Appendix J to the Houston-Galveston Area Council (H-GAC) Clean Rivers Program FY 2016/2017 QAPP

Expanded Routine Monitoring in East Fork San Jacinto River Watershed

Prepared by the Houston-Galveston Area Council (H-GAC) in cooperation with the Texas Commission on Environmental Quality (TCEQ)

Effective: Immediately upon approval by all parties

Questions concerning this QAPP should be directed to:
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SS-A1 Approval Page

Texas Commission on Environmental Quality

Water Quality Planning Division

Signed Electronically Effective 12/9/2016

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Clean Rivers Program

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TRIES Laboratory

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Dr. Rachelle Smith Date
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Eastex Laboratory

Signed Electronically Effective 12/9/2016

Pam Hickman Date
Eastex Lab Manager

Signed Electronically Effective 12/9/2016

Daniel Bowen Date
Eastex Lab Quality Assurance Officer

SS-A2 Table of Contents

List of Acronyms

As described in Section A2 of the regional QAPP in addition to the acronyms below.

EFSJR	East Fork of the San Jacinto River
SHSU	Sam Houston State University
TRIES	Texas Research Institute for Environmental Studies

SS-A3 Distribution List

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The Houston-Galveston Area Council (H-GAC) will provide copies of this project plan and any amendments or appendices of this plan to each person on this list and to each sub-tier project participant, e.g., subcontractors, subparticipants, or other units of government. H-GAC will document distribution of the plan and any amendments and appendices, maintain this documentation as part of the project's quality assurance records, and will ensure the documentation is available for review. Sub-Tier participants & Laboratories to receive copies of the QAPP include:

- Texas Research Institute for Environmental Studies (TRIES)
- TRIES Laboratory
- Eastex Environmental Laboratory

SS-A4 PROJECT/TASK ORGANIZATION

Description of Responsibilities

TCEQ

Sarah Eagle
CRP Work Leader
As described in Section A4 of the regional QAPP.

Daniel R. Burke
CRP Lead Quality Assurance Specialist
As described in Section A4 of the regional QAPP.

Kelly Rodibaugh
CRP Project Manager
As described in Section A4 of the regional QAPP.

Cathy Anderson
Team Leader, Data Management and Analysis (DM&A) Team
As described in Section A4 of the regional QAPP.

Peter Bohls
CRP Data Manager, DM&A Team
As described in Section A4 of the regional QAPP.

Kelly Rodibaugh
CRP Project Quality Assurance Specialist
As described in Section A4 of the regional QAPP.

Houston-Galveston Area Council (H-GAC)

Todd Running
H-GAC Project Manager and Field Supervisor
As described in Section A4 of the regional QAPP.

Jean Wright
H-GAC Quality Assurance Officer
As described in Section A4 of the regional QAPP.

Bill Hoffman
H-GAC Data Manager
As described in Section A4 of the regional QAPP.

Texas Research Institute for Environmental Studies (TRIES)

Dr. Chad Hargrave
CRP Project Manager
Responsible for project oversight and ensuring that all lab and field personnel are working together to meet the requirements of the contract between H-GAC and the Texas Research Institute for Environmental Studies (TRIES) Aquatics and Analytical Laboratories by implementing CRP requirements, the H-GAC QAPP, and QAPP amendments and appendices. Reviews all field and lab data, electronic data files, chain-of-custody forms, etc. for accuracy, reasonableness, and completeness. Ensures all deliverables are submitted to H-GAC in a timely manner.

Kaitlen Gary
CRP Field QAO / CRP Field Supervisor / CRP Data Manager
Works closely with TRIES CRP Project Manager to ensure all methods/protocols for sample collection and lab analyses are consistent with the H-GAC CRP QAPP requirements. Responsible for coordinating all sampling trips, conducting and documenting equipment calibrations, and the training of all field personnel. Supervises and participates in all field sample collection. Responsible for entering data in spreadsheets, reviewing and verifying data with field operations and with laboratory personnel. Reviews all field and lab data, electronic data files, chain-of-custody forms, and Data Review Check-lists for accuracy, reasonableness, and completeness. Performs QA/QC checks on data. Communicates project status to H-GAC Project Manager and notifies H-GAC Project Manager and/or the H-GAC QAO of circumstances that may adversely affect quality of data derived from collection and analysis of samples. Submits all necessary data and supporting documents to H-GAC.

Dr. Rachelle Smith
CRP Lab Manager / Lab QAO
Responsible for the day-to-day operations of the lab and supervision of lab personnel to produce quality analytical data. Maintains verification of procedures for establishing the level of quality. Ensures staff are properly trained according to prescribed procedures and laboratory techniques. Performs verification and validation procedures to confirm quality data is issued to clients. Performs other QA/QC duties and checks associated with lab activities. Provides QC samples as per requirements of QAPP. Develops and revises standard operating procedures, techniques, polices and reports. Responsible for coordinating CRP activities with TRIES CRP Project Manager and QA Officer.

Eastex Environmental Laboratory (Eastex)

Pam Hickman
Laboratory Director - Eastex Environmental Laboratory (Contract Lab)
As described in Section A4 of the regional QAPP.

Daniel Bowen
Eastex Lab QAO
As described in Section A4 of the regional QAPP.

