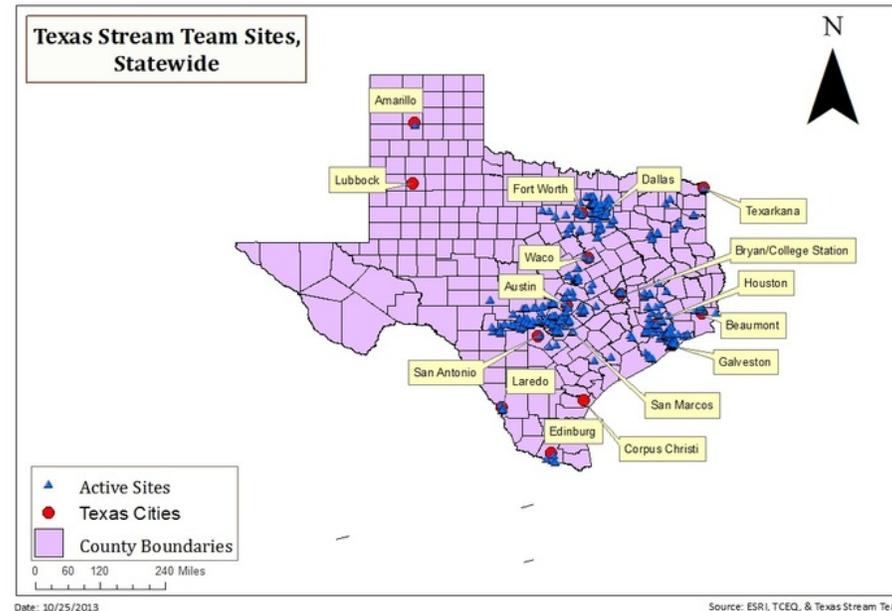


Texas Stream Team

Involvement with the UTRB 303(d) Vision Project

TST Background

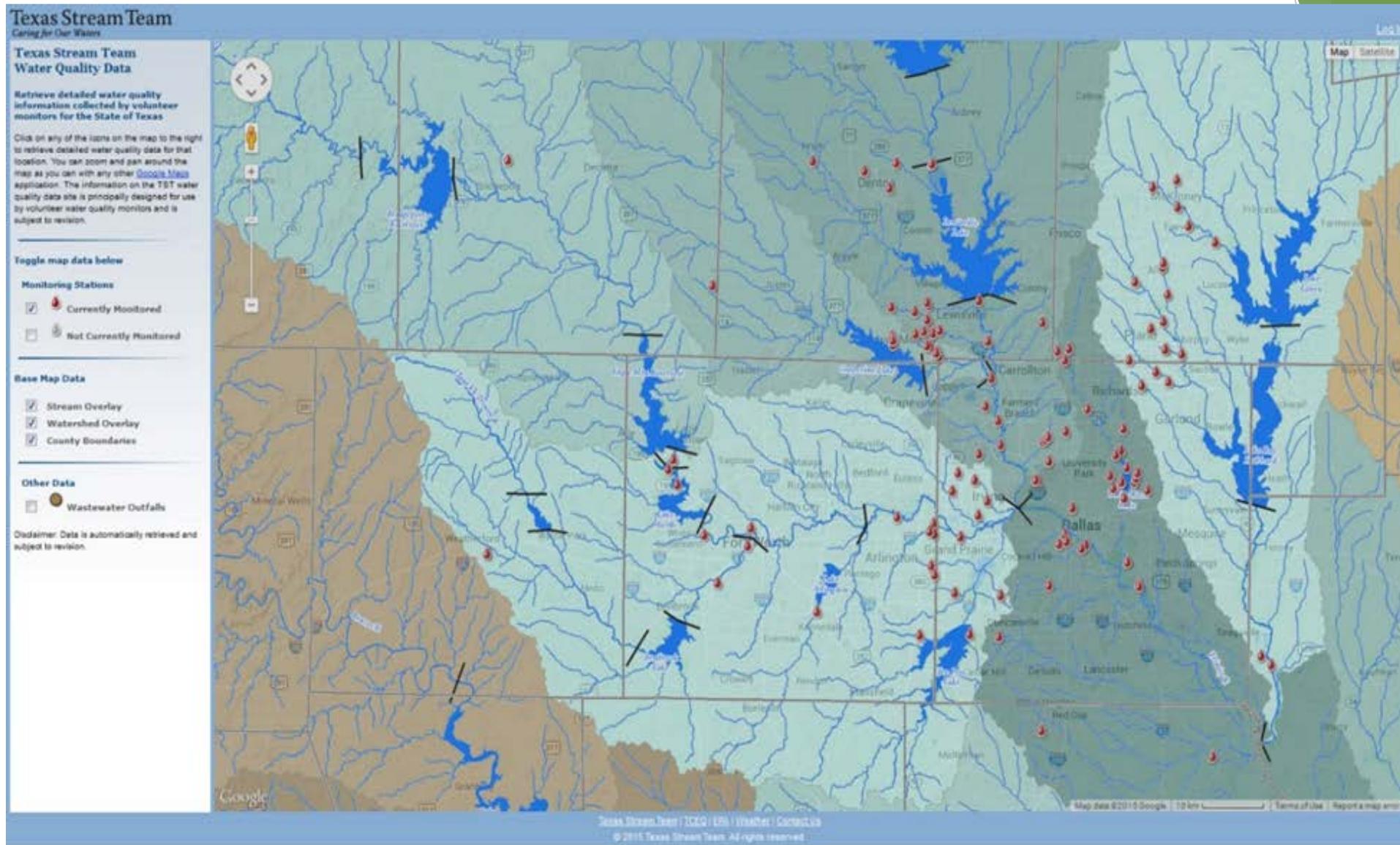
- ▶ The Texas Stream Team (TST) is a network of trained citizen scientists and supportive partners working together to gather information about the natural resources of Texas and to ensure the information is available to all Texans
- ▶ Established in 1991, TST is administered through a cooperative partnership between The Meadows Center for Water and the Environment at Texas State University, the Texas Commission on Environmental Quality (TCEQ), and the US Environmental Protection Agency (EPA)



