

# How Can Citizen Science Benefit Stormwater Management

Alabama Stormwater Symposium  
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Mona Dominguez

Program Director, Alabama Water Watch  
Auburn University Water Resources Center





## Overview

What is Citizen Science?

What is Alabama Water Watch?

How can AWW help you meet your Minimum Measures?

# What is Citizen Science?

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**Citizen science, also referred to as community science, is the involvement of the public in scientific research.**





# Guiding Principles of Community Science

**ANYONE CAN PARTICIPATE**

**RESOURCE MANAGEMENT**

**CREDIBLE DATA FOR USE BY ANYONE**

**RESTORATION & PROTECTION**

**RESEARCH PROJECTS**

**EDUCATION & OUTREACH**

**PARTICIPANTS USE STANDARDIZED METHODS**

**COMMUNITY OF SCIENTISTS & VOLUNTEERS WORK TOGETHER TO SHARE DATA**

Alabama Water Watch	Alabama
Search data by: KAWW Watershed HSC Watershed Data Type	
AWW Watershed: Alabama	Subject Group:
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<input type="button" value="SEARCH"/>	State: <input type="text"/>
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<input type="button" value="SEARCH"/>	City/Town: <input type="text"/>



# Alabama Water Watch



**ALABAMA  
WATER  
WATCH** 

ALABAMA EXTENSION

A program dedicated to facilitating community-based volunteer water monitoring of Alabama's lakes, streams and coasts.

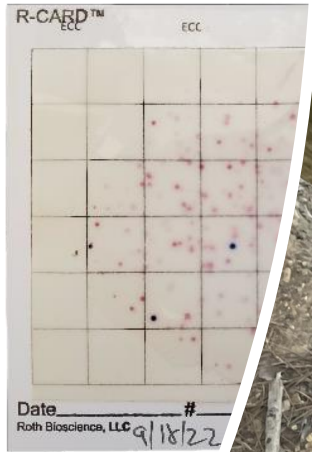
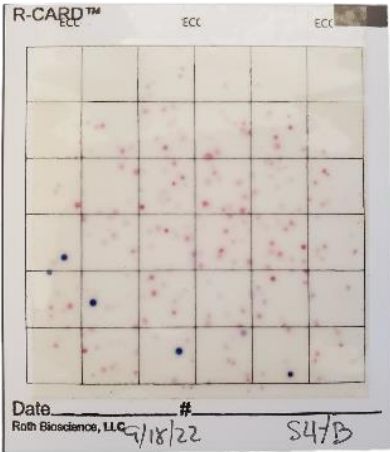
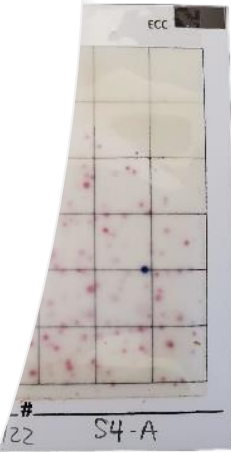
# Water Chemistry Monitoring

- Air Temperature
- Water Temperature
- pH
- Hardness
- Alkalinity
- Dissolved Oxygen
- Turbidity
- Secchi Disk Depth
- Salinity



# Bacteriological Monitoring

Measure fecal contamination by testing for *E. coli* and other coliforms with the R-CARDS method.



# Stream Biomonitoring

- Aquatic Macroinvertebrates
- **Group I** (Low Tolerance to Pollution, Good Water Quality)
- **Group II** (Wide Tolerance to Pollution, Fair Water Quality)
- **Group III** (High Tolerance to Pollution, Poor Water Quality)





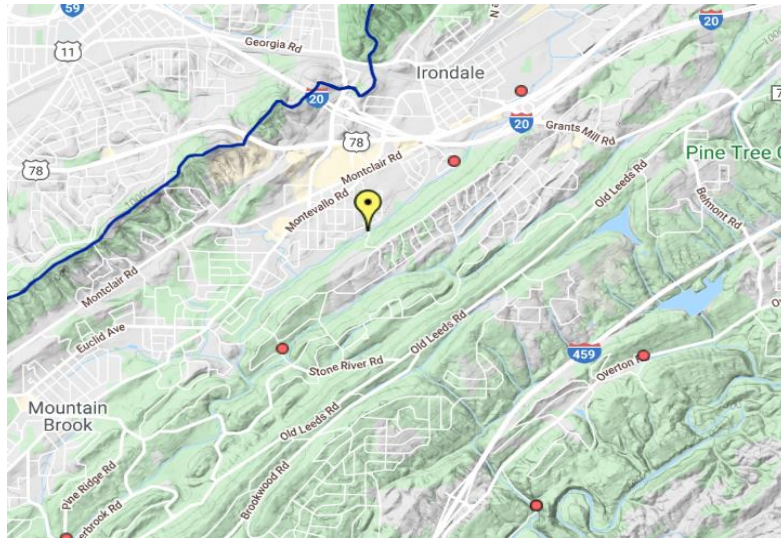
# AWW Training Program

- Hybrid Model, self-paced online courses and in-person field sessions
- Training of Trainer Programs

