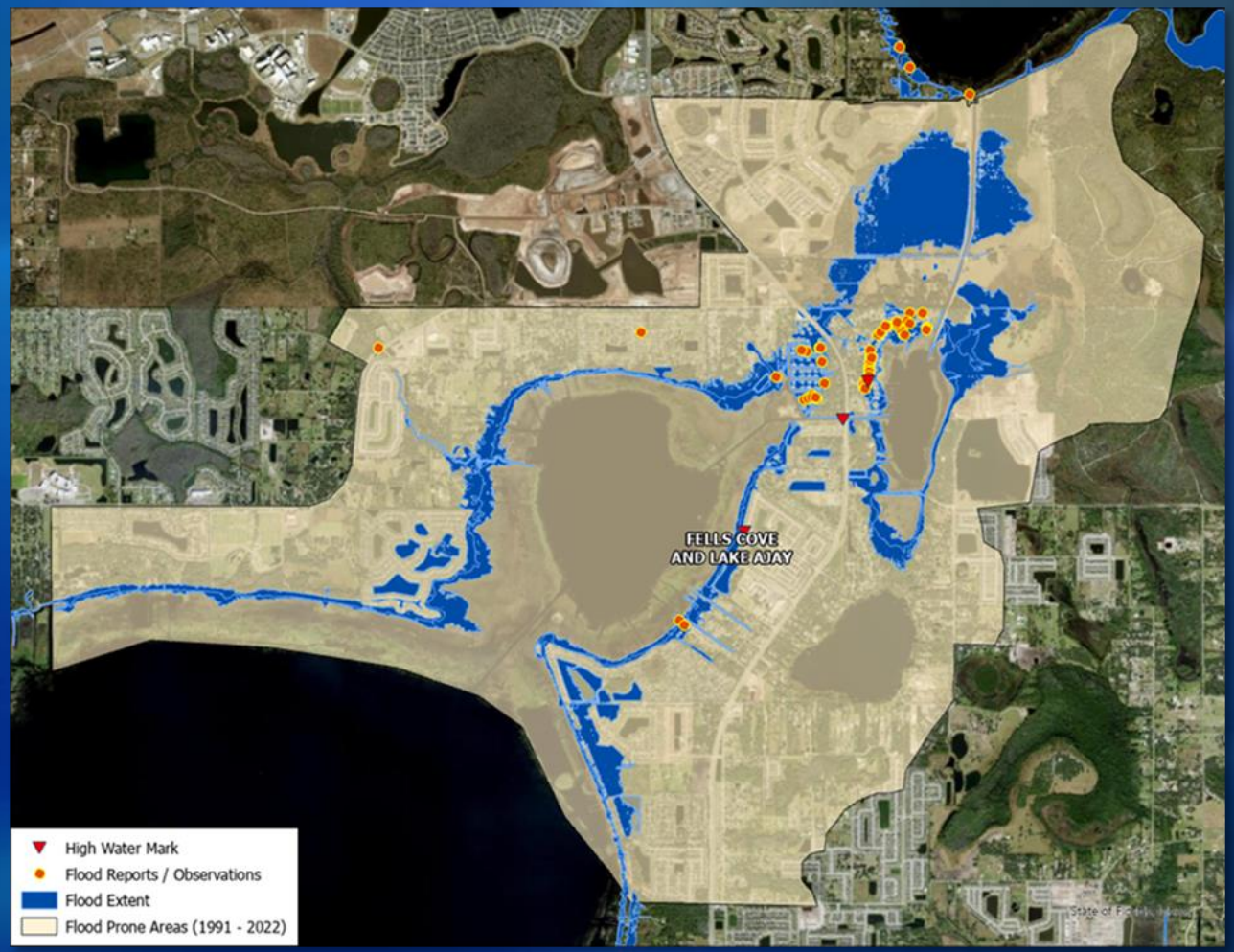
# Collecting High Water Marks




# Collecting High Water Marks

# Collecting High Water Marks

# Determining Flood Extents




Hurricane Ian September 2022, East Lake Tohopekaliga / Fells Cove

# Best Practices - IMPORTANT

- When taking the location of the high water mark in the map, <u>always be as close as possible to the actual high water mark</u>
  - This is the location that is used in data analysis – representing the high water mark as elsewhere (ex: from your vehicle, back in the office, etc.) can lead to misinterpretation of the results and/or inaccurate conclusions about the flooding event

