

This presentation premiered at WaterSmart Innovations

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Beyond the Mandate

Innovative Teaching Model for Water Systems in Georgia Program Overview

Presenters:

Will Jernigan, P.E., Cavanaugh & Associates, P.A.

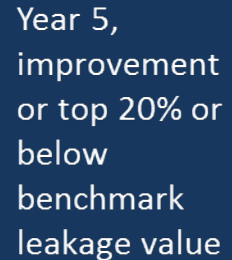
Brian Skeens, P.E., CH2M HILL

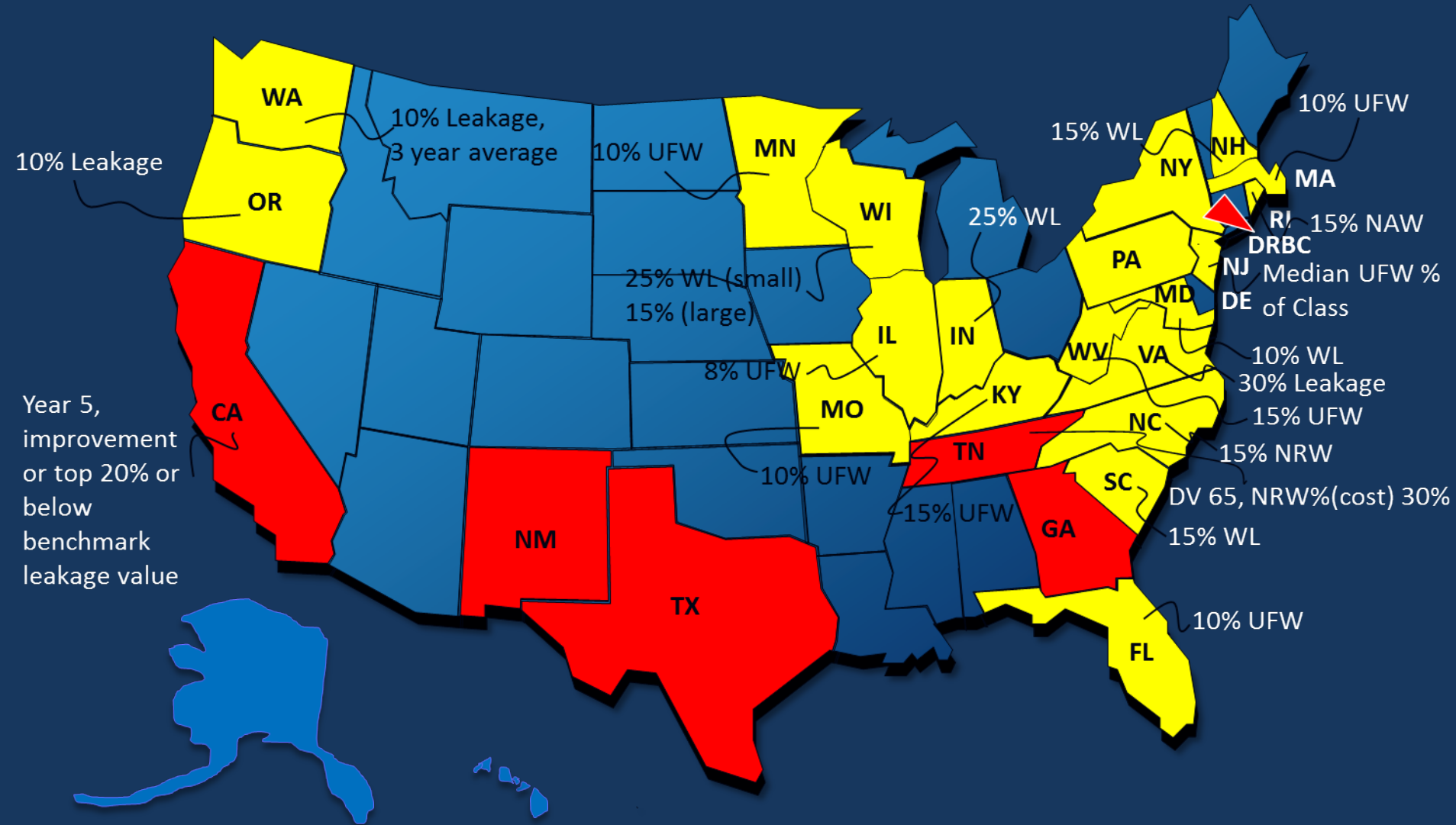


CH2MHILL



Auditing, Reporting & Performance Targets





**AWWA outreach and education
through KY-TN AWWA & KY-DoW**

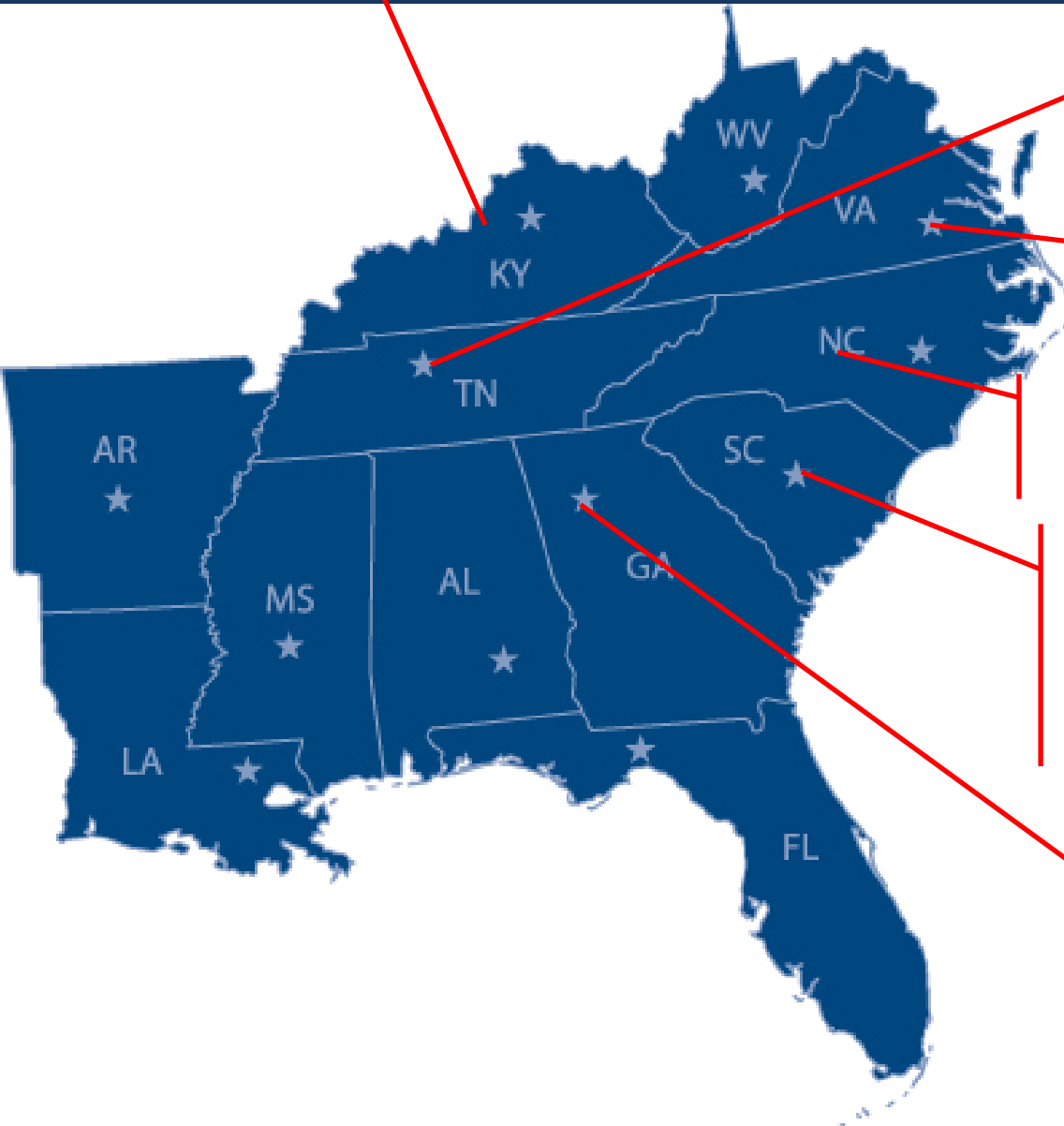
**AWWA Water Audits required
annually, with performance targets**

**AWWA outreach and education
through VA-AWWA**

**AWWA outreach and education
through NCAWWA, WRRI & NCDENR**

**AWWA outreach and education
through DHEC. Sanitary Survey
modified to include AWWA Water
Audit as best-practice**

**AWWA Water Audits required
annually, no performance targets**



Tennessee Water Loss Legislation

- 2007 – Legislation enacted in reference to water loss in Public Chapter No. 243
- Triggered because utility increased rates 25%
- Customer upset about increase
 - Water system billing < 50% of water produced
 - Customer contacted local legislator
 - Legislator says this is unacceptable
 - Introduced bill & passed legislation