Figure A4.1. Organization Chart - Lines of Communication for H-GAC Region

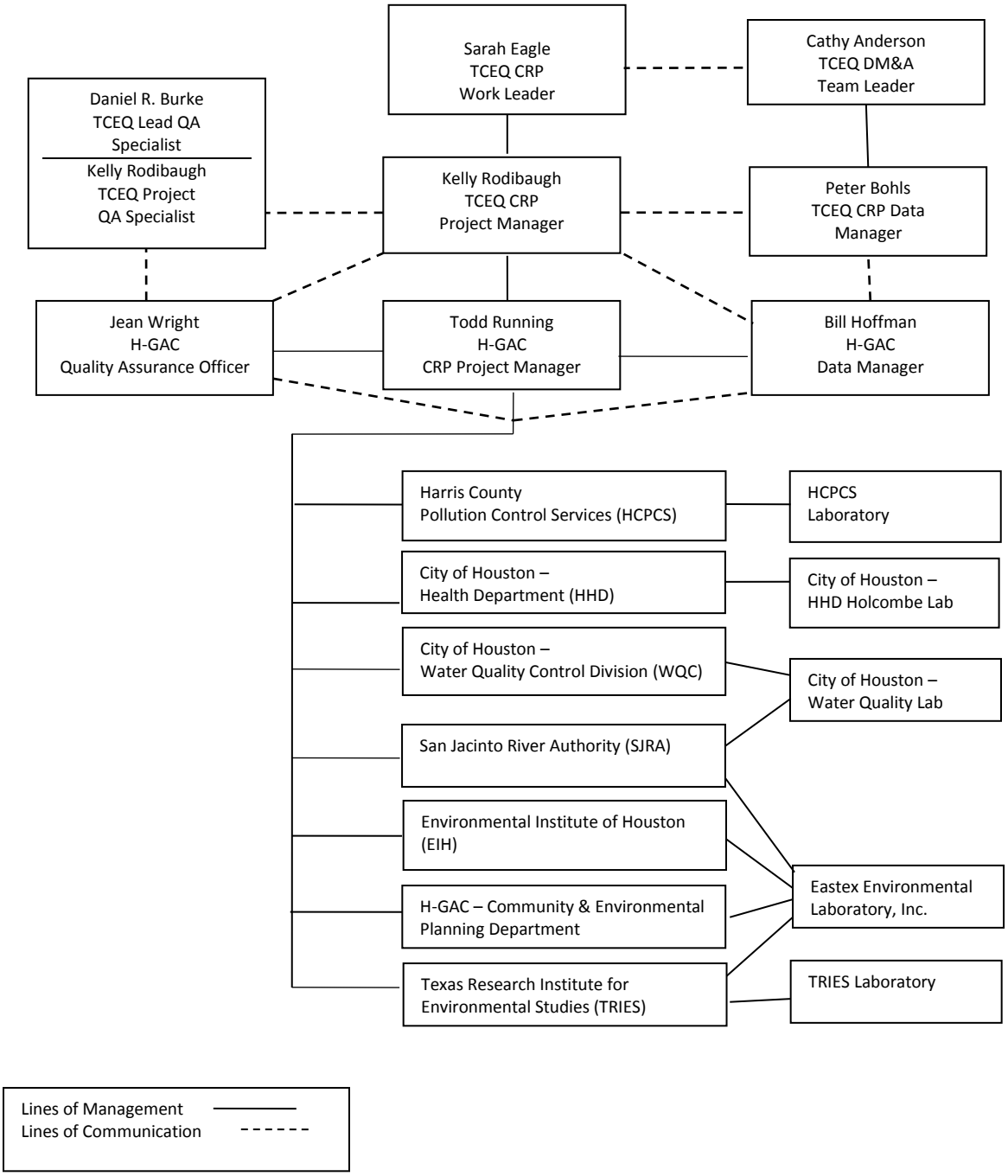
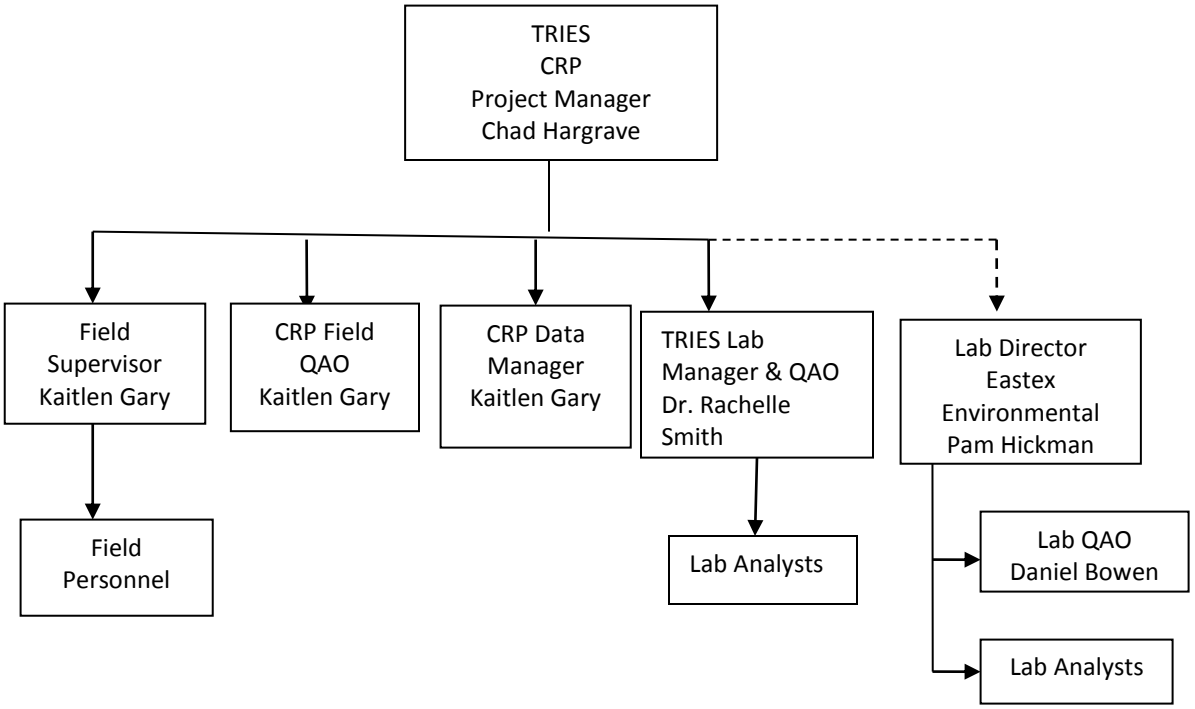


Figure A4.1. Texas Research Institute for Environmental Studies (TRIES) CRP Organizational Chart.



SS-A5 Problem Definition/Background

Under the Clean Rivers Program, the East Fork of the San Jacinto River (EFSJR) and Winters Bayou are currently monitored at 4 locations. The City of Houston, Drinking Water Operations (DWO), collects samples from two locations while the Houston-Galveston Area Council (H-GAC) collects samples from the other two locations. The river is 81 miles long flowing from the headwaters north of Hwy 190, east of Huntsville, south to the eastern arm of Lake Houston. The largest tributary, Winters Bayou, flows 46 miles from the City of Huntsville southeast to the confluence with the EFSJR north of Cleveland. According to H-GAC's 2016 Basin Summary Report, this classified segment (1003) is predominately forested but has recently undergone widespread changes via clear cutting as ranchettes and hobby farms were built across the watershed. Along with this change in land cover has come an increase in bacteria concentrations measured in the waterway.

Segment 1003 was first listed as impaired in the 2006 Integrated Report when the geometric mean exceeded the state standard of 126 MPN/100 mL for the indicator bacteria *E. coli*. Since then, bacteria concentrations have continued to climb slightly with each new assessment where the geomean is now more than double the standard in the upper reaches of the water body. When a TMDL group was assembled to address this impairment, the stakeholders identified a lack of monitoring associated with this large nonpoint source problem. H-GAC was asked to pursue additional funding to increase the ambient monitoring efforts throughout the watershed. There is no central point source contributing bacteria. Rather, the bacteria concentrations seem to be associated with septic systems, agricultural practices, and wildlife.

This project is being initiated to supplement the routine surface water quality monitoring currently being conducted in the East Fork San Jacinto River watershed. As the regional coordinator for the Clean Rivers Program, H-GAC will contract with the Texas Research Institute for Environmental Studies (TRIES) located at Sam Houston State University to conduct all sample collection and most, but not all, of the lab analyses. Only data produced under NELAP certification will be provided to TCEQ. This first time partnership with TRIES is being funded by H-GAC's Clean Rivers Program contract with TCEQ. Future funding may not be available so H-GAC has chosen to document this monitoring project in Appendix J to the regional FY16-17 QAPP rather than incorporate this partner's information into the regional document.

SS-A6 Project/Task Description

As described in Sections A5 and A6 of the FY2016-2017 Houston-Galveston Area Council Quality Assurance Project Plan, H-GAC coordinates the local agencies that conduct routine surface water quality monitoring within the San Jacinto River, Trinity-San Jacinto Coastal, San Jacinto-Brazos Coastal and Brazos-Colorado Coastal Basins under the auspices of the Clean Rivers Program (CRP). Simultaneously, H-GAC's Water Resources Group is involved in or facilitates the development of several Watershed Protection Plans and Total Maximum Daily Load studies and I-Plans throughout the region. During the development process of these plans and through the annual CRP coordinated

monitoring meeting, several data gaps have been identified in the region. H-GAC and CRP are addressing these data gaps by adding routine monitoring stations to existing local partner schedules or facilitating the contracting of a new monitoring partner.

The Texas Research Institute for Environmental Studies was contracted by H-GAC to monitor ambient surface water quality at 10 sites on the Upper East Fork San Jacinto River and Winters Bayou. Within these water bodies, there are currently 4 active CRP monitoring stations; all of which were previously established by H-GAC and the City of Houston. Sampling of these additional 10 sites will occur quarterly during FY2017, upon approval of this QAPP appendix. All data collected will be submitted for use by TCEQ and the Clean Rivers Program. Appendix SS-B outlines H-GAC's entire monitoring schedule including this effort. Appendix SS-C contains a map of all sampling station locations in the region. Appendices SS-D and SS-E contain copies of the field monitoring sheets and Chain-of-Custody forms respectively.