# High Water Mark Survey

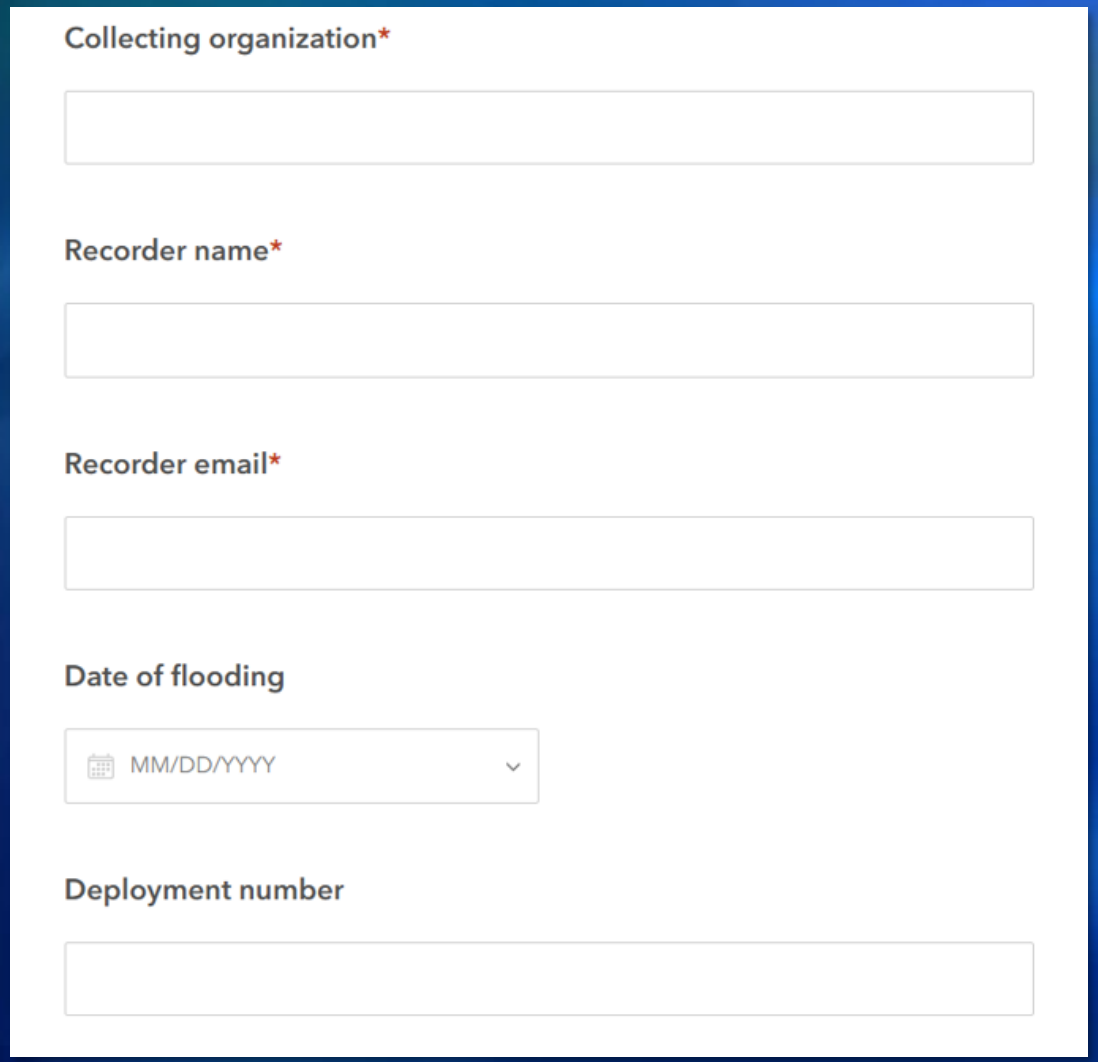
- SFWMD HWM Survey (arcgis.com)
  - You will need to sign into the Survey123 application in order to collect data in this survey beyond the training period
  - Do not expose yourself to any risk of harm while conducting this survey