Beginning in 2013, all systems required to conduct an AWWA Water Audit annually

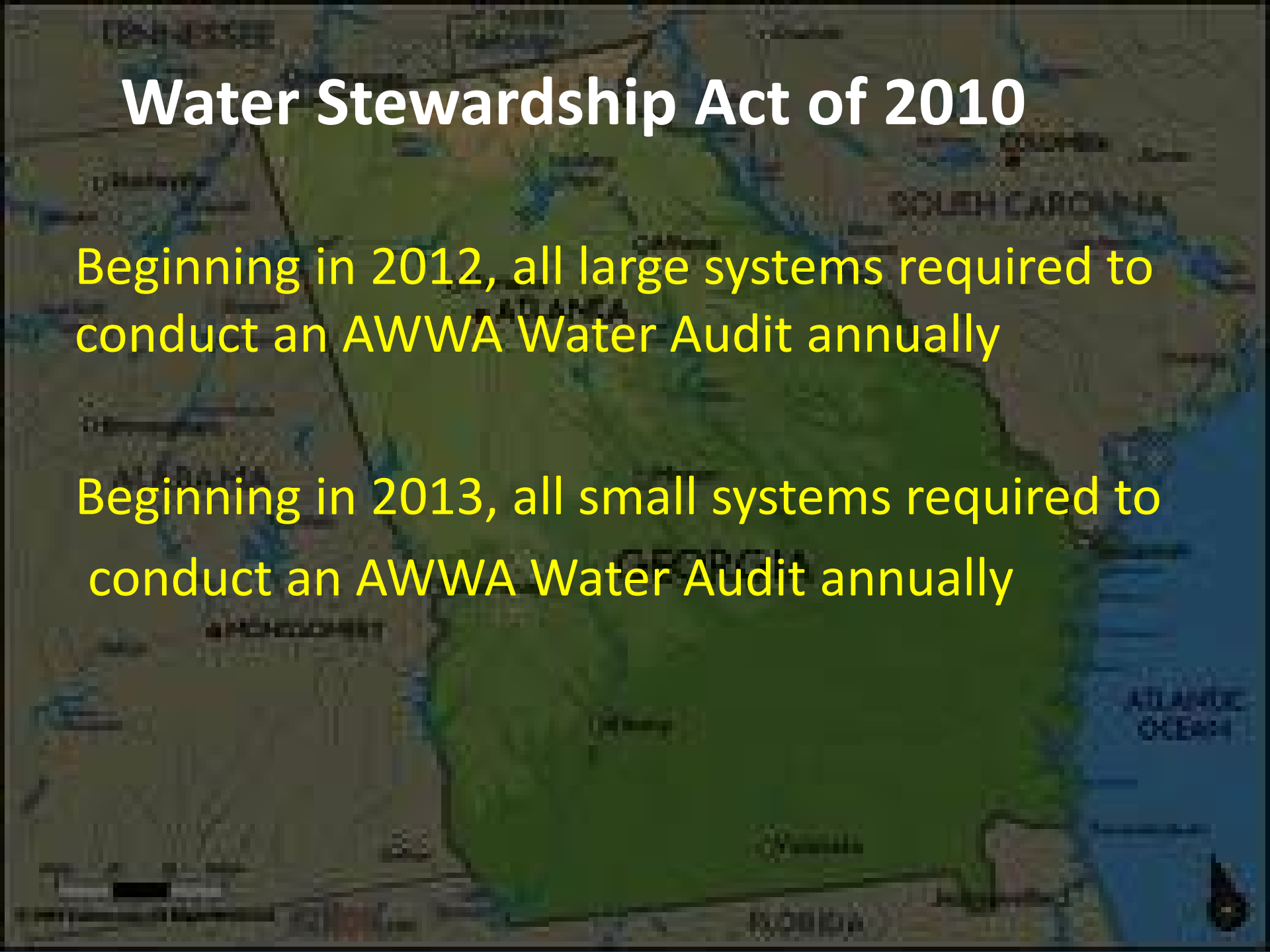
Georgia – Water Loss Legislation

- Triggered from of Lake Lanier/Atlanta water supply disputes and litigation
- Water Stewardship Act was enacted by 2010 General Assembly
- Recognizes imminent needs:
 - To create a culture of water conservation in the State of Georgia
 - To plan for water supply enhancement during future extreme drought conditions and weather emergencies

Water Stewardship Act of 2010

Beginning in 2012, all large systems required to conduct an AWWA Water Audit annually

Beginning in 2013, all small systems required to conduct an AWWA Water Audit annually