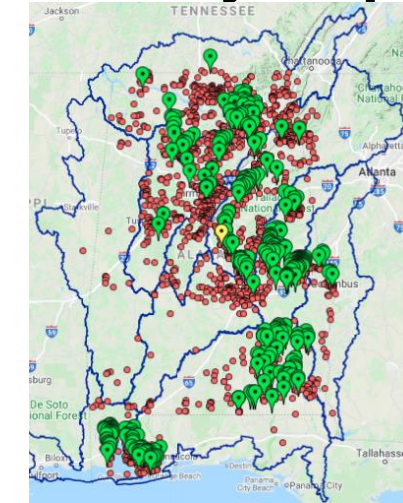




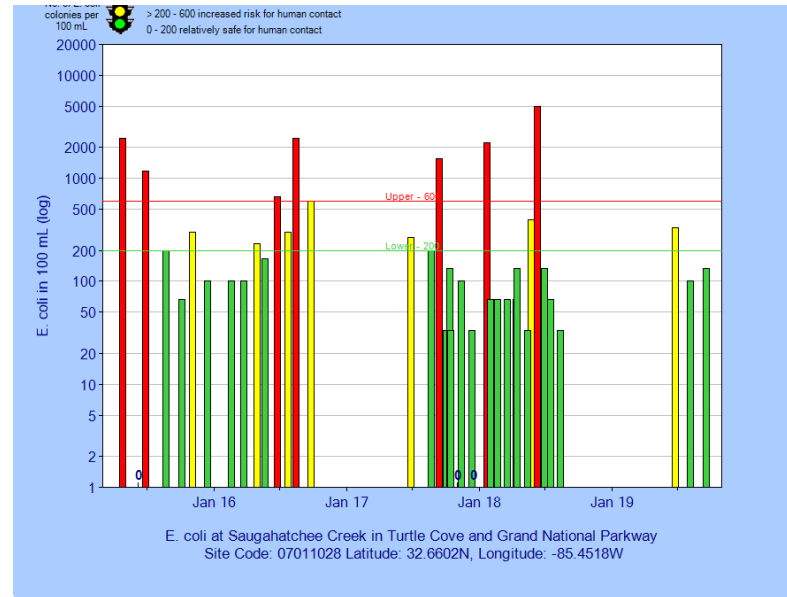
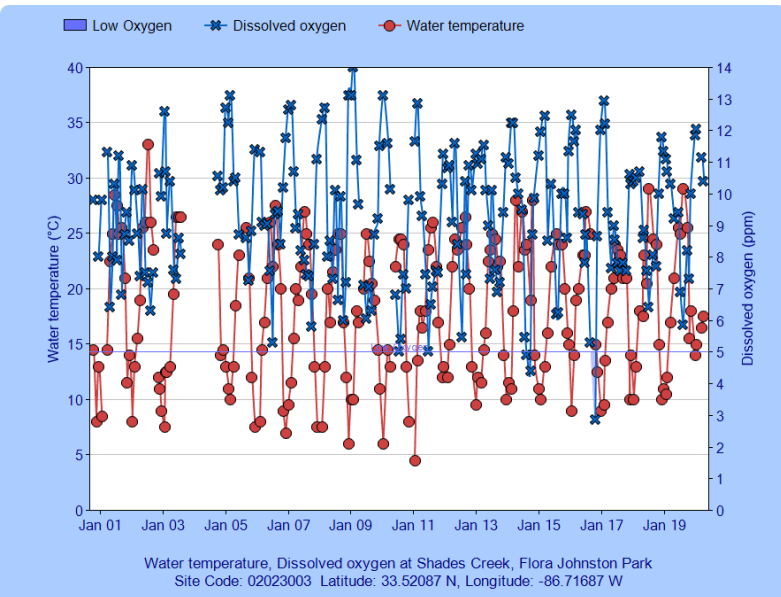
# AWW Online Water Data Tools



## Data by Map



## Data by Table



Alabama Water Watch  
Community-Based, Science-Based Watershed Stewardship

Search data by:  AWW Watershed  HUC Watershed Data Type:   All Sites (103)

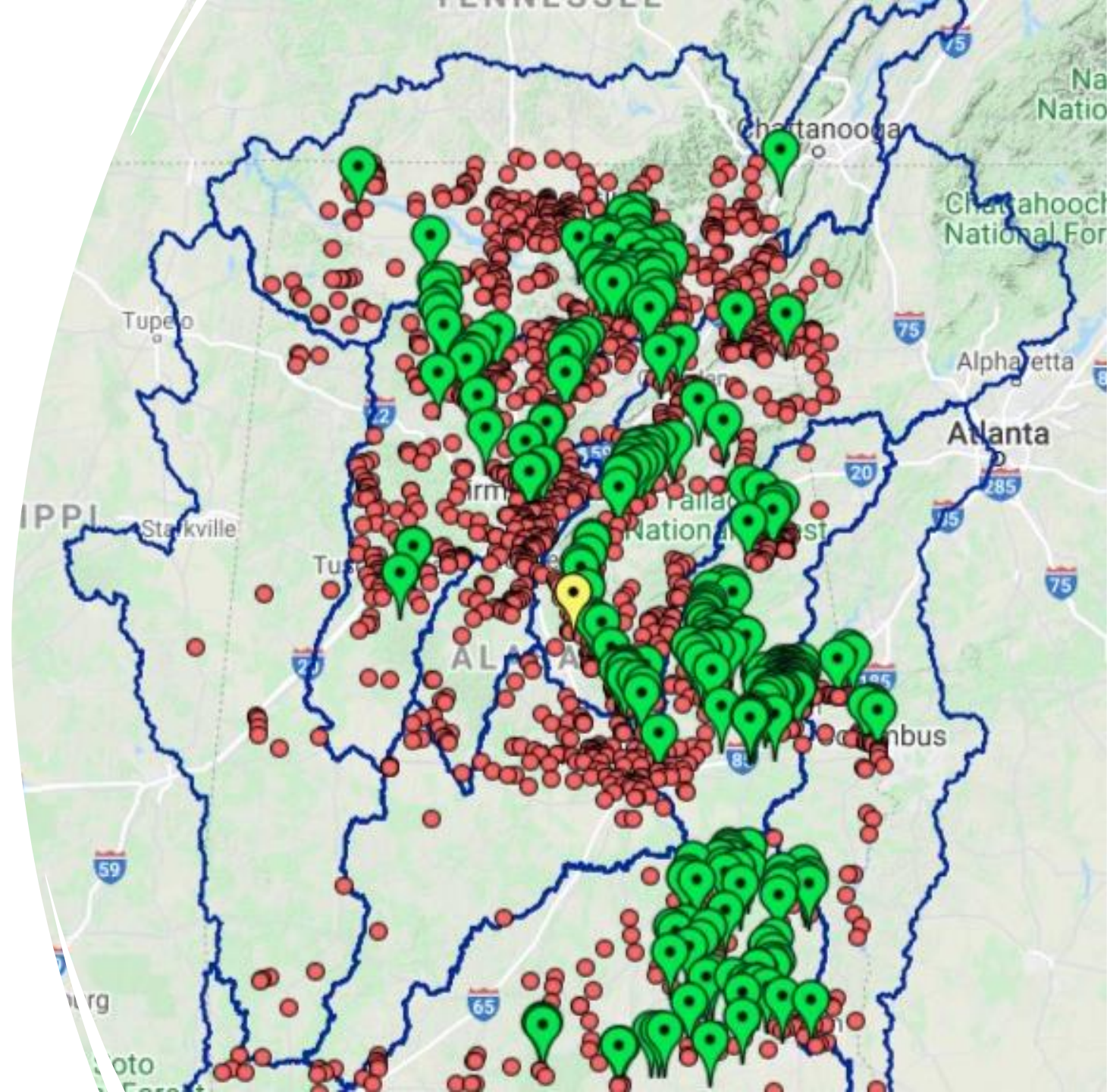
AWW Watershed:  Select Group:

Site Code	Waterbody	Site Location	Latitude	Longitude	Last Date	No. Recs	Site Maps
01001001	Ramer Creek	Snowdown Chambers Road	32.25040	-86.24475	19 Sep 2002	25	
01001002	Ramer Creek	at Montgomery CR 24	32.15840	-86.26055	21 Nov 2000	3	
01001003	Ramer Creek UT	Snowdown Chambers Rd	32.25165	-86.24278	07 Feb 2005	5	
01001004	Caney Creek	at US Hwy 31 bridge	32.27244	-86.35619	17 Jun 2001	12	

# AWW Impact

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- **30 years** of monitoring, over **110,000 data records**
- Data used for watershed management, research, education, protection of natural resources and more!





# 4-H Alabama Water Watch



**Since 2013, 4-H agents, teachers, and volunteers have reached over 40,000 youth with 4-H AWW programming!**

**"4-H is important to me because it allows me to be a part of something that helps keep our ecosystems safe and healthy."**

**—Shelby Henry** Limestone County 4-H






A photograph showing three individuals engaged in water sampling in a stream. On the left, a woman with her hair in a ponytail, wearing a dark blue polo shirt and jeans, is kneeling and looking towards the center. In the middle, a person wearing a wide-brimmed brown hat, a dark blue polo shirt, khaki pants, and green rubber boots is kneeling and using a pipette to transfer liquid into a small vial. On the right, a man with glasses, wearing a white polo shirt and jeans, is kneeling and looking towards the person in the hat. A black equipment case containing various bottles and pipettes is open on the ground between the woman and the person in the hat. The background shows a stream with rocks and some greenery.

## Benefits of AWW to Stormwater Management

- More informed and supportive community members
- Extra eyes, ears, and noses on the ground



# Meet Minimum Control Measures with AWW

-  Public Education & Outreach
-  Public Participation & Involvement
-  Illicit Discharge Detection
-  Good Housekeeping
-  Construction Site Runoff