# High Water Mark Survey

## SFWMD HWM Survey

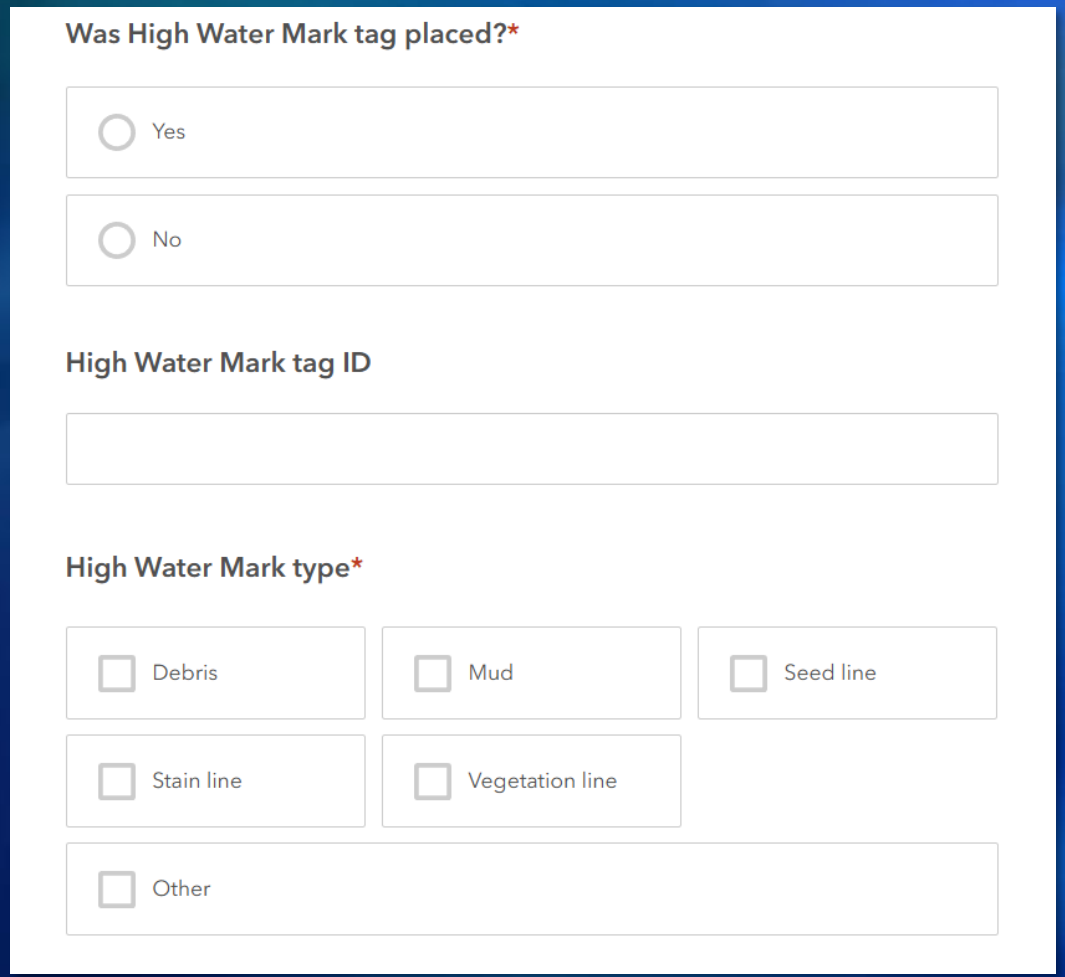

Questions with a red * are required.