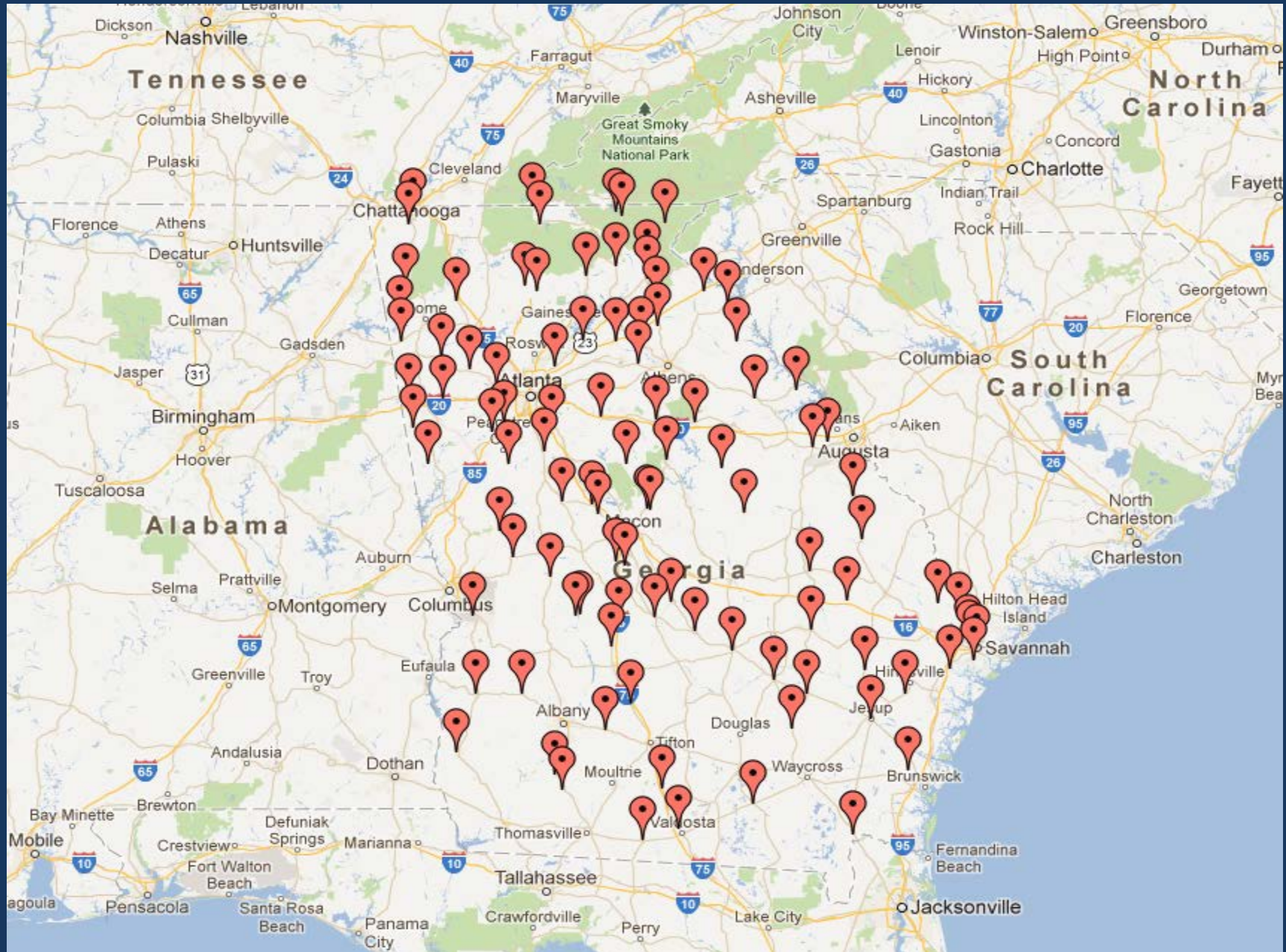


Georgia – Technical Assistance and Training

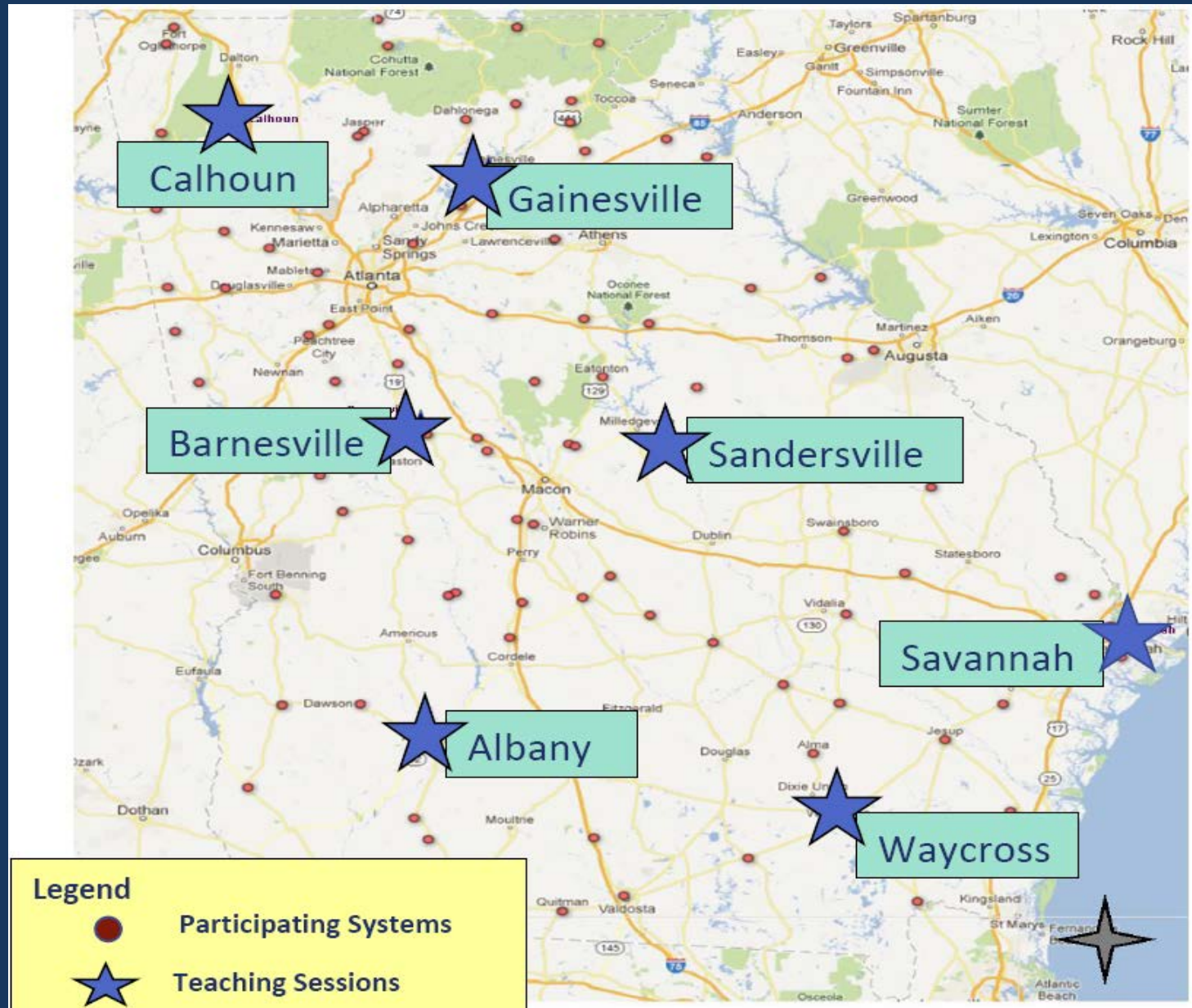
10 Month Technical Assistance & Training Program for over 100 small systems , to prepare for their first submittal by March 1st, 2013. Financed through the 2% SRF Small-System setaside.