Amendments to the QAPP

Amendments to this Special Study Appendix may be necessary to address incorrectly documented information or to reflect changes in project organization, tasks, schedules, objectives, and methods. Requests for amendments will be directed from the H-GAC Project Manager to the CRP Project Manager electronically. Amendments are effective immediately upon approval by the H-GAC Project Manager, the H-GAC QAO, the CRP Project Manager, the TCEQ Quality Assurance Manager (or designee), the CRP Project QA Specialist, and additional parties affected by the amendment. Amendments are not retroactive. No work shall be implemented without an approved Special Study QAPP or amendment prior to the start of work. Any activities under this contract that commence prior to the approval of the governing QA document constitute a deficiency and are subject to corrective action as described in section C1 of the regional QAPP. Any deviation or deficiency from this QAPP which occurs after the execution of this QAPP should be addressed through a Corrective Action Plan (CAP). An Amendment may be a component of a CAP to prevent future recurrence of a deviation. Amendments will be incorporated into the QAPP by way of attachment and distributed to personnel on the distribution list by the H-GAC Project Manager. H-GAC will secure written documentation from each sub-tier project participant (e.g., subcontractors, other units of government) stating the organization's awareness of and commitment to requirements contained in each amendment to this QAPP appendix.

SS-A7 Quality Objectives and Criteria

As described in Section A7 of the regional QAPP, the measurement performance specifications listed in Table SS-A7.1h will generate data of sufficient quality to meet the objectives as described in Sections SS-A5 and SS-A6. Table SS-A7.1h can be found in Appendix SS-A.

Ambient Water Reporting Limits (AWRLs)

As described in Section A7 of the regional QAPP.

Precision

As described in Section A7 of the regional QAPP.

Bias

As described in Section A7 of the regional QAPP.

Representativeness

As described in Section A7 of the regional QAPP.

Comparability

As described in Section A7 of the regional QAPP.

Completeness

As described in Section A7 of the regional QAPP.

SS-A8 Special Training/Certification

As described in section A7 of the regional QAPP plus the addition of information to Table A8.1 below.

Table A8.1 – The Designated Trainer for new Local Partner.

Local Partner Agency	Designated Trainer
Texas Research Institute for Environmental Studies (TRIES)	Kaitlen Gary

SS-A9 Documents and Records

As described in Section A9 of the regional QAPP plus the addition of information in Table A9.1h for TRIES.

Table A9.1h – Project Documents and Records – TRIES

Document/Record	Location	Retention (yrs)	Format
QAPPs, amendments and appendices	TRIES	7	Paper & electronic
Field SOPs	TRIES	7	Paper & electronic
Laboratory Quality Manuals	TRIES / TRIES Lab / Eastex Lab	7	Paper & electronic

Laboratory SOPs	TRIES Lab / Eastex Lab	7	Paper & electronic
QAPP distribution documentation	TRIES / TRIES Lab / Eastex Lab	7	Paper
Field staff training records	TRIES	7	Paper
Field equipment calibration/maintenance logs	TRIES	7	Paper
Field instrument printouts	TRIES	7	Paper & electronic
Field notebooks or data sheets	TRIES	7	Paper
Chain of custody records	TRIES / TRIES Lab / Eastex Lab	7	Paper
Laboratory calibration records	TRIES Lab / Eastex Lab	7	Paper
Laboratory instrument printouts	TRIES Lab / Eastex Lab	7	Paper
Laboratory data reports/results	TRIES / TRIES Lab / Eastex Lab	7	Paper
Laboratory equipment maintenance logs	TRIES Lab / Eastex Lab	7	Paper
Corrective Action Documentation	TRIES / TRIES Lab / Eastex Lab	7	Paper & electronic

Laboratory Test Reports
As described in Section A9 of the regional QAPP plus additional information about TRIES.

TRIES Lab will perform lab analyses on most but not all parameters listed in Appendix SS-A: Table SS-A7.1h table upon NELAP certification. For any parameters not certified by NELAP, TRIES field crew will submit samples to Eastex Lab, contracted by H-GAC, for analysis. The final lab data for all TRIES sampling, regardless of which lab performed the analysis, will be submitted to H-GAC by the TRIES Data Manager. It is reformatted as needed and reviewed prior to submission to TCEQ. TRIES and Eastex lab reports include the following information.

1) The title "Test Report" or other identifying statement (the lab offers several report formats);
2) Name and address of laboratory, and phone number with name of contact person;
3) A unique identification number and the total number of pages, with all pages sequentially numbered;
4) Name and address of client;
5) Description and unambiguous identification of the sample(s) including the client identification

code (i.e. station information);
6) Identification of results for any sample that did not meet sample acceptance requirements;
7) Date of receipt of sample, date and time of sample collection, sample matrix, and time of sample preparation and/or analysis;
8) Identification of the test method used plus its LOQ and LOD;
9) Reference to sampling procedure (grab or composite);
10) Any deviations from, additions to or exclusions from SOPs, and any conditions that may have affected the quality of results, and including the use and definitions of data qualifiers;
11) Measurements, examinations and derived results, supported by tables, graphs, sketches and photographs as appropriate, and any failures identified; identification of whether data are calculated on a dry weight or wet weight basis; identification of the reporting units such as µg/l or mg/kg;
12) Clear identification of all test data provided by outside sources, such as subcontracted laboratories, clients, etc.;
13) Clear identification of numerical results with values below the Reporting Limit, and
14) Identification of accreditation status per analysis.

If TRIES receives any Eastex summary reports without all the above information, it will still be available upon request.

Electronic Data
As described in Section A9 of the regional QAPP plus additional information about TRIES.

TRIES shall submit data to H-GAC electronically. Every TRIES data set is submitted with a completed Data Review Checklist (Appendix SS-F). See Section B10 for a description of the Data Management Process.

Table SS-A9.2 – The Software used by Local Partners to Submit Data to H-GAC.

Sub-Tier Participants	Software
TRIES	MS Excel

SS-B1 Sampling Process Design

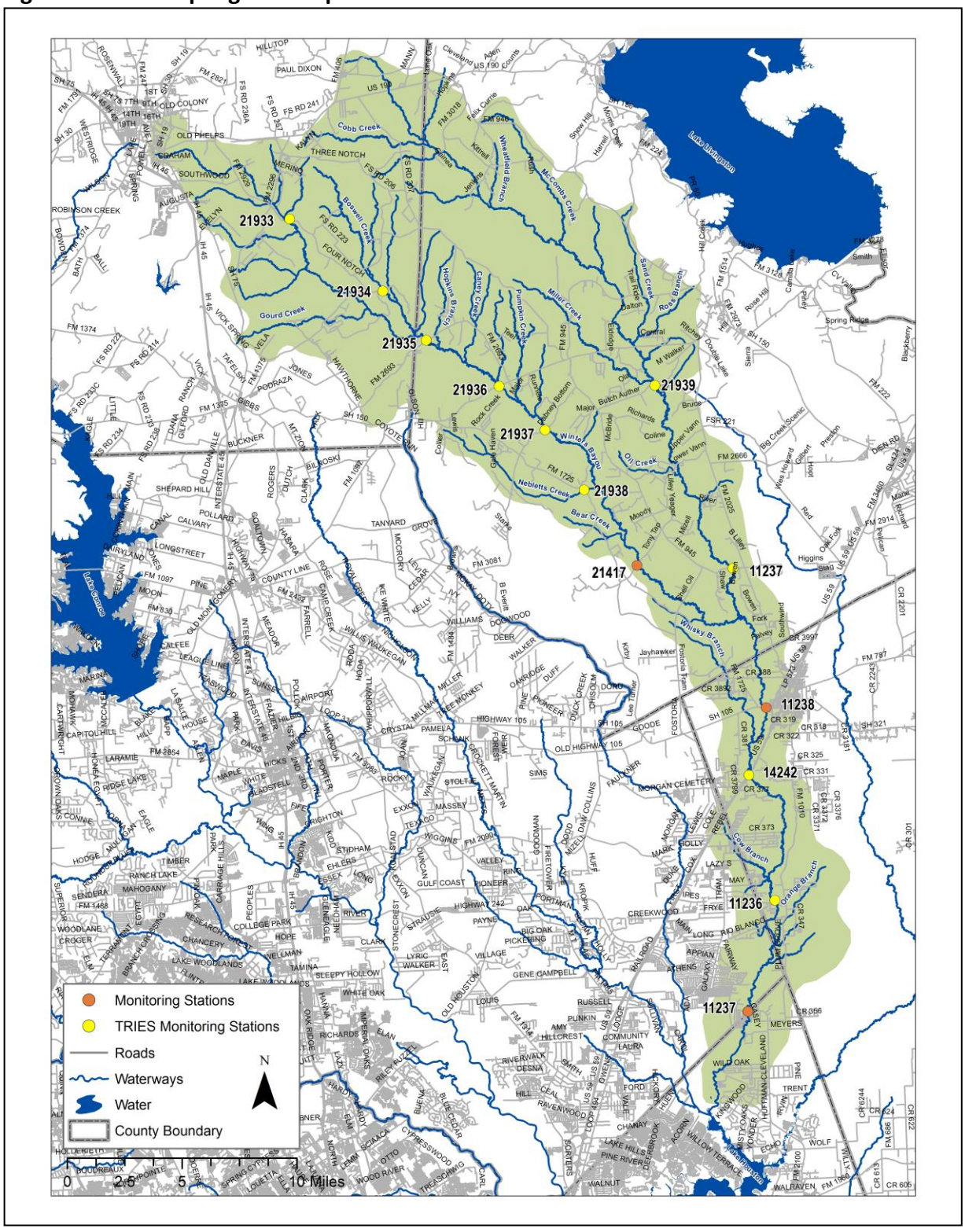
H-GAC's data collection design for all local partners, including TRIES, is summarized in Appendix SS-B. The overall coordinated monitoring maps for the greater H-GAC region is included in Appendix SS-C. To see only the sites being monitored by TRIES, refer to Table SS-B1.1 - Sampling Sites and Monitoring Frequencies and Figure SS-B1.1 - Sample Site Maps provided on the following pages.