# High Water Mark Survey



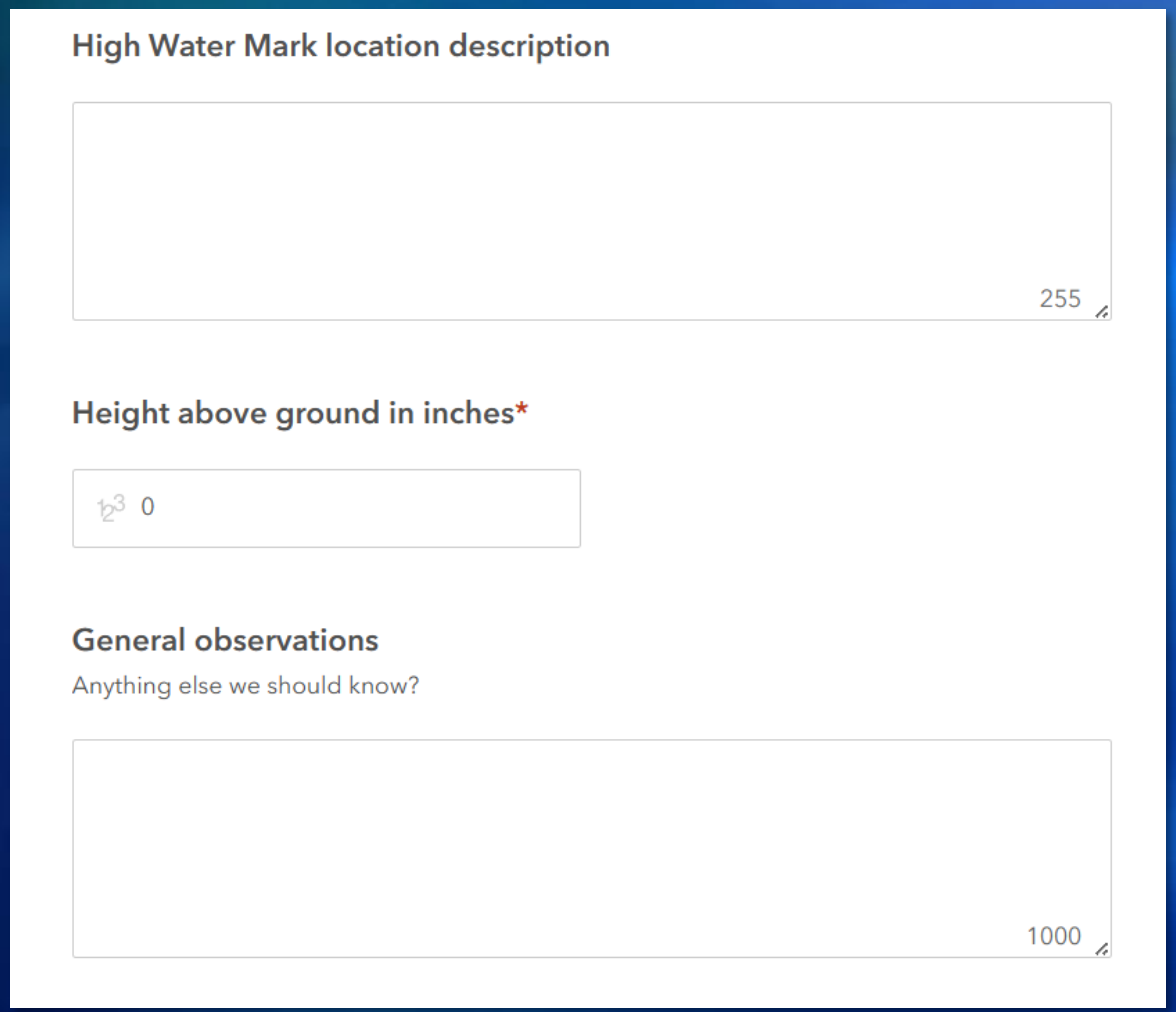

- **Collecting organization**: SFWMD, or your organization
- **Recorder name**: your name
- **Recorder email**: your email
- Date of flooding
- Deployment number: this number will be given to you if it is needed (SFWMD staff)

# High Water Mark Survey




- Check **yes or no** if there was a tag placed on the high water mark
- High Water Mark tag ID: the ID/number on the tag, if the tag was placed
- **High Water Mark type**: Select the type of high water mark indicator that was used to identify the high water mark, from the options: debris, mud, seed line, stain line, vegetation line, or other
  - If other, type in more information