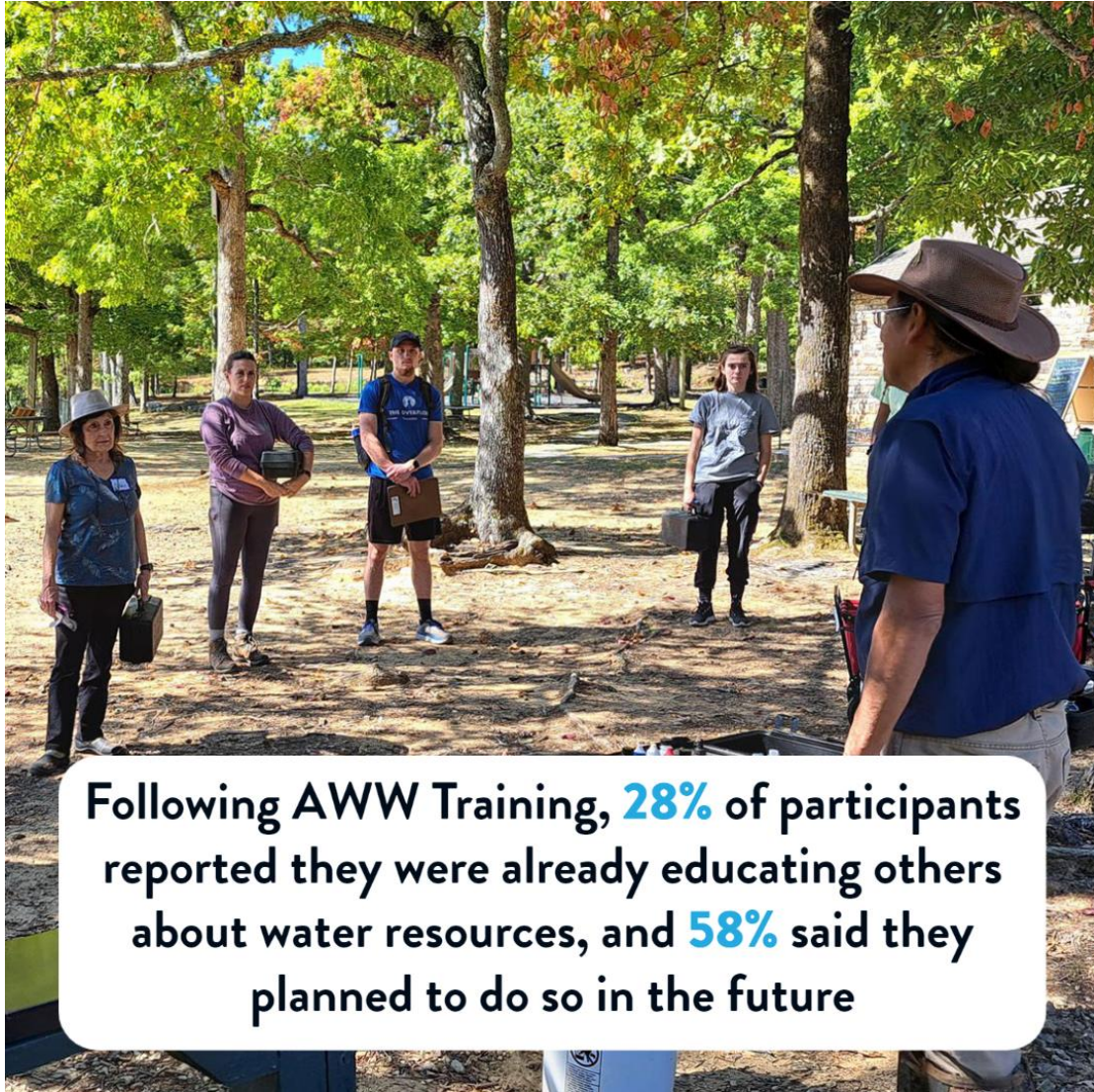
# Public Education & Outreach

- ✓ Building Partnerships
- ✓ Educational Materials

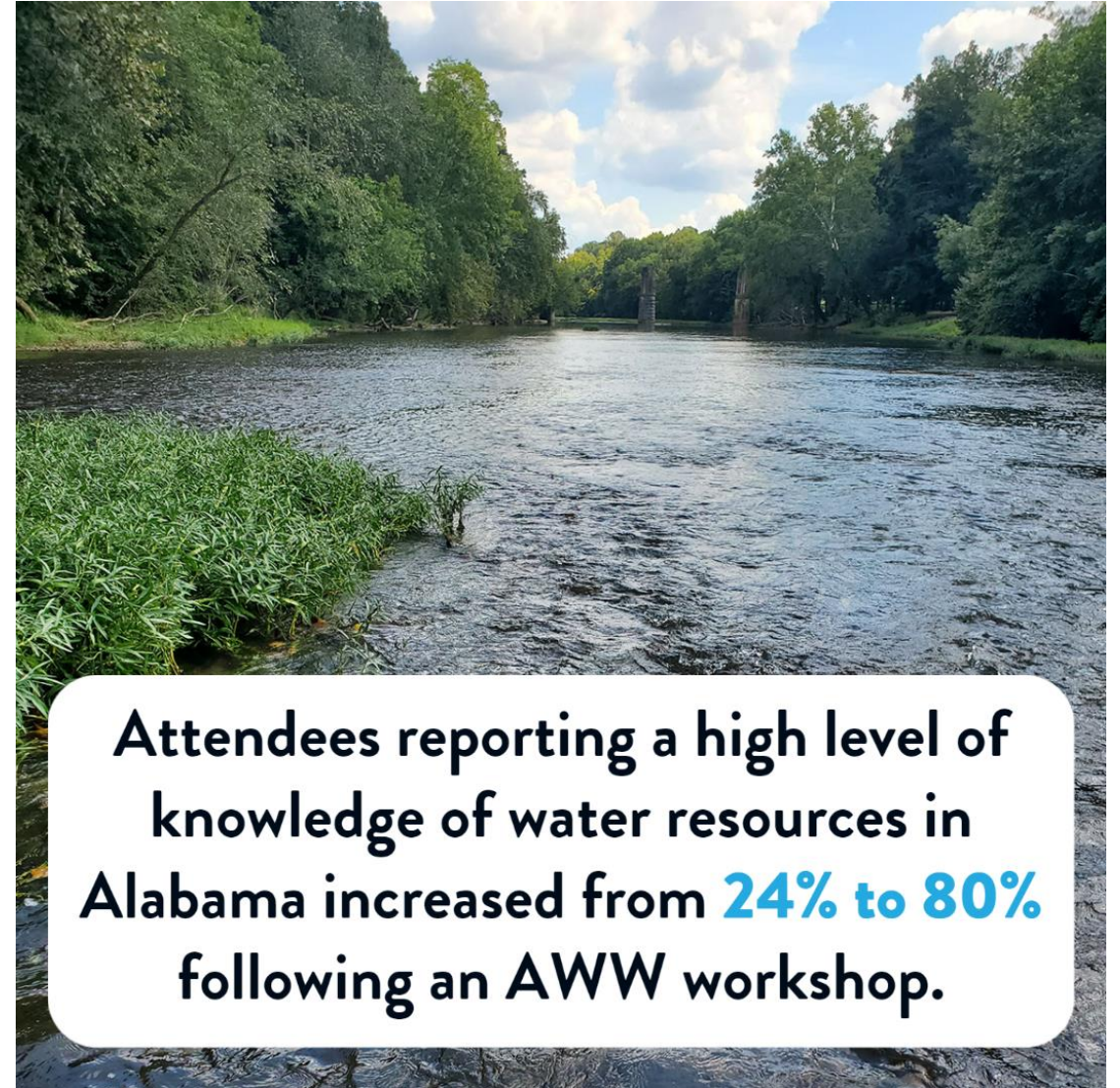




# Outreach & Education Outcomes



Following AWW Training, **28%** of participants reported they were already educating others about water resources, and **58%** said they planned to do so in the future



Attendees reporting a high level of knowledge of water resources in Alabama increased from **24% to 80%** following an AWW workshop.