The map of stations monitored by the TRIES and the overall, regional monitoring map provided in Appendix SS-C was generated by H-GAC. This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries. For more information concerning this map, contact Will Merrell at 713-993-4594 or QAO, Jean Wright, at 713-499-6660.

Table SS-B1.1 Sample Design and Schedule, FY 2017

Site Description	Station ID	Waterbody ID	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	Metal Water	Comments
WINTERS BAYOU AT FM 2929 / FOUR NOTCH ROAD 4.8 KILOMETERS SOUTH OF PHELPS IN WALKER COUNTY	21933	1003A	10	12	HG	TF	RT	4	4	4	4			Added for FY2017 only
BOSWELL CREEK AT FOUR NOTCH ROAD / BOSWELL ROAD 13 KILOMETERS NORTHEAST OF NEW WAVERLY IN WALKER COUNTY	21934	1003A	10	12	HG	TF	RT	4	4	4	4			Added for FY2017 only
WINTERS BAYOU AT FM 2693 IN SAN JACINTO COUNTY	21935	1003A	10	10	HG	TF	RT	4	4	4	4			Added for FY2017 only
WINTERS BAYOU AT SH 150 IN SAN JACINTO COUNTY	21936	1003A	10	10	HG	TF	RT	4	4	4	4			Added for FY2017 only
WINTERS BAYOU AT DABNEY BOTTOM RD IN SAN JACINTO COUNTY	21937	1003A	10	10	HG	TF	RT	4	4	4	4			Added for FY2017 only
NEBLETTS CREEK AT FM 1725 IN SAN JACINTO COUNTY	21938	1003A	10	10	HG	TF	RT	4	4	4	4			Added for FY2017 only
EAST FORK SAN JACINTO RIVER AT NORTH BUTCH ARTHUR ROAD IN SAN JACINTO COUNTY	21939	1003	10	10	HG	TF	RT	4	4	4	4			Added for FY2017 only
EAST FORK SAN JACINTO RIVER DOWNSTREAM OF FM 945 5.6 MILES NORTH OF CLEVELAND	11237	1003	10	10	HG	TF	RT	4	4	4	4			Added for FY2017 only
EAST FORK SAN JACINTO RIVER IMMEDATELY DOWNSTREAM OF US 59 AT RED GULLY	14242	1003	10	12	HG	TF	RT	4	4	4	4			Added for FY2017 only
EAST FORK SAN JACINTO RIVER AT FM 2090 IN LIBERTY COUNTY	11236	1003	10	12	HG	TF	RT	4	4	4	4			Added for FY2017 only

Figure SS-B1. Sampling Site Map



SS-B2 Sampling Methods

Field Sampling Procedures

As described in Section B2 of the regional QAPP plus additional information relating to TRIES.

Table SS-B2.1h Sample Storage, Preservation, and Handling Requirements for Samples Analyzed by the TRIES Laboratory

Parameter	Matrix	Container	Preservation	Sample Volume	Holding Time
TSS	water	Plastic	Cool to <6°C	1 L	7 days
Sulfate	water	Plastic	Cool to <6°C	100 mL[2]	28 days
Chloride	water	Plastic	Cool to <6°C	100 mL[2]	28 days
E. coli IDEXX Colilert	water	Sterile Plastic w/ sodium thiosulfate	Cool to <6°C but not frozen	120[4] mL	8 hours[1]
Enterococci IDEXX Enterolert	water	Sterile Plastic w/ sodium thiosulfate	Cool to <6°C but not frozen	120[5] mL	8 hours
Ammonia-N	water	Plastic	Cool to <6°C H_2SO_4 to pH <2	125 mL[3]	28 days
Nitrite + Nitrate-N	water	Plastic	Cool to <6°C, H_2SO_4 to pH <2	125 mL[3]	28 days
Phosphorus-P, total	water	Plastic	Cool to <6°C HNO_3 to pH <2	125 mL[3]	28 days

1. *E.coli* samples analyzed by SM 9223-B should always be processed as soon as possible and within 8 hours. When transport conditions necessitate delays in delivery longer than 6 hours, the holding time may be extended and samples must be processed as soon as possible and within 30 hours.
2. One 500 mL plastic container is used to collect these two samples.
3 Four tests are analyzed from one 1L plastic bottle.
4. Maximum volume analyzed for E. coli is 50 ml allowing duplicate analyses from 1 container.
5. Maximum volume analyzed for Entero is 10 mL allowing duplicate analyses from 1 container.

Sample Containers

As described in Section B2 of the regional QAPP. Certificates from sample container manufacturers are maintained in a notebook by lab providing sample containers.

The TRIES Analytical Lab provides all sample containers for sample collection except TKN. The lab performs and tracks required QC procedures for all bottles purchased.

- Pre-cleaned, plastic, disposable sample containers are used for conventional parameters.
- Sterile, sealed, 120 mL plastic, disposable bottles with a sodium thiosulfate tablet added, are used for bacteriological samples.
- When preservation is required for particular parameters, the acid is added to the container in the field by field personnel immediately after samples are collected.
- Pre-cleaned, plastic, disposable sample containers for the TKN samples are provided by H-GAC's contract lab, Eastex Environmental Lab. Eastex performs and tracks required QC procedures for all TKN bottles.

Processes to Prevent Contamination

As described in Section B2 of the regional QAPP.

Documentation of Field Sampling Activities

As described in Section B2 of the regional QAPP.

Recording Data

As described in Section B2 of the regional QAPP.

Sampling Method Requirements or Sampling Process Design Deficiencies, and Corrective Action

As described in Section B2 of the regional QAPP.

SS-B3 Sample Handling and Custody

Chain-of–Custody

As described in Section B3 of the regional QAPP plus the COC related to TRIES Lab found in Appendix SS-E.

Sample Labeling

As described in Section B3 of the regional QAPP.

Sample Handling

As described in Section B3 of the regional QAPP plus specific information related to TRIES.

Table SS-B3.1. Sample Handling References for Local Monitoring Partner.

Monitoring Entity	Reference to Sample Handling
TRIES	TRIES's Standard Operating Procedures (SOP) Manual for Conducting Surface Water Quality Monitoring references the most current *TCEQ Surface Water Quality Monitoring Procedures Volumes 1* plus specific SOP's pertaining to TRIES monitoring activities only. TRIES Laboratory QM, or most current version, covers the handling of all samples analyzed. Eastex Environmental Laboratory QM, most current version, covers samples relinquished to the lab.

Sample Tracking Procedure Deficiencies and Corrective Action

As described in Section B3 of the regional QAPP.

SS-B4 Analytical Methods

As described in Section B4 of the regional QAPP plus additional information about TRIES.