Audit Validation Project for over 100 large system audits, turned in to GA-EPD in March, 2012, to do a quality control validation on the data and provide systems direct technical assistance.

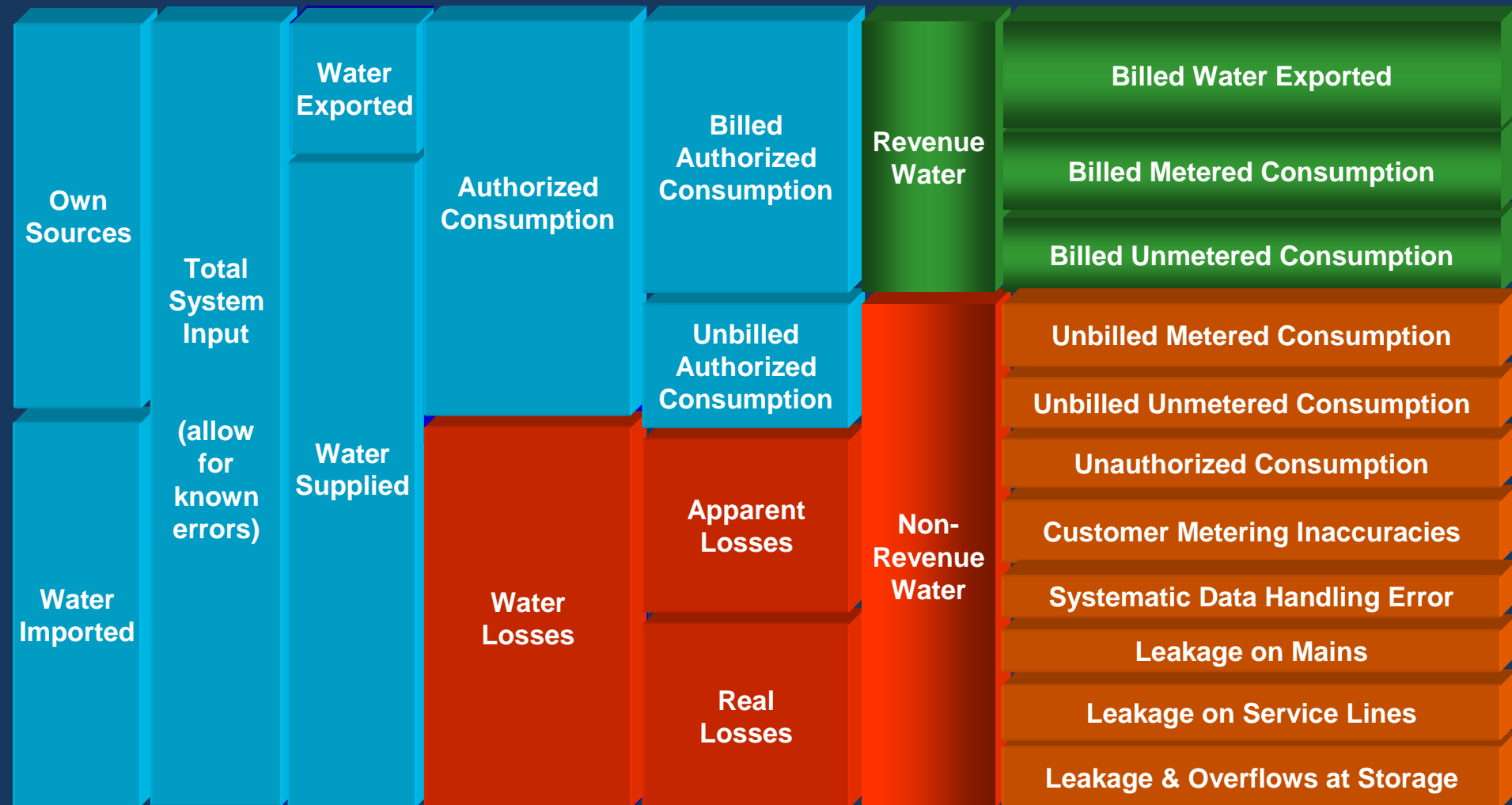
GEFA Water Audit Training – Small Systems



GEFA Water Audit Training – Small Systems



AWWA-Water Auditing & Loss Control Methodology



Audience Poll

According to the AWWA Water Audit Method, an acceptable level of Unaccounted For Water is:

A. 15%

B. 5%

C. 0%

D. 10%




How Do We Learn?