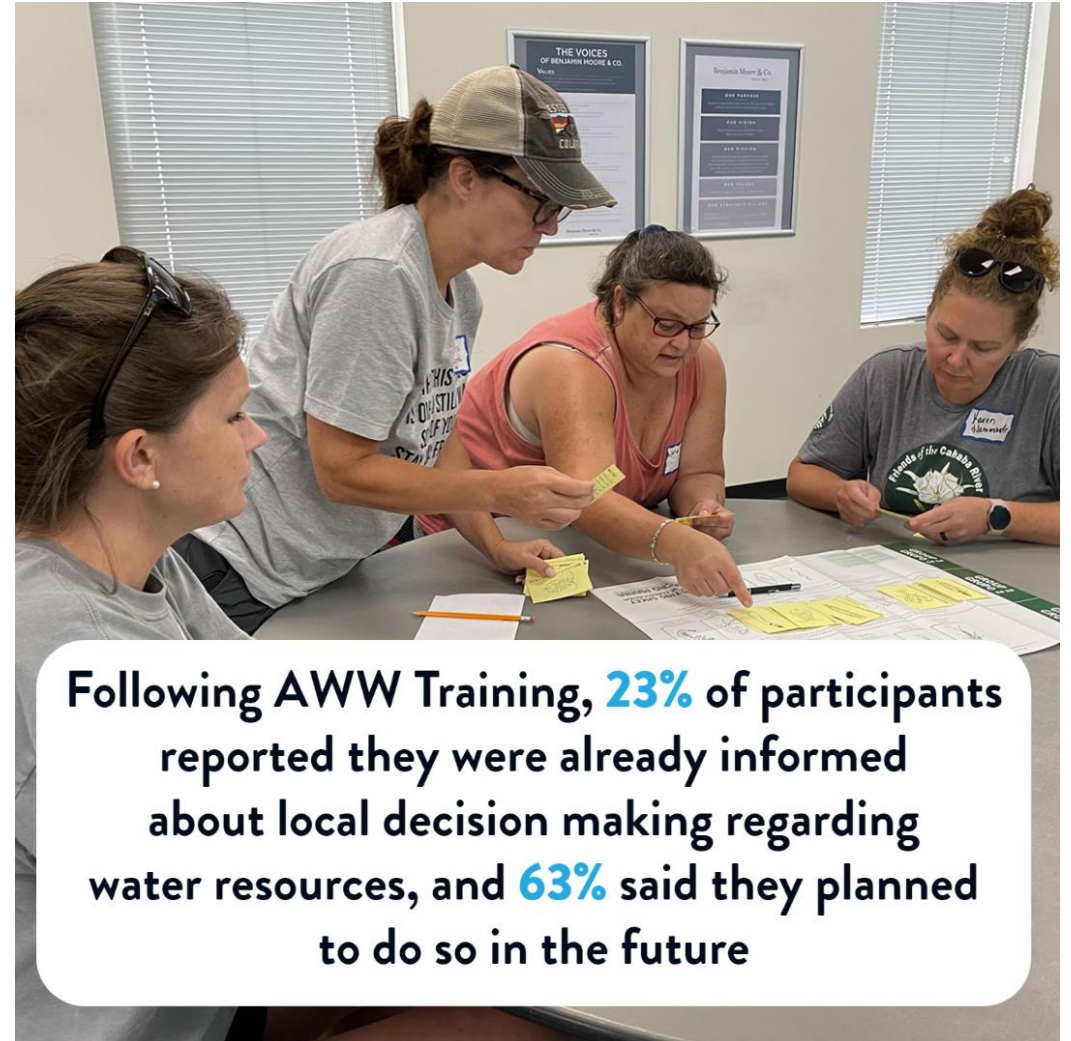




# Public Participation & Involvement



- ✓ Greater Support
- ✓ Greater Compliance



Following AWW Training, **23%** of participants reported they were already informed about local decision making regarding water resources, and **63%** said they planned to do so in the future