Volunteers and Data Collection

- ▶ Currently, over 400 TST citizen scientists collect water quality data every month at over 150 different sites in Texas
- ▶ Data collected by TST is open source and can be used for public education and outreach purposes, research, and to supplement professional and other water quality monitoring. **However, TST data cannot be used for any official state assessment of water quality.**
- ▶ TST data is collected by citizen scientists through approved protocols and is quality assured via the TST Quality Assurance Project Plan (QAPP).
 - ▶ The QAPP, which is approved by TCEQ and the EPA ensures strict monitoring procedures are followed and that data are of a known, standard quality





[Interactive map](#) showing current and past monitoring sites in Trinity River Basin. Click on each site to see data collected there.

Available Datasets Include:

- Site Geo Data: a) Longitude/Latitude; b) Segment; c) Segment Miles; d) Description
- Sample Data: a) Site Geo Data; b) Group ID; c) Partner ID
- Sample Date, Time & Depth
- Comments – Number of Participants – Time Spent Sampling – Miles Traveled
- Variables:

Conductivity	Air Temperature	Water Temperature
Dissolved Oxygen	pH	Secchi Disk
Transparency Tube	Total Depth	Flow
Algae Cover	Water Color	Water Clarity
Water Surface	Water Conditions	Water Odor
Present Weather	Days since Last Precipitation	Cumulative Precipitation
Turbidity	Orthophosphate	Nitrate Nitrogen
Fecal Coliform	<i>E. coli</i>	

Citizen Science Monitoring Programs

▶ *Basic Water Quality Monitoring*

- ▶ All prospective citizen scientist monitors must undergo a training session that introduces the concepts of watershed awareness as well as point source and non-point source (NPS) pollution.
- ▶ Core Water Quality Monitoring involves performing tests for water temperature, dissolved oxygen, conductivity, pH, water clarity, total depth, as well as conducting various field observations. The citizen scientist training strategy is typically set up in three phases over the course of one day.

▶ *Advanced Water Quality Monitoring*

- ▶ All citizen scientists that are certified as “core” water quality monitors and wish to perform further citizen science NPS monitoring have the option to attend an “advanced” training course.
- ▶ Advanced Water Quality Monitoring involves performing tests for Escherichia coli (*E. coli*) bacteria, nitrate-nitrogen, orthophosphate, turbidity, and streamflow. The Advanced Training takes approximately 5 hours.

Citizen Science Training

Additional Training Options

- ▶ TST is working to create water quality monitoring online trainings through YouTube. A review of core water quality testing protocol is currently available on [Texas Stream Team's YouTube account](#). There is also a Paddler training video that includes instructions on how to sample from a canoe or kayak, as well as details on how to use the new ExTech ExStik II “probe” kits.
- ▶ Future videos will review *E. Coli* and advanced water monitoring techniques and protocol, as well as interactive online training courses for anyone interested in learning how to become a TST citizen scientist.



Additional Monitoring Components

- ▶ TST Paddlers
- ▶ TST Anglers
- ▶ TST Biomonitors
- ▶ TST Divers
- ▶ TST Monofilament Finders



Monitoring Sites

- ▶ All permanent citizen science monitoring sites are identified in conjunction with a monitoring plan that is developed with assistance from TST staff
- ▶ Often, citizen scientists monitor permanent sites as part of a **monitoring group or partnership**. Groups can also provide technical assistance and TST partners may provide supplies, data analysis, education and outreach, and other support.



Upper Trinity River Basin Partners

TST partners with public and private entities to train, equip, manage, and offer general support to the growing number of volunteer monitors across the state through the TST Partners Program. Partners also benefit from data collection, specialized research projects and customized education programs.