Copies of laboratory SOPs are retained by the TRIES and are available for review by the TCEQ.

Standards Traceability

As described in Section B4 of the regional QAPP.

Analytical Method Deficiencies and Corrective Actions

As described in section B4 of the regional QAPP.

SS-B5 Quality Control

Sampling Quality Control Requirements and Acceptability Criteria

As described in Section B5 of the regional QAPP.

Laboratory Measurement Quality Control Requirements and Acceptability Criteria

As described in Section B5 of the regional QAPP plus additional information about TRIES.

For TRIES, matrix spikes are environmental samples fortified with a known amount of analyte to help assess the effect of the matrix on method performance. Samples are spiked at appropriate concentrations and frequencies as dictated in the test method SOPs. Percent recovery (%R) is calculated by subtracting the sample result from the matrix spike result, dividing by spike amount added and converting to percent — **%Rec = ((Matrix spike result – sample result) / spike added) x 100**. In the event that matrix spike results are not acceptable, all other batch and run QC will be reviewed to ensure quality performance. If all other QC data associated with the batch are acceptable, the laboratory QAO or H-GAC QAO and Data Manager will decide whether to report the data for the failed analyte in the parent sample to TCEQ or to determine that the result from the parent sample associated with that failed matrix spike is considered to have excessive analytical variability and does not meet project QC requirements. Depending on the similarities in composition of the samples in the batch, H-GAC may consider excluding all of the results in the batch related to the analyte that failed recovery.

Measurement performance specifications for matrix spikes for TRIES Lab are discussed below.

- TRIES Lab uses matrix spike recovery limits of 75-125 percent which are published in the mandated test method where a spike solution is required. Matrix spikes that fail to meet these guidelines are reanalyzed if possible, or an alternate sample may be used to help determine whether the problem was specific to that sample. If matrix spikes are not achievable within method acceptance criteria, the data are reported with appropriate data qualifying codes on the analytical report. Control Carts are monitoring for laboratory performance.

Quality Control or Acceptability Requirements Deficiencies and Corrective Actions

As described in Section B5 of the regional QAPP.

SS-B6 Instrument/Equipment Testing, Inspection, and Maintenance

As described in Section B6 of the regional QAPP.

SS-B7 Instrument Calibration and Frequency

As described in Section B7 of the regional QAPP.

SS-B8 Inspection/Acceptance of Supplies and Consumables

As described in Section B8 of the regional QAPP.

SS-B9 Acquired Data

As described in Section B8 of the regional QAPP.

SS-B10 Data Management

As described in Section B10 of the regional QAPP plus additional information about TRIES.

TRIES field QAO, TRIES Lab QAO and Eastex Lab submit all field and lab data to the TRIES Data

Manager. The data manager completes all data entry into two separate Excel spreadsheets; one for field data and one for lab data. Any supporting QA data is input to spreadsheets also. The TRIES field QAO, TRIES Lab QAO and the TRIES CRP Project Manager review more than 10% of data for accuracy, completeness, and reasonableness. A Data Review Checklist is completed by the data manager and submitted to the TRIES CRP Project Manager for final approval. The data manager then submits the two Excel spreadsheets for both the field and lab data along with hard copies of the field sheets and COCs to H-GAC.

Table SS-B10.1 –Sampling Entity Data Submission Codes

Name of Monitoring Entity	Tag Prefix	Submitting Entity	Collecting Entity
Texas Research Institute for Environmental Studies - SHSU	I	HG	TF

Data Errors and Loss

As described in Section B10 of the regional QAPP plus additional information about TRIES.

TRIES Details of the protocols for data reductions and review are described in their TRIES Analytical Lab Quality Manual, Section 27 (most current version). The TRIES Data Manager collects all field data sheets and immediately inputs data into an Excel spreadsheet while also checking for data outliers and reasonableness. The TRIES CRP Project Manager also reviews the data for transcription accuracy and reasonableness. A Data Review Checklist is completed for each set of data submitted to H-GAC.

Record Keeping and Data Storage

As described in Section B10 of the regional QAPP plus additional information about TRIES.

TRIES Details of the protocols for records management and data storage procedures are described in their TRIES Analytical Lab Quality Manual, Sections 16.1 & 16.2 (most current version). All field data will be stored electronically in an Excel spreadsheet and in hard copy format at TRIES. The TRIES Data Manager and the TRIES Lab QAO will maintain the data.

Data Handling, Hardware, and Software Requirements

As described in Section B10 of the regional QAPP.

Information Resource Management Requirements

As described in Section B10 of the regional QAPP.

SS-C1 Assessments and Response Actions

As described in Section C1 of the regional QAPP.

Corrective Action Process for Deficiencies

As described in Section C1 of the regional QAPP.

Corrective Action

As described in Section C1 of the regional QAPP.

SS-C2 Reports to Management

As described in Section C2 of the regional QAPP.

Reports to H-GAC Project Management

As described in Section C2 of the regional QAPP.

Reports to TCEQ Project Management

As described in Section C2 of the regional QAPP.

Reports by TCEQ Project Management

As described in Section C2 of the regional QAPP.

SS-D1 Data Review, Verification, and Validation

As described in Section D1 of the regional QAPP plus additional information about TRIES.

The TRIES data manager and the H-GAC CRP Data Manager are responsible for ensuring that field data are properly reviewed, verified, and submitted in the required format to the TCEQ CRP Project Manager. Likewise, the Laboratory Manager of TRIES is responsible for ensuring that laboratory data are reviewed, verified, and submitted in the required format to the H-GAC CRP Data Manager.

SS-D2 Verification and Validation Methods

As described in Section D2 of the regional QAPP plus additional information about TRIES.

Table D2.1: Data Review Tasks

Table D2.1a: Data Review Tasks for the Texas Research Institute for Environmental Studies (TRIES)

TRIES Data to be Verified	Field Task	TRIES Lab Task	Laboratory Task (Eastex Lab)	Lead Organization Data Manager Task
Sample documentation complete; samples labeled, sites identified	TRIES QAO	Sample Custodian (analysts)	Sample Custodian.	
Field instrument pre- and post-calibration results within limits	TRIES QAO			
Field QC samples collected for all analytes as prescribed in the TCEQ *SWQM Procedures Manual*	TRIES QAO			
Standards and reagents traceable	TRIES QAO	Lab QAO	Lab QAO	
Chain of custody complete/acceptable	TRIES QAO	Sample Custodian (analysts)	Sample Cust.	H-GAC Data Mgr
NELAP Accreditation is current		LAB QAO	Lab QAO	
Sample preservation and handling acceptable	TRIES QAO	Sample Custodian (analysts)	Sample Custodian.	
Holding times not exceeded		Sample Custodian (analysts)	Lab QAO	H-GAC Data Mgr
Collection, preparation, and analysis consistent with SOPs and QAPP	TRIES QAO	Lab QAO	Lab QAO	
Field documentation (e.g., biological, stream habitat) complete	TRIES QAO			
Instrument calibration data complete	TRIES QAO	Lab QAO	Lab QAO	
Bacteriological records complete		Lab QAO	Lab QAO	
QC samples analyzed at required frequency	TRIES QAO	Lab QAO	Lab QAO	H-GAC Data Mgr
QC results meet performance and program specifications		Lab QAO	Lab QAO	
Analytical sensitivity (Minimum Analytical Levels/Ambient Water Reporting Limits) consistent with QAPP		Lab QAO	Lab QAO	