# Illicit Discharge Detection

- ✓ Locate Problem Areas
- ✓ Find the Source

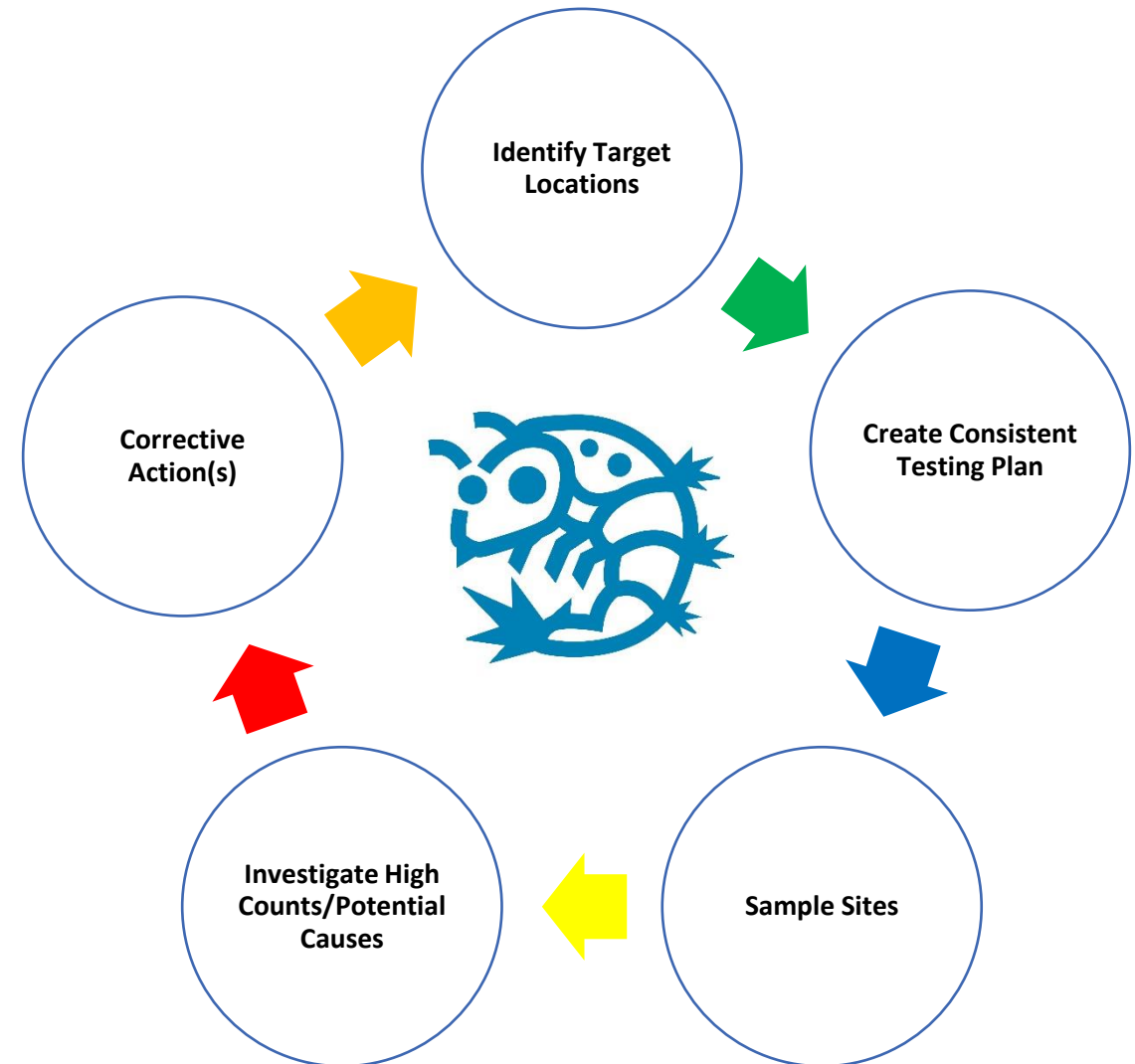


*Photo Credit: Dusty Kimbrow, City of Auburn, Watershed Program Coordinator*



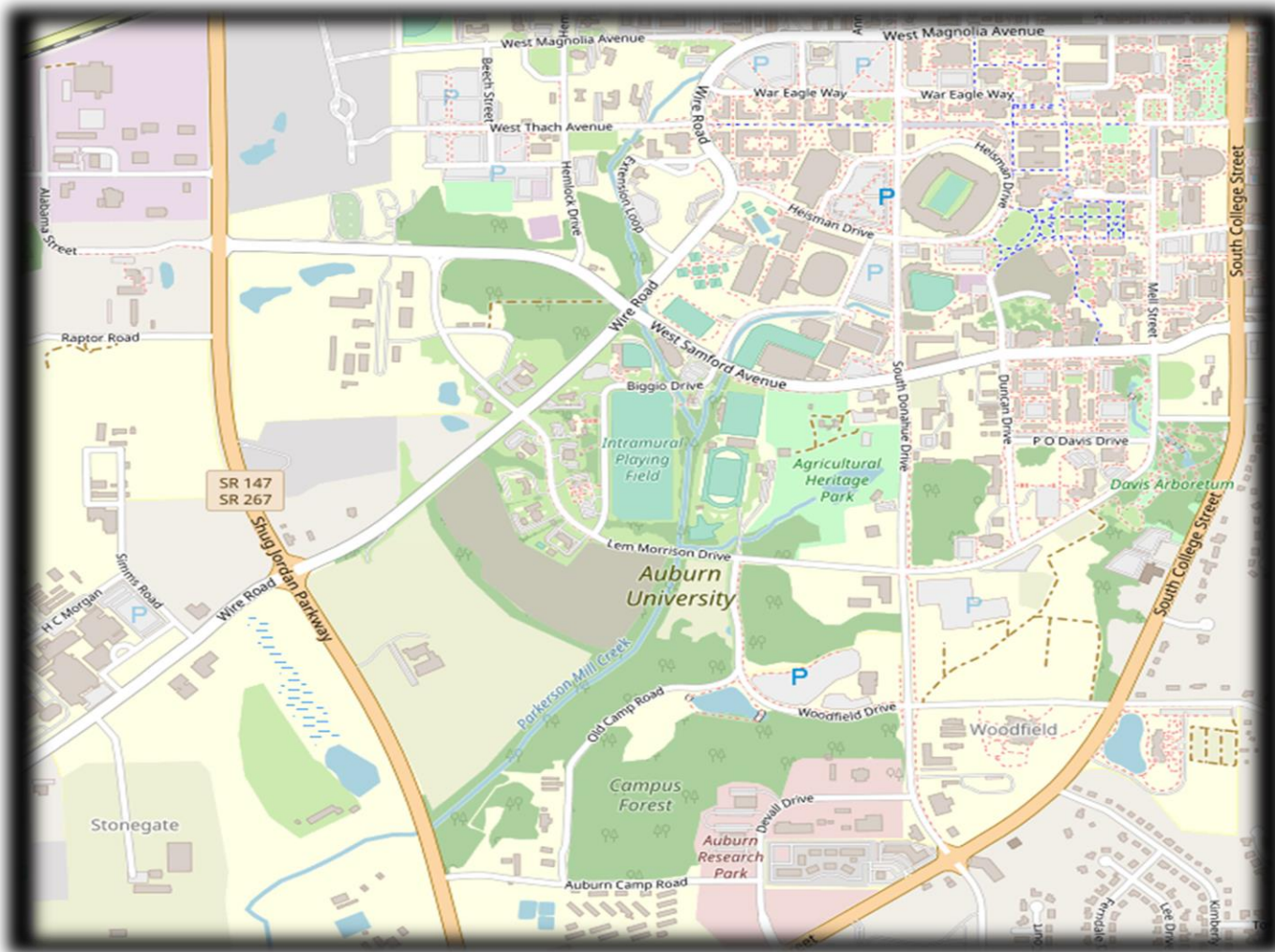
# AU Stormwater Management with AWW

- Sampling Sites selected by AU Risk Management & Safety
- Routine monitoring for bacteria by AWW since January 2021
- ~500 records collected
- Alert for system breaks
- Part of MS4