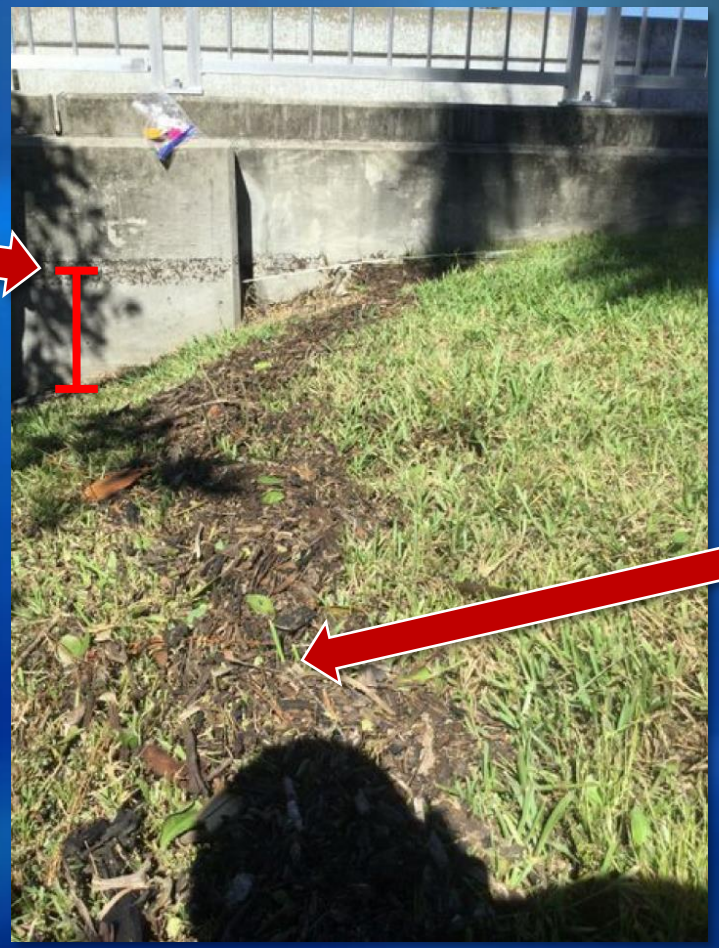
# High Water Mark Survey




- High Water Mark location description: include other details about where the high water mark can be found
- Height above ground in inches: the height of the high water mark off of the ground – Default is set to 0 to represent that the mark is on the ground
- General observations: other information about observed flooding and/or conditions

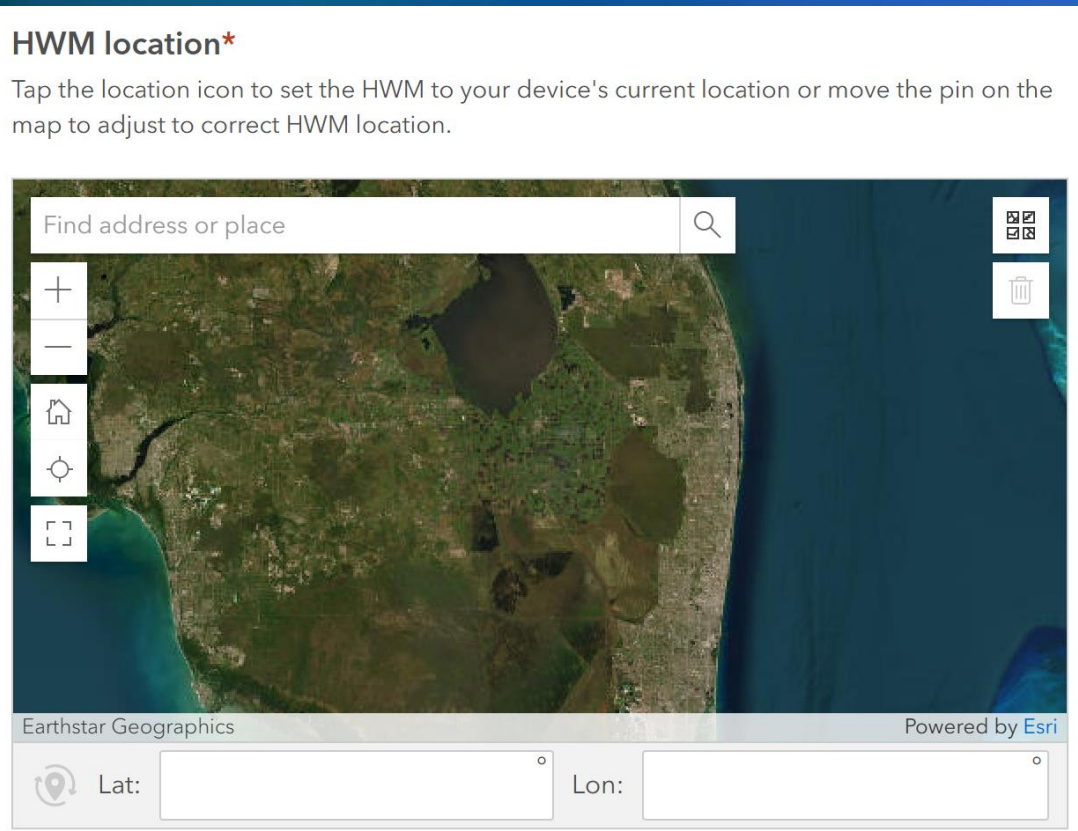
# Collecting High Water Marks

If you are recording your high water mark based off this debris line, the “height above ground in inches” here would be the measurement of the red line