TRIES Data to be Verified	Field Task	TRIES Lab Task	Laboratory Task (Eastex Lab)	Lead Organization Data Manager Task
Results, calculations, transcriptions checked	TRIES QAO	Analysts/Peer Review	Technical Director	
Laboratory bench-level review performed		Lab QAO	Head Technician	
All laboratory samples analyzed for all parameters		Lab QAO	Lab QAO	
Corollary data agree		Lab QAO	Lab QAO	H-GAC Data Mgr
Nonconforming activities documented	TRIES QAO	Lab QAO	Lab QAO	H-GAC QAO
Outliers confirmed and documented; reasonableness check performed	TRIES QAO	Lab QAO	Lab QAO	H-GAC Data Mgr & H-GAC QAO
Dates formatted correctly	TRIES Data Mgr	Lab QAO		H-GAC Data Mgr
Depth reported correctly	TRIES Data Mgr			H-GAC Data Mgr
TAG IDs correct	TRIES Data Mgr			H-GAC Data Mgr
TCEQ Station ID number assigned	TRIES Data Mgr			H-GAC Data Mgr
Valid parameter codes	TRIES Data Mgr			H-GAC Data Mgr & H-GAC QAO
Codes for submitting entity(ies), collecting entity(ies), and monitoring type(s) used correctly	TRIES Data Mgr			H-GAC Data Mgr
Time based on 24-hour clock	H-GAC Data Mgr	Lab QAO		H-GAC Data Mgr
Absence of transcription error confirmed	TRIES Data Mgr & TRIES QAO	Lab QAO	Technical Director	H-GAC Data Mgr
Absence of electronic errors confirmed	TRIES Data Mgr & TRIES QAO		Technical Director	H-GAC Data Mgr
Sampling and analytical data gaps checked (e.g., all sites for which data are reported are on the coordinated monitoring schedule)	TRIES Data Mgr & TRIES QAO			H-GAC Data Mgr & H-GAC QAO
Field QC results attached to data review checklist	TRIES Data Mgr & TRIES QAO			H-GAC Data Mgr
Verified data log submitted	TRIES Data Mgr			H-GAC Data Mgr
10% of data manually reviewed	TRIES Data Mgr & TRIES QAO	Lab QAO	Technical Director	H-GAC Data Mgr & H-GAC QAO

SS-D3 Reconciliation with User Requirements

As described in Section D3 of the regional QAPP.

APPENDIX SS-A: Table SS-A7.1h

(As described in Appendix A of the regional QAPP plus the following information addressing TRIES.)

TABLE A7.1h - Measurement Performance Specifications for Texas Research Institute for Environmental Studies (TRIES)										
Field Parameters										
Parameter	**Units**	**Matrix**	**Method**	**Parameter Code**	**TCEQ AWRL**	**LOQ**	**LOQ Check Sample %Rec**	**Precision (RPD of LCS/LCSD)**	**Bias %Rec. of LCS**	**Lab**
TEMPERATURE, WATER (DEGREES CENTIGRADE)	DEG C	water	SM 2550 B and TCEQ SOP V1	00010	NA*	NA	NA	NA	NA	Field
TRANSPARENCY, SECCHI DISC (METERS)	meters	water	TCEQ SOP V1	00078	NA*	NA	NA	NA	NA	Field
SPECIFIC CONDUCTANCE, FIELD (US/CM @ 25C)	us/cm	water	EPA 120.1 and TCEQ SOP, V1	00094	NA*	NA	NA	NA	NA	Field
OXYGEN, DISSOLVED (MG/L)	mg/L	water	SM 4500-O G and TCEQ SOP V1	00300	NA*	NA	NA	NA	NA	Field
PH (STANDARD UNITS)	s.u.	water	EPA 150.1 and TCEQ SOP V1	00400	NA*	NA	NA	NA	NA	Field
DAYS SINCE PRECIPITATION EVENT (DAYS)	days	other	TCEQ SOP V1	72053	NA*	NA	NA	NA	NA	Field
DEPTH OF BOTTOM OF WATER BODY AT SAMPLE SITE	meters	water	TCEQ SOP V2	82903	NA*	NA	NA	NA	NA	Field
MAXIMUM POOL WIDTH AT TIME OF STUDY (METERS)***	meters	other	TCEQ SOP V2	89864	NA*	NA	NA	NA	NA	Field
MAXIMUM POOL DEPTH AT TIME OF STUDY(METERS)***	meters	other	TCEQ SOP V2	89865	NA*	NA	NA	NA	NA	Field
POOL LENGTH, METERS***	meters	other	TCEQ SOP V2	89869	NA*	NA	NA	NA	NA	Field
% POOL COVERAGE IN 500 METER REACH***	%	other	TCEQ SOP V2	89870	NA*	NA	NA	NA	NA	Field
WIND INTENSITY (1=CALM,2=SLIGHT,3=MOD.,4=STRONG)	NU	other	NA	89965	NA	NA	NA	NA	NA	Field

Parameter	Units	Matrix	Method	Parameter Code	TCEQ AWRL	LOQ	LOQ Check Sample %Rec	Precision (RPD of LCS/LCSD)	Bias %Rec. of LCS	Lab
PRESENT WEATHER (1=CLEAR,2=PTCLDY,3=CLDY,4=RAIN, 5=OTHER)	NU	other	NA	89966	NA	NA	NA	NA	NA	Field
WATER SURFACE (1=CALM, 2=RIPPLE, 3=WAVE, 4=WHITECAP)	NU	water	NA	89968	NA	NA	NA	NA	NA	Field
WATER COLOR (1=BROWNISH, 2=REDDISH, 3=GREENISH, 4=BLACKISH, 5=CLEAR, 6=OTHER)	NU	water	NA	89969	NA	NA	NA	NA	NA	Field
WATER ODOR (1=SEWAGE, 2=OILY/CHEMICAL, 3=ROTTEN EGG, 4=MUSKY, 5=FISHY, 6=NONE, 7=OTHER)	NU	water	NA	89971	NA	NA	NA	NA	NA	Field
WATER CLARITY (1=EXCELLENT, 2=GOOD, 3=FAIR, 4=POOR)	NU	water	NA	20424	NA	NA	NA	NA	NA	Field
TURBIDITY, OBSERVED (1=LOW, 2=MEDIUM, 3=HIGH)	NU	water	NA	88842	NA	NA	NA	NA	NA	Field
PRIMARY CONTACT, OBSERVED ACTIVITY (# OF PEOPLE OBSERVED)	# of people observed	other	NA	89978	NA	NA	NA	NA	NA	Field
EVIDENCE OF PRIMARY CONTACT RECREATION (1 = OBSERVED, 0 = NOT OBSERVED)	NU	other	NA	89979	NA	NA	NA	NA	NA	Field

* Reporting to be consistent with SWQM guidance and based on measurement capability.
*** To be routinely reported when collecting data from perennial pools.
† As published by the Texas Water Development Board on their website http://wiid.twdb.state.tx.us/ims/resinfo/BushButton/lakestatus.asp?selcat=3&slbasin=2
References:
United States Environmental Protection Agency (USEPA) Methods for Chemical Analysis of Water and Wastes, Manual #EPA-600/4-79-020
American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998. (Note: The 21st edition may be cited if it becomes available.)
TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).
TCEQ SOP, V2 - TCEQ Surface Water Quality Monitoring Procedures, Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data, 2014 (RG-416)

TABLE A7.1h - Measurement Performance Specifications for Texas Research Institute for Environmental Studies (TRIES)					
Flow Parameters					
Parameter	**Units**	**Matrix**	**Method**	**Parameter Code**	**Lab**
FLOW STREAM, INSTANTANEOUS (CUBIC FEET PER SEC)	cfs	water	TCEQ SOP V1	00061	Field
FLOW SEVERITY: 1=No Flow, 2=Low, 3=Normal, 4=Flood, 5=High, 6=Dry	NU	water	TCEQ SOP V1	01351	Field
STREAM FLOW ESTIMATE (CFS)	cfs	Water	TCEQ SOP V1	74069	Field
FLOW MTH 1=GAGE 2=ELEC 3=MECH 4=WEIR/FLU 5=DOPPLER	NU	other	TCEQ SOP V1	89835	Field

References:
United States Environmental Protection Agency (USEPA) Methods for Chemical Analysis of Water and Wastes, Manual #EPA-600/4-79-020
American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998. (Note: The 21st edition may be cited if it becomes available.)
TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).
TCEQ SOP, V2 - TCEQ Surface Water Quality Monitoring Procedures, Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data, 2014 (RG-416)