Principles that Guided the Training Program Design

- ❖ Connectivity between memory and emotion
- ❖ The value of intentional struggle
- ❖ Learning through community – peer system networks
- ❖ Knowledge, application, skill, habit - Learning through reinforcement
- ❖ Water Loss Management is as much about awareness and behavior as it is technology

GEFA Water Audit Training – Program Overview

- **Statewide Kickoff & WKS1: Fundamentals** Jun 2012
- **2011 Practice Audit & Initial Validation** July 2012
- **WKS2: Understanding the Practice Audit** August 2012
- **Homework & Application Phase** Sept – Dec 2012
- **WKS3: Reinforcement & 2012 Audit** Jan-Feb 2013
- **2012 Audit Final Validation** Feb 2013
- **Audit Submittals to EPD, program completion** March 2013 



GEFA Water Audit Training – Program Overview

- ❖ Connectivity between memory and emotion
- ❖ The value of intentional struggle
- ❖ Learning through community – peer system networks
- ❖ Knowledge, application, skill, habit - Learning through reinforcement
- ❖ Water Loss Control is as much about awareness and behavior as it is technology



GEFA Water Audit Training – Monthly Tracking

Each month, track these 7 numbers:

- A. Volume from Own Sources
- B. Water Imported
- C. Water Exported

$$A + B - C = \textit{Water Supplied}$$

- D. Billed Metered Consumption
- E. Billed Unmetered Consumption
- F. Unbilled Metered Consumption
- G. Unbilled Unmetered Consumption

$$D + E + F + G = \textit{Authorized Consumption}$$

$$\textit{Water Supplied} - \textit{Authorized Consumption} = \textit{Water Loss}$$

Each month, review these numbers with your team, and ask these 3 questions:

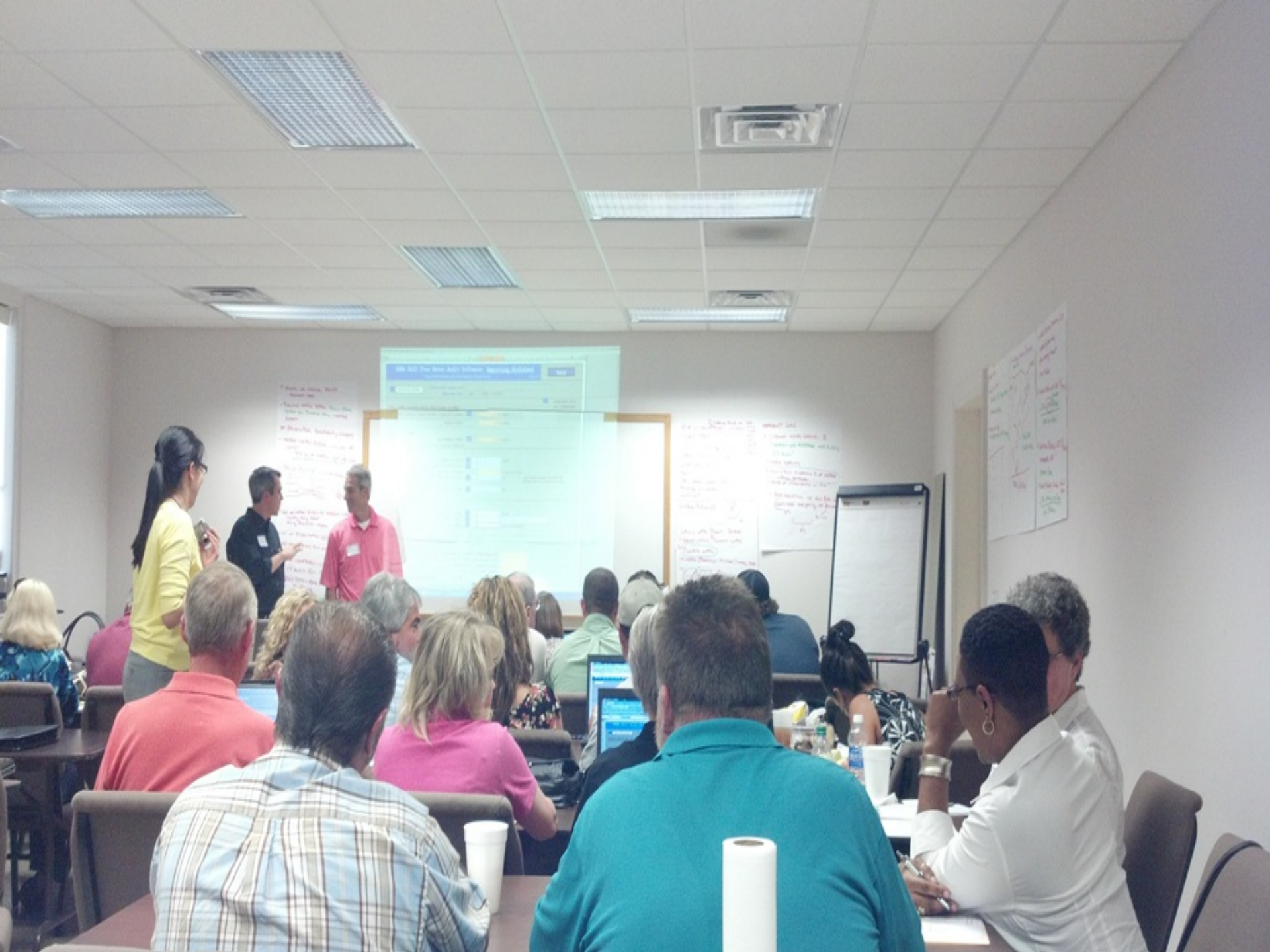
1. Are we able to track these 7 numbers OK?
2. Do the Water Loss numbers make sense?
3. How are we progressing on those 2 or 3 next steps to improve our Data Validity before the end of the year?