- TRINITY RIVER AUTHORITY
- CITY OF IRVING
- CITY OF DALLAS
- CITY OF GRAND PRAIRIE
- CITY OF DENTON
- TOWN OF FLOWER MOUND
- RIVER LEGACY
- JOHN BUNKER SANDS WETLAND CENTER

Upper Trinity River Basin Groups

(* indicates current TST relationship)

- CITY OF IRVING*
- AQUATIC ALLIANCE*
- FOR THE LOVE OF THE LAKE*
- PRESTON HOLLOW PRESBY SCHOOL CREEK CRITTERS
- PARISH EPISCOPAL MIDDLE SCHOOL SCIENCE DEP*
- ROCK FALLS
- AMERICAN ANIMAL HEALTH
- CITY OF GRAND PRAIRIE*
- CITY OF DALLAS*
- CHAMPIONS TRIBUTARY
- GLEN ROSE HIGH SCHOOL*
- CITY OF DENTON*
- FRIENDS OF JOE CREEK
- BLUE FAIR LAKE ASSOCIATION
- DALLAS STORMWATER MANAGEMENT
- BRYAN A DALLAS STORMWATER MANAGEMENT MS ENVIRONMENTAL CLUB
- W&M Environmental Group*
- INDIAN TRAIL/BIG LAKE/ TEXAS* WATCHERS MASTER NATURALISTS*
- NORTH TEXAS MASTER NATURALISTS*
- ALLEN HIGH SCHOOL ENVIRONMENTAL AWARENESS TEAM*
- TOWN OF FLOWER MOUND*
- FORT WORTH NATURE CENTER AND REFUGE*
- THE RIVER LEGACY*
- JOHN BUNKER SANDS WETLAND CENTER*

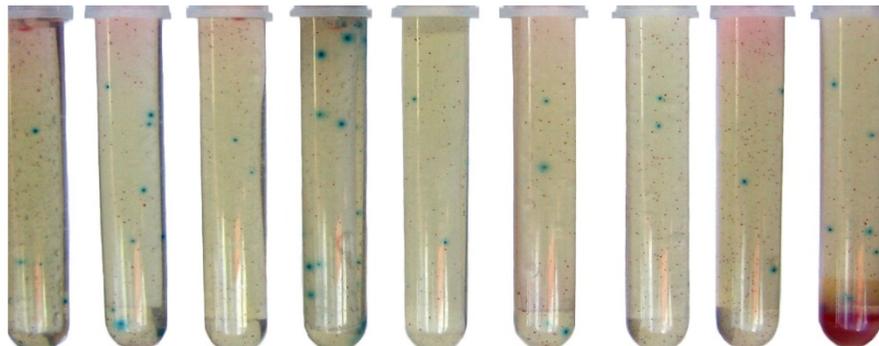
Tailored Services for Partners

TST is open to tailoring citizen scientist based monitoring plan according to each partner's needs. A monitoring plan may consist of the following sampling options:

- ▶ Bacteria only
- ▶ Core kit or probe based core kit and bacteria
- ▶ Advanced kit (includes bacteria)
- ▶ Core kit or probe kit plus advanced kit (includes bacteria)
- ▶ Water sample collection and delivery to a NELAP-approved laboratory
- ▶ Inclusion of other desired supplementary environmental data collection

E. coli Sampling Capacity

- ▶ Texas Stream Team citizen scientists currently possess the capacity to collect and process samples for *E. coli* testing, but more citizen scientists need to be trained to provide adequate testing coverage both within the Upper Trinity River Basin and statewide
- ▶ It is estimated that approximately 36 TST citizen scientists are currently trained to sample *E. coli* in the Upper Trinity River Basin. TST's ability to expand coverage is presently limited by funds for supplies to support citizen scientists testing for *E. Coli*.
- ▶ TST partners are the likely avenue for initiating enhancement of volunteer *E. coli* sampling capacity. Investment in TST advanced volunteer training and in *E. coli* capable sampling kits by partners will be necessary.



Next Steps

- ▶ In order to facilitate partnerships and enhance the region's capacity to collect water quality data, Texas Stream Team is able to provide services tailored to the needs of each impaired segment and potential partner.
- ▶ In the **August 2016 Committee Coordinating meeting** a representative from the TST will present an outline of available services and, through the UTRB Website hosted by the NCTCOG, will launch an online survey for prospective partners to complete. This will help to accomplish the following:
 - ▶ Determine monitoring goals, needs, requirements—e.g. What gaps in data and monitoring exist; what data should be collected; how many citizen scientists will monitor at how many sites, what types of analyses should be performed?
 - ▶ Assess supply costs, required partner staff allocations and available funds.
 - ▶ Develop an individualized monitoring plan to meet data collection and analysis goals, including use of TST QAPP and development of any required QAPP addendums for specialized activities.

Next Steps

- ▶ TST staff, with the help of Texas AgriLife Research staff, will assist ongoing interactions between the UTRB partners in order to get Stream Team sampling in place for target segments. Examples of this include:
 - ▶ Training of partner organization staff regarding use incubator and *E. Coli* testing supplies or protocols for specialized data collection.
 - ▶ Assist with grant writing for support of TST program activities and supplies, including watershed protection planning, citizen science, education and outreach.
 - ▶ Identify and track match for EPA 319 funding requirements.
 - ▶ Report data trends, changes in water quality and potential watershed threats.
 - ▶ Assist with watershed services, including watershed characterizations and assistance with establishment of stakeholder groups.
 - ▶ Recruit citizen scientists.

Don't miss the August Coordinating Committee meeting for more information

- ▶ Date TBD