TABLE A7.1h - Measurement Performance Specifications for Eastex Environmental Laboratory										
Conventional Parameters in Water										
Parameter	**Units**	**Matrix**	**Method**	**Parameter Code**	**TCEQ AWRL**	**LOQ**	**LOQ Check Sample %Rec**	**Precision (RPD of LCS/LCSD)**	**Bias %Rec. of LCS**	**Lab**
RESIDUE, TOTAL NONFILTRABLE (MG/L)	mg/L	water	SM 2540D	00530	5	1	NA	NA	NA	Eastex
NITROGEN, AMMONIA, TOTAL (MG/L AS N)	mg/L	water	SM 4500 NH3 - G	00610	0.1	0.1	70-130	20	80-120	Eastex
NITROGEN, KJELDAHL, TOTAL (MG/L AS N)	mg/L	water	SM 4500 NH3-C B; SM 4500 -Norg	00625	0.2	0.2	70-130	20	80-120	Eastex
NITRITE PLUS NITRATE, TOTAL ONE LAB DETERMINED VALUE (MG/L AS N)	mg/L	water	SM 4500-NO3 - F	00630	0.05	0.04	70-130	20	80-120	Eastex
PHOSPHORUS, TOTAL, WET METHOD (MG/L AS P)	mg/L	water	SM 4500-P E	00665	0.06	0.02	70-130	20	80-120	Eastex
CHLORIDE (MG/L AS CL)	mg/L	water	SM 4500 Cl- C	00940	5	5	70-130	20	80-120	Eastex
SULFATE (MG/L AS SO4)	mg/L	water	ASTM D516	00945	5	5	70-130	20	80-120	Eastex

References:
United States Environmental Protection Agency (USEPA) Methods for Chemical Analysis of Water and Wastes, Manual #EPA-600/4-79-020
American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998. (Note: The 21st edition may be cited if it becomes available.)
TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).
TCEQ SOP, V2 - TCEQ Surface Water Quality Monitoring Procedures, Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data, 2014 (RG-416)

TABLE A7.1h - Measurement Performance Specifications for Texas Research Institute for Environmental Studies (TRIES)

Conventional Parameters in Water

Parameter	Units	Matrix	Method	Parameter Code	TCEQ AWRL	LOQ	LOQ Check Sample %Rec	Precision (RPD of LCS/LCSD)	Bias %Rec. of LCS	Lab
RESIDUE, TOTAL NONFILTRABLE (MG/L)	mg/L	water	SM 2540-D	00530	5	2.5	NA	NA	NA	TRIES
NITROGEN, AMMONIA, TOTAL (MG/L AS N)	mg/L	water	SM 4500 NH3 D	00610	0.1	0.1	75-125	20	80-120	TRIES
NITRITE NITROGEN, TOTAL (MG/L AS N)	mg/L	water	EPA 300.0	00615	0.05	0.06	75-125	20	85-115	TRIES
NITRATE, NITROGEN, TOTAL (MG/L AS N)	mg/L	water	EPA 300.0	00620	0.05	0.05	75-125	20	85-115	TRIES
PHOSPHORUS, TOTAL, WET METHOD (MG/L AS P)	mg/L	water	EPA 200.7	00665	0.06	0.04	75-125	20	85-115	TRIES
CHLORIDE (MG/L AS CL)	mg/L	water	EPA 300.0	00940	5	0.06	75-125	20	85-115	TRIES
SULFATE (MG/L AS SO4)	mg/L	water	EPA 300.0	00945	5	0.3	75-125	20	85-115	TRIES

References:

United States Environmental Protection Agency (USEPA) Methods for Chemical Analysis of Water and Wastes, Manual #EPA-600/4-79-020

American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998. (Note: The 21st edition may be cited if it becomes available.)

TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).

TCEQ SOP, V2 - TCEQ Surface Water Quality Monitoring Procedures, Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data, 2014 (RG-416)

TABLE A7.1h - Measurement Performance Specifications for Eastex Environmental Laboratory										
Bacteriological Parameters in Water										
Parameter	**Units**	**Matrix**	**Method**	**Parameter Code**	**TCEQ AWRL**	**LOQ**	**LOQ Check Sample %Rec**	**Log Difference of Duplicates**	**Bias %Rec. of LCS**	**Lab**
E. COLI, COLILERT, IDEXX METHOD, MPN/100ML	MPN/100 mL	water	Colilert-18 **	31699	1	1	NA	0.50*	NA	Eastex
ENTEROCOCCI, ENTEROLERT, IDEXX, (MPN/100 ML)	MPN/100 mL	water	Enterolert	31701	10***	10	NA	0.50*	NA	Eastex
E.COLI, COLILERT, IDEXX, HOLDING TIME	hours	water	NA	31704	NA	NA	NA	NA	NA	Eastex

* This value is not expressed as a relative percent difference. It represents the maximum allowable difference between the logarithm of the result of a sample and the logarithm of the duplicate result. See Section B5.

** *E.coli* samples analyzed by these methods should always be processed as soon as possible and within 8 hours. When transport conditions necessitate delays in delivery longer than 6 hours, the holding time may be extended and samples must be processed as soon as possible and within 30 hours.

***Enterococcus Samples should be diluted 1:10 for all waters.

References:

United States Environmental Protection Agency (USEPA) Methods for Chemical Analysis of Water and Wastes, Manual #EPA-600/4-79-020

American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998. (Note: The 21st edition may be cited if it becomes available.)

TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).

TCEQ SOP, V2 - TCEQ Surface Water Quality Monitoring Procedures, Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data, 2014 (RG-416)

TABLE A7.1h - Measurement Performance Specifications for Texas Research Institute for Environmental Studies (TRIES)										
Bacteriological Parameters in Water*										
Parameter	**Units**	**Matrix**	**Method**	**Parameter Code**	**TCEQ AWRL**	**LOQ**	**LOQ Check Sample %Rec**	**Log Difference of Duplicates**	**Bias %Rec. of LCS**	**Lab**
E. COLI, COLILERT, IDEXX METHOD, MPN/100ML	MPN/100 mL	water	Colilert-18 ***	31699	1	1	NA	0.50**	NA	TRIES
ENTEROCOCCI, ENTEROLERT, IDEXX, (MPN/100 ML)	MPN/100 mL	water	Enterolert	31701	10****	10	NA	0.50**	NA	TRIES
E.COLI, COLILERT, IDEXX, HOLDING TIME	hours	water	NA	31704	NA	NA	NA	NA	NA	TRIES

* TRIES analyses of E. coli samples pending NELAP certification, which is in progress as of the signing of this amendment. No *E. coli* samples will be submitted to or analyzed by TRIES for this special study until NELAP accreditation is received.

** This value is not expressed as a relative percent difference. It represents the maximum allowable difference between the logarithm of the result of a sample and the logarithm of the duplicate result. See Section B5.

*** *E.coli* samples analyzed by these methods should always be processed as soon as possible and within 8 hours. When transport conditions necessitate delays in delivery longer than 6 hours, the holding time may be extended and samples must be processed as soon as possible and within 30 hours.

****Enterococcus Samples should be diluted 1:10 for all waters.

References:

United States Environmental Protection Agency (USEPA) Methods for Chemical Analysis of Water and Wastes, Manual #EPA-600/4-79-020

American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998. (Note: The 21st edition may be cited if it becomes available.)

TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415).

TCEQ SOP, V2 - TCEQ Surface Water Quality Monitoring Procedures, Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data, 2014 (RG-416)

APPENDIX SS-B: FY2017 Coordinated Monitoring Schedule

(This Appendix includes only the newest monitoring locations added for TRIES through this QAPP Appendix J.)

Sample Design Rationale for Additional Monitoring in the East Fork San Jacinto River Watershed

(As described in Appendix B of the regional QAPP plus the following information addressing TRIES.)

Upon approval of this QAPP appendix, the following sampling locations will be added to the Coordinated Monitoring Schedule for FY2017. These sites were identified through surveillance and agreed upon in subsequent conversations with local partners and committee members. Each of the 10 new monitoring stations will have the same monitoring frequency as other sites monitored by H-GAC. Field, conventional, nutrients and bacteria will be collected as listed in the partner's A7.1 tables. The following additions have been made to the monitoring schedule.