GEFA Water Audit Training – Program Tracker

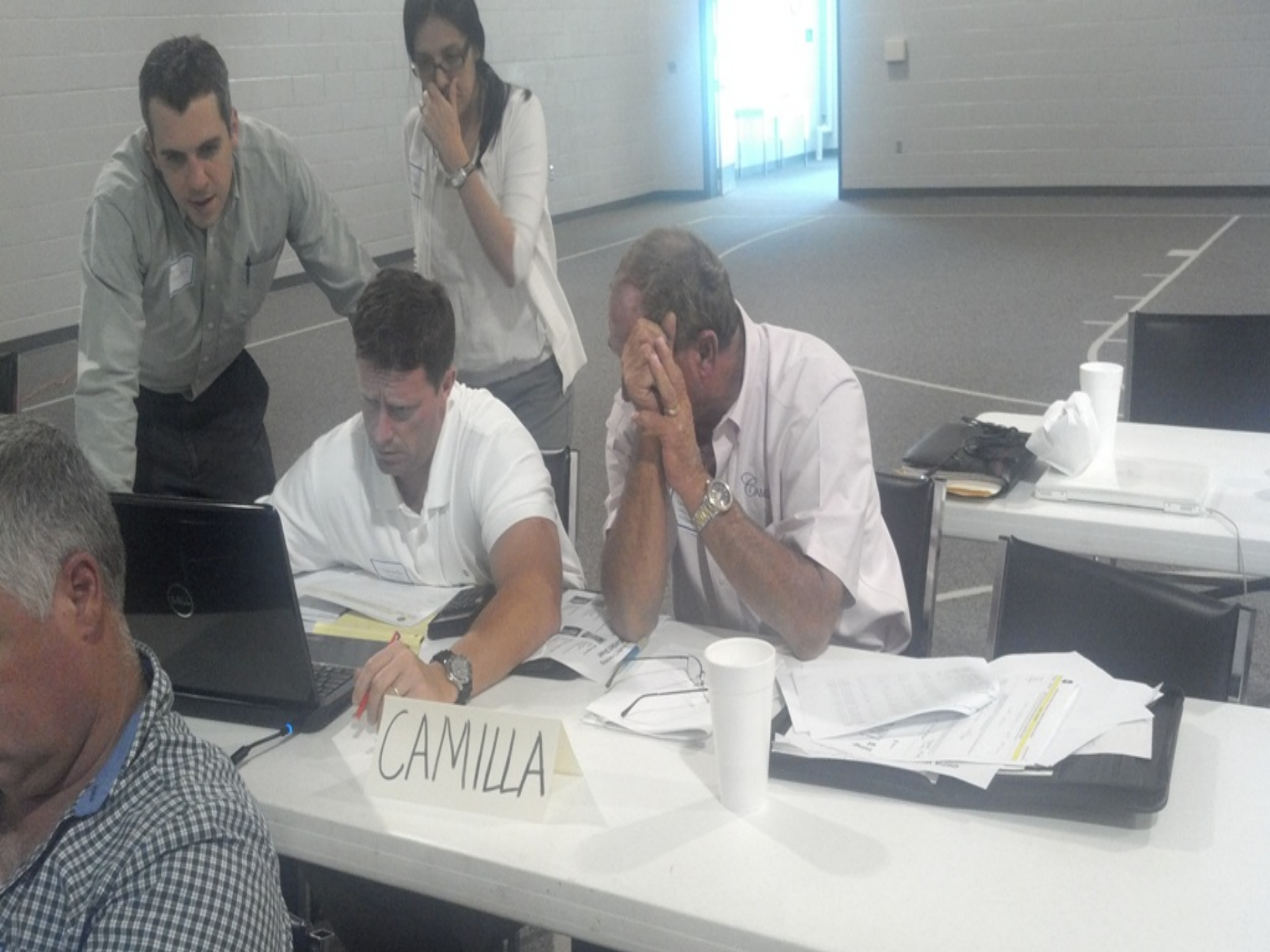
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Games to Educate and Entertain

Jeopardy

- Water Audit terms and definitions
- Split up the room into 4 teams
- Give out prizes to correct answers and ultimate winners



General	Inputs	Performance Indicators
10	10	10
20	20	20
30	30	30
40	40	40
50	50	50

“please phrase that in the form of a question”

Games to Educate and Entertain

Family Feud



- Validation activities
- Ways to increase data grading
- Split up the group into two “families” and encourage the fun

“good answer, good answer”

Utility Feedback: Discoveries

- Massive amounts of “unbilled” usage
- Found accounts being metered and billed in different units – bills were being incorrectly calculated
- Discovered production numbers were significantly off, even though they were “calibrating” the production meters

Utility Feedback: Some of the Biggest Challenges

- “Effort required in extracting data from billing system reports”
- “Managing the number/awareness of the number of unmetered usage.”
- “Bringing the water team together.”