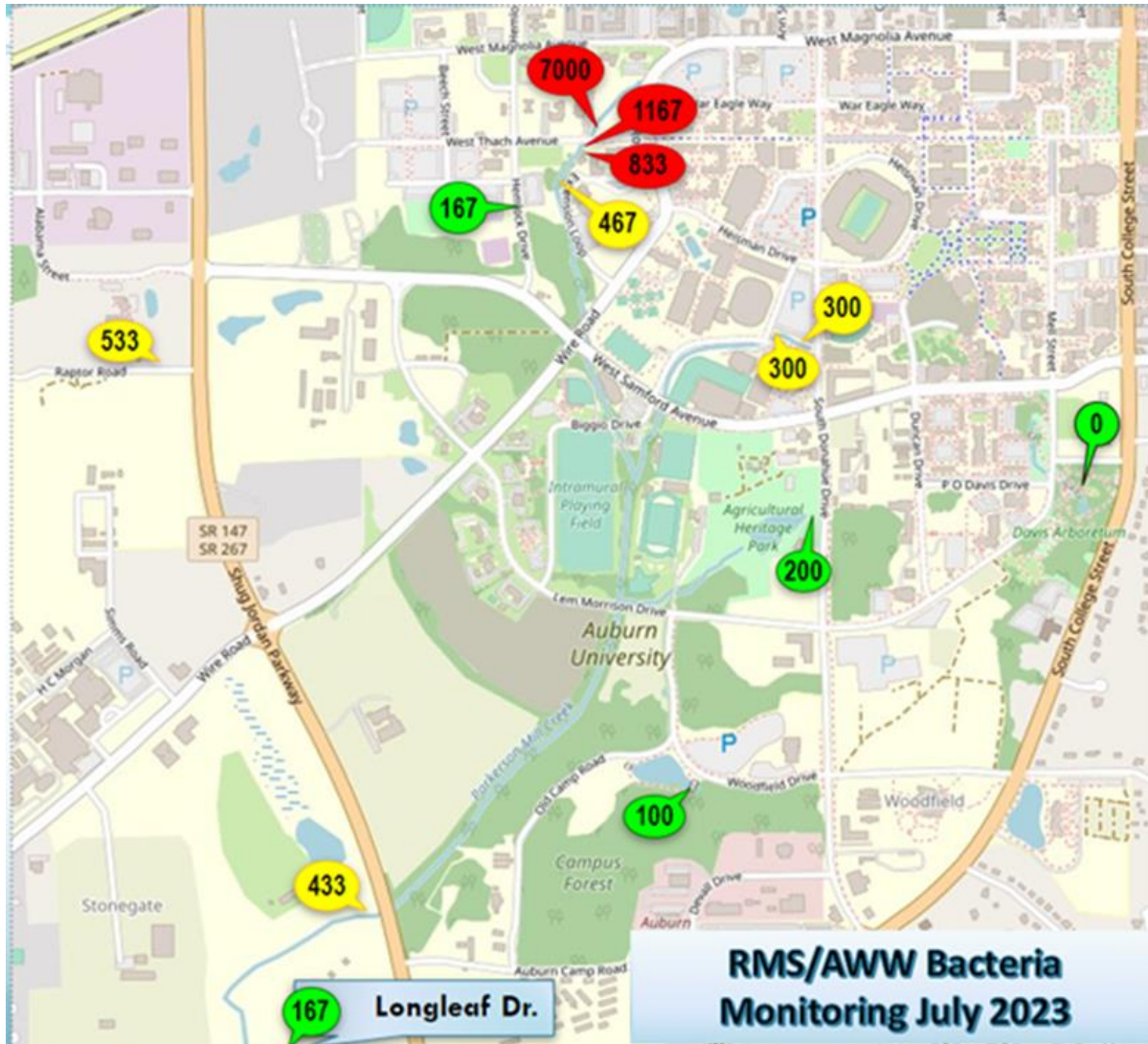
# Sampling Results Over Time



Triplicate samples are collected at each site using the R-CARD ECC A Method. Results are available in 20-24 hours.



# Investigate Cause and Take Corrective Action



Possible Cause - Tree Roots into a sewer line, verified by camera.

# Pollution Prevention & Good Housekeeping

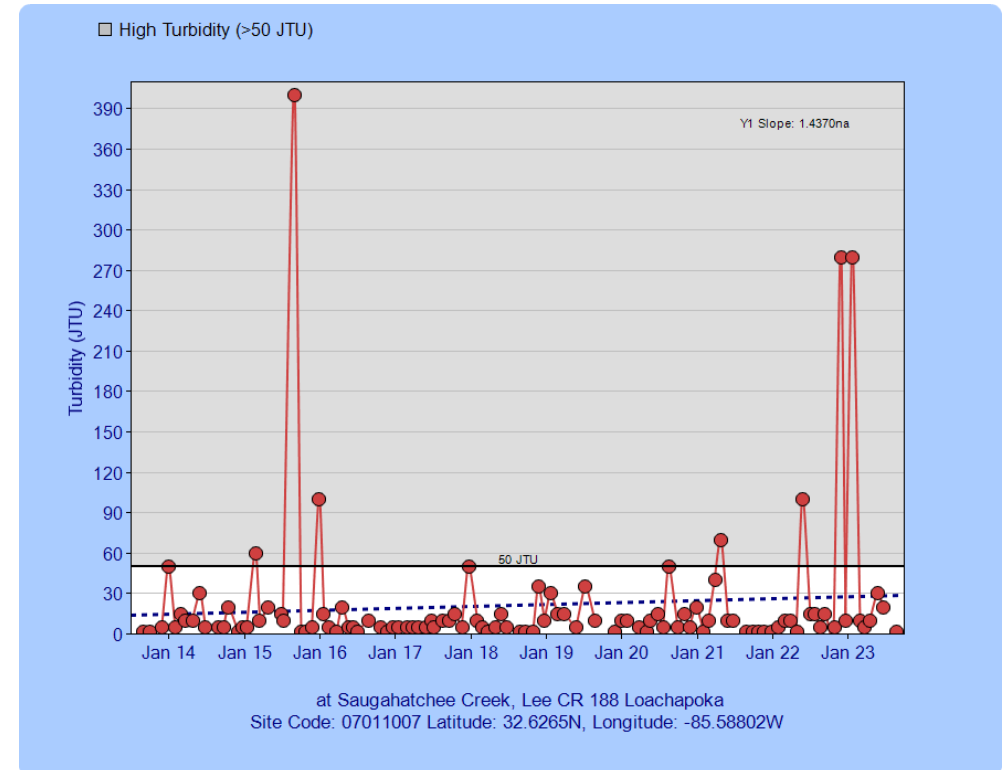
- ✓ preventing or reducing pollutant runoff
- ✓ Implement BMPs