Texas Research Institute for Environmental Studies (TRIES)

- TRIES shall start sampling the 10 new locations after this QAPP appendix is approved by TCEQ.
- TRIES will collect samples once during the non-INDEX period, twice during the INDEX period and once during the CRITICAL period between QAPP approval and August 31, 2107.

Site Selection Criteria

(As described in Appendix B of the regional QAPP.)

Critical vs. non-critical measurements

(As described in Appendix B of the regional QAPP.)

Monitoring Sites for this Watershed

(As described in Appendix B of the regional QAPP.)

Table B1.1 Sample Design and Schedule, FY 2017

Site Description	Station ID	Waterbody ID	Basin	Region	SE	CE	MT	Field	Conv	Bacteria	Flow	24 hr DO	Metal Water	Comments
WINTERS BAYOU AT FM 2929 / FOUR NOTCH ROAD 4.8 KILOMETERS SOUTH OF PHELPS IN WALKER COUNTY	21933	1003A	10	12	HG	TF	RT	4	4	4	4			Added for FY2017 only
BOSWELL CREEK AT FOUR NOTCH ROAD / BOSWELL ROAD 13 KILOMETERS NORTHEAST OF NEW WAVERLY IN WALKER COUNTY	21934	1003A	10	12	HG	TF	RT	4	4	4	4			Added for FY2017 only
WINTERS BAYOU AT FM 2693 IN SAN JACINTO COUNTY	21935	1003A	10	10	HG	TF	RT	4	4	4	4			Added for FY2017 only
WINTERS BAYOU AT SH 150 IN SAN JACINTO COUNTY	21936	1003A	10	10	HG	TF	RT	4	4	4	4			Added for FY2017 only
WINTERS BAYOU AT DABNEY BOTTOM RD IN SAN JACINTO COUNTY	21937	1003A	10	10	HG	TF	RT	4	4	4	4			Added for FY2017 only
NEBLETTS CREEK AT FM 1725 IN SAN JACINTO COUNTY	21938	1003A	10	10	HG	TF	RT	4	4	4	4			Added for FY2017 only
EAST FORK SAN JACINTO RIVER AT NORTH BUTCH ARTHUR ROAD IN SAN JACINTO COUNTY	21939	1003	10	10	HG	TF	RT	4	4	4	4			Added for FY2017 only
EAST FORK SAN JACINTO RIVER DOWNSTREAM OF FM 945 5.6 MILES NORTH OF CLEVELAND	11237	1003	10	10	HG	TF	RT	4	4	4	4			Added for FY2017 only
EAST FORK SAN JACINTO RIVER IMMEDATELY DOWNSTREAM OF US 59 AT RED GULLY	14242	1003	10	12	HG	TF	RT	4	4	4	4			Added for FY2017 only
EAST FORK SAN JACINTO RIVER AT FM 2090 IN LIBERTY COUNTY	11236	1003	10	12	HG	TF	RT	4	4	4	4			Added for FY2017 only

APPENDIX SS-C: Map of all H-GAC and Local Partner Monitoring Stations in FY 2017

(This Appendix includes an updated CMS map including the newest monitoring being collected by TRIES.)

H-GAC's 2017 Regional Coordinated Monitoring Stations

APPENDIX SS-D: Field Form for Data Collection

(As described in Appendix D of the regional QAPP plus the following information addressing TRIES.)

Texas Research Institute for Environmental Studies - Sam Houston State University

Clean Rivers Program Field Data/Sampling Sheet

Station ID:_____ Date:_____ Sample Time: _____

Location:_____ Lat:_____ Long:_____

Collected By:_____

FIELD MEASUREMENTS (If < 1.5m deep - record @ 0.3m from surface; If≥ 1.5m deep - perform profile @ 0.3m from bottom, @ middle, and @ 0.3m from surface)

	1	2	3	4	5
Temp (C)					
Conductivity (uS)					
Salinity (psu)					
DO (%sat)					
DO mg/L					
pH					
Depth (m)					

FIELD OBSERVATIONS

	TOTAL DEPTH (m)		PRESENT WEATHER 1-clear 2-partly cloudy 3-cloudy 4-rain 5-other
	WATER ODOR 1-sewage 2-oily/chemical 3-rotten egg 4-musky 5-fishy 6-none 7-other		FLOW SEVERITY 1-no flow 2-low 3-normal 4-flood 5-high 6-dry
	WATER SURFACE 1-calm 2-ripples 3-waves 4-whitecap		FLOW (cfs)
	WIND INTENSITY 1-calm 2-slight 3-moderate 4-strong		FLOW METHOD 1-gage 2-electric 3-mechanical 4-weir/flume 5-doppler
	WATER COLOR 1-brownish 2-reddish 3-greenish 4-blackish 5-clear 6-other		SECCHI DISK (m)
	TIDE STAGE 1-low 2-falling 3-slack 4-rising 5-high		RECREATIONAL USE 1=1° observed, 2=2° observed, 3=non-contact observed, 4=1° evidence, 5=2° evidence, 6=non-contact evidence, 7=no evidence
	DAYS SINCE LAST SIG. RAINFALL		Primary Contact Rec. Observed (enter number of people)
			Evidence of Primary Contact Rec. Observed 0= no evidence observed, 1= evidence observed

WATER SAMPLES

☐ **FRESH** (Non-Tidal) ☐ **MARINE** (Tidal) Field Split Collected (yes/no)

☐ *E. coli* ☐ *Enterococcus*

Container	Preservative	Analysis Requested	Comments
2 x 1L - Plastic	Ice	TSS	
2 x 1L - Plastic	Ice, 2 mL H_2SO_4 added	NH_3, TPO_4, NO_2+NO_3	
2 x 500ml - Plastic	Ice, 1 mL H_2SO_4 added	TKN	
2 x 500ml - Plastic	Ice	Cl, SO_4 (fresh water only)	
2 x 4L - Plastic (amber)	Ice	Chlorophyll-*a* (select sites)	
1 x 100ml - Plastic	Ice, $Na_2S_2O_3$ tablet	Bacteria (Entero and/or *E. coli*)	

ADDITIONAL INFORMATION & REMARKS

* If site is dry, determine if there is any pool with 500m reach, If pool(s) exists (> 10 m in length and 0.4m deep) record: Lat _____ Long_____ of largest pool in reach Maximum pool width_____(m), Maximum pool depth _____ (m), Pool length _____(m), and percent pool coverage in 500m reach _____%.

APPENDIX SS-E: Chain of Custody Forms for Eastex and TRIES Laboratories

(As described in Appendix E of the regional QAPP plus the following information addressing TRIES.)

Texas Research Institute for Environmental Studies (TRIES)

2424 Sam Houston Avenue, Suite B-8
Huntsville, Texas 77340
Phone: 936-294-2501 Fax: 936-294-3822

ANALYSIS REQUESTED

Company	Remarks:																							
Address																								
Attn:																								
Phone#																								
P.O. #																								
Sampler's Name (print)	**Sampler's Signature**																							
Project Number	**Project Name: Clean Rivers Program East Fork San Jacinto River watershed**									Containers														
Sample ID	**Date**	**Time**	**C or G**	**DO**	**pH**	**Cl2**	**Flow**	**Temp**	**Matrix**	**#**	**size**	**type**	**pres**											
Relinquished By:		Date		Time		Received By:							Date		Time									
Relinquished By:		Date		Time		Received By and/or Checked In By:							Date		Time									
LAB USE ONLY Sample Condition Acceptable: YES / NO				Temp ° C		Logged In By:							Date		Time									
Alternate Check In:		Date		Time																				

Received Iced: YES / NO

Received Iced: YES / NO

See back for instructions

APPENDIX SS-F: Data Review Checklist for Submitting Data to H-GAC

(As described in Appendix F of the regional QAPP.)

APPENDIX SS-G: Data Summary Report for H-GAC to Submit Data to TCEQ

(As described in Appendix G of the regional QAPP.)

APPENDIX SS-H: Data Management Process

(As described in Appendix H of the regional QAPP.)

APPENDIX SS-I: Data Management Plan

(As described in Appendix I of the regional QAPP.)