Utility Feedback: Some of the Biggest Surprises

“Apparent and Real loss - didn't realize how much could be lost through faulty meters.”

“Updating/performing audit was easier than originally thought.”

“Amount of money we do not collect”

“Impact of water loss on finances”

Utility Feedback: Common Themes

“We should have been doing this all along”

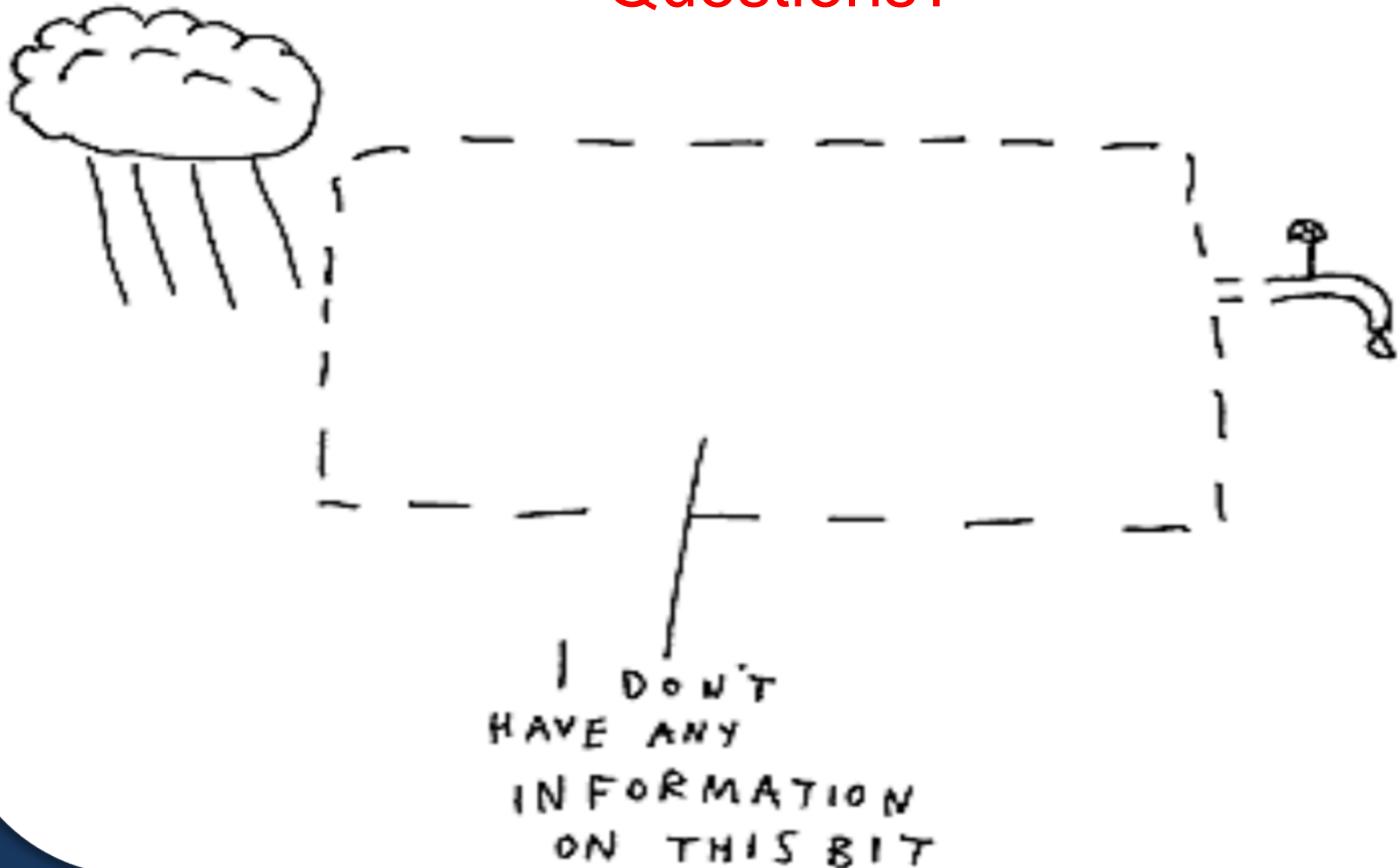
“We got it over time”

Program Effectiveness: 1-2-3

1. Teach systems how to benchmark and track system efficiency using the AWWA audit methodology.
2. Implement projects identified from the audits and technical assistance program that improve Data Validity and reduce Water Loss.
3. Receive SRF Loan Applications from systems that received technical assistance and point to the results of their audit and water loss control program as a justification for loan proceeds.

HOW WE GET WATER IN OUR HOMES

Questions?





Thank You!

Innovative Teaching Model for Water Systems in Georgia

Program Overview

Acknowledgements:

Jason Bodwell, Georgia Environmental Finance Authority
Lebone Moeti, Ph.D., Georgia Environmental Protection Division