If you are recording your high water mark based off this line on the ground, “the height above ground in inches” would be 0

# High Water Mark Survey




- **HWM location**: choose the location of the flooding on the map
  - Either find an address in the search bar, type in coordinates, use the map to select the location, or select the "find my location" button (under the "home" icon) to zoom to your location
- **Photos**: submit at least one photo of the high water mark, additional photos can be included to help provide location information/context or High Water Mark details

# Survey123 Best Practices

- Always send all data as soon as you have an internet connection
  - If the device is damaged, the app is deleted, etc. before the data is sent, it may be completely lost
- In addition to the “Collect” button on the bottom of the screen, there may also be a “Drafts,” “Outbox,” and/or “Sent” buttons
  - Incomplete surveys are saved to the Drafts to be finished later
  - Completed surveys that were sent while offline are stored in the Outbox

# ArcGIS QuickCapture

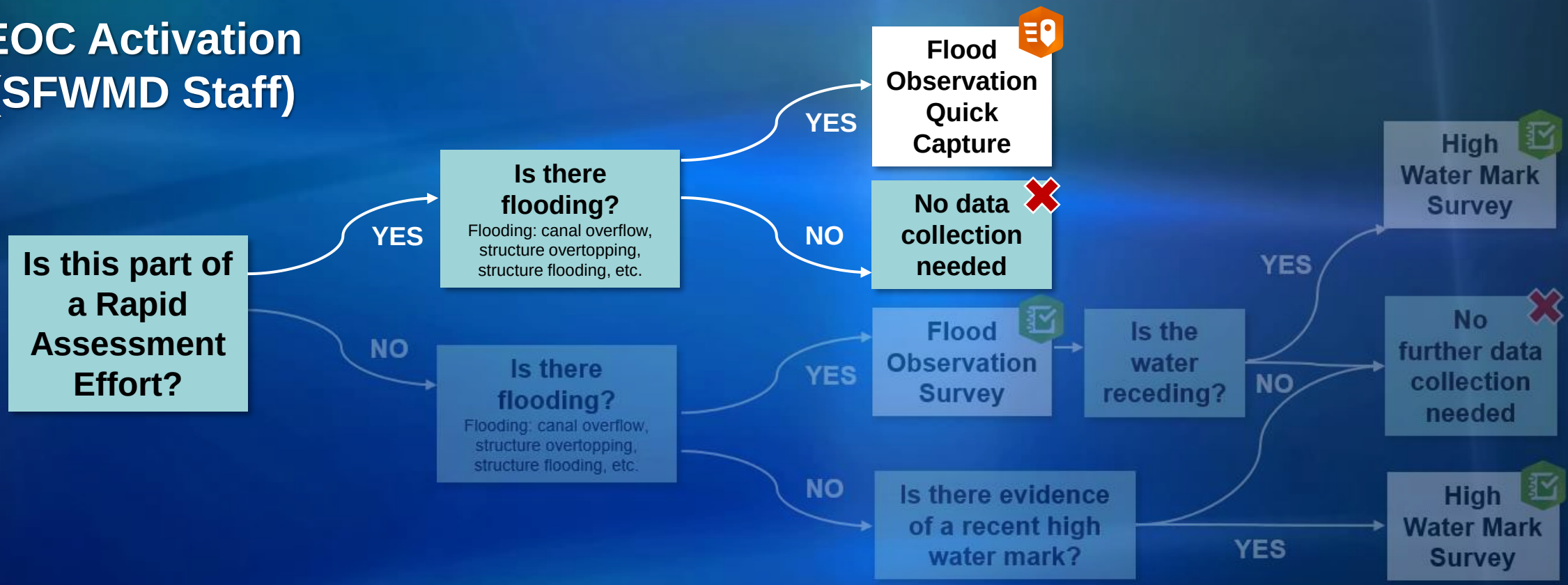
(SFWMD Staff)