*Following AWW Trainings, **82%** of participants reported that they would correctly apply fertilizers and pesticides in their yards, **85%** reported they would pick up their pet's waste.*

# Construction Site Runoff Control

✓ Information submitted by the public

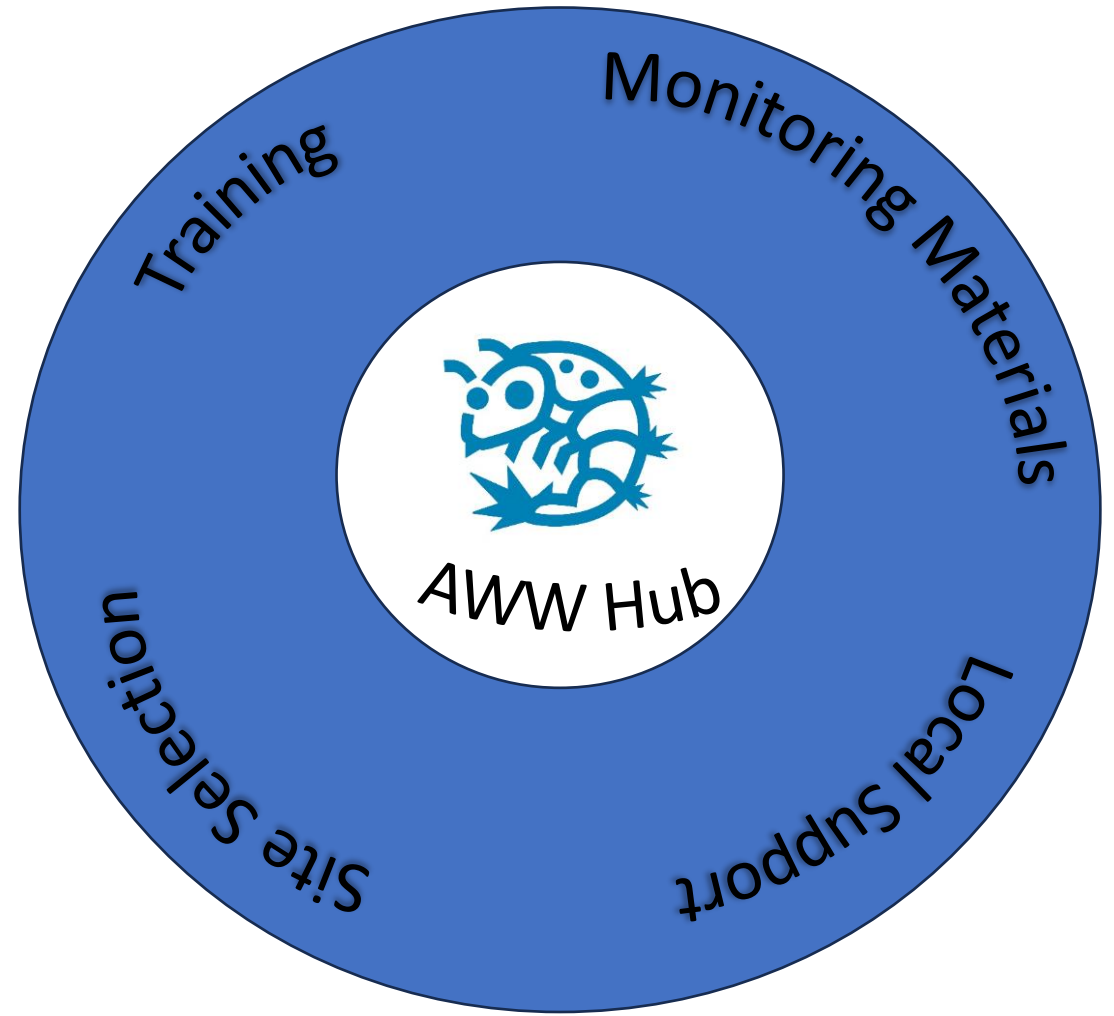


*Turbidity Graph created through AWW Water Data Portal*



# How to Incorporate AWW into Your Program

- 🐟 Sponsor or co-coordinate an AWW Training in your city
- 🐟 Provide volunteers with monitoring materials
- 🐟 Assist with strategic sampling site selection
- 🐟 Have staff become AWW Trainers





# Take Away Messages

- 🌿 Partnering with AWW is an **effective and economical** way to meet Minimum Control Measures
- 🌿 AWW volunteers can be a **first alert** for local water issues and
- 🌿 AWW volunteers can **educate others** stormwater best practices
- 🌿 **Talk to me** about how we can work together!





# Questions & Comments?



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Channel: Alabama Water Watch

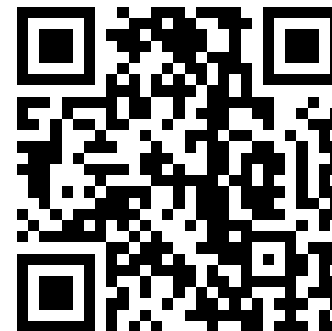
**Mona Dominguez**

**Director, Alabama Water Watch**

**[www.alabamawaterwatch.org](http://www.alabamawaterwatch.org)**

**Phone: 334-844-4785**

**Email: [srs0013@auburn.edu](mailto:srs0013@auburn.edu)**



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