# ArcGIS QuickCapture

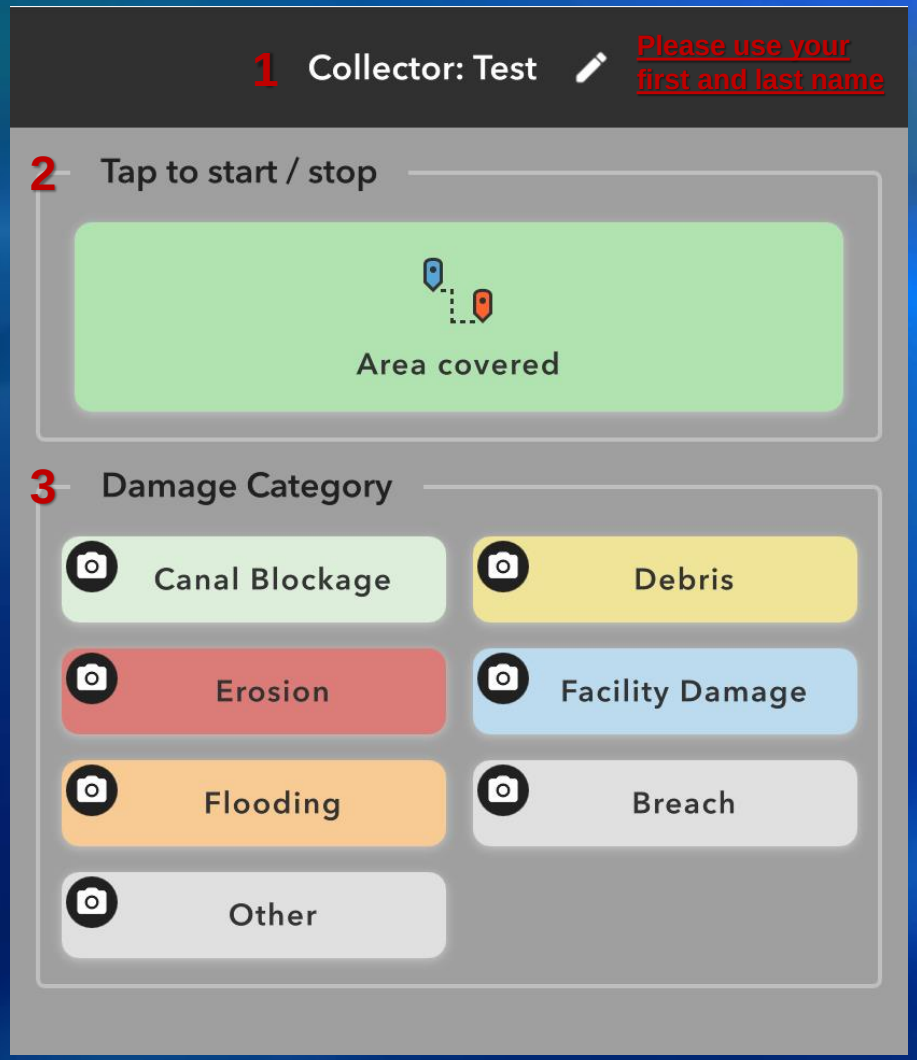

Introducing ArcGIS QuickCapture - YouTube

# Which Survey Should I Use, And When?

## EOC Activation (SFWMD Staff)



# Damage/Flood Assessment QuickCapture (SFWMD Staff)




1. Enter in your full (first and last) name
2. Tap the “Area covered” green box when you start your assessment – the app will begin tracking your location
3. Select the damage category – this will launch your camera to take a picture

All fields/steps are required

# Questions & Support

- If you have any questions that come up regarding any of the materials we've gone over today, please feel free to reach out via email:
- Geospatial Services & High Water Mark Team
  - SFWMD_HWM@sfwmd.gov
- Resiliency & Flood Survey Reviewer Team
  - FloodReportReviewers@sfwmd.gov

# Testing

- Please take at least one collection in Survey123 and QuickCapture, for SFWMD staff, before leaving today
  - Please include “TEST” somewhere within the surveys if possible (ex: in the Comments or Observations field)
  - Test points will be deleted once the trainings are completed
- SFWMD staff: if you do not have the Microsoft Authenticator installed on a trusted device please speak with a member of Geospatial Services before leaving for testing
- Please return to the room after collecting data

# Thank You!