

# **Amendment #1 Update to the San Antonio River Authority Clean Rivers Program FY 2024/2025 QAPP**

***Prepared by the San Antonio River  
Authority in Cooperation with the Texas  
Commission on Environmental Quality  
(TCEQ)***

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**Effective: Immediately upon approval by all parties**

Questions concerning this QAPP Amendment should be directed to:

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## Justification

This document details the changes made to the basin wide QAPP to update language regarding limits of quantitation (LOQs) in sections A7 and B5, and updates to Appendix B for fiscal year 2025. Additional modifications include the removal of the City of Boerne as a sub-participant in the SARB Clean River Program; these changes impact sections A3, A4, A6, A9, B10 and D2. Staffing changes for the San Antonio River Authority are included to replace Christopher Vaughn with Austin Davis; these changes impact sections A3 and A4. Appendix D updates include the addition of Survey123 data collection for nekton and habitat events.

**Red font** = change by TCEQ CRP Project QA Specialist

**Green highlight** = change by San Antonio River Authority

**Strikethrough font** = deletion of text from previous QAPP document (highlighted **green** for change by San Antonio River Authority/**red text** for change by TCEQ CRP Project QA Specialist)

## Summary of Changes

Section	Sub-section/ Figure/Table	Page(s) in Basin- wide QAPP	Change	Justification	Affected Entity	Page(s) in this Amendment
A1	Signature Blocks	2-8	Remove City of Boerne	City of Boerne will no longer conduct monitoring in support of the SARB Clean Rivers Program.	City of Boerne/ SARA	6-8
A3	Distribution List	11-12	Remove City of Boerne from QAPP distribution list, replace Christopher Vaughn with Austin Davis in SARA staffing	City of Boerne will no longer conduct monitoring in support of the SARB Clean Rivers Program and address staffing changes at SARA	City of Boerne/ SARA	9-11
A4	Project/Task Organization	13-17	Remove City of Boerne from Description of Responsibilities, replace Christopher Vaughn with Austin Davis in	City of Boerne will no longer conduct monitoring in support of the SARB Clean Rivers	City of Boerne/ SARA	12-16

Section	Sub-section/ Figure/Table	Page(s) in Basin- wide QAPP	Change	Justification	Affected Entity	Page(s) in this Amendment
			SARA staffing	Program and address staffing changes at SARA		
A4	Project/Tak Organization  Figure A4.1	18	Remove City of Boerne from Organization Chart, replace Christopher Vaughn with Austin Davis in SARA staffing	City of Boerne will no longer conduct monitoring in support of the SARB Clean Rivers Program and address staffing changes at SARA	City of Boerne/ SARA	17
A6	Project/Task Description	19	Removed City of Boerne. Changed FY 2024 to FY 2025.	City of Boerne will no longer conduct monitoring in support of the SARB Amendment is for new FY 2025.	City of Boerne/BCRAGD/SAR A	18
A7	Ambient Water Reporting Limits (AWRLs)	21-22	Modified language concerning allowable LOQs.	To adjust language used in current CRP QAPPs that does not align with TCEQ CRP's stance on allowable LOQs.	SARA/DHL/ LCRA	19
A8	Special Training/Certification	23	Remove reference to City of Boerne	City of Boerne will no longer conduct monitoring in support of the SARB	City of Boerne	19
A9	Documents and Records Table A9.1	23-24	Remove City of Boerne as a sub-participant	City of Boerne will no longer	City of Boerne/ SARA	20

Section	Sub-section/ Figure/Table	Page(s) in Basin- wide QAPP	Change	Justification	Affected Entity	Page(s) in this Amendment
				conduct monitoring in support of the SARB Clean Rivers Program		
B5	Quality Control or Acceptability Requirements, Deficiencies, and Corrective Actions	35	Modified language concerning allowable LOQs.  Typo correction to first paragraph	To adjust language used in current CRP QAPPs that does not align with TCEQ CRP's stance on allowable LOQs.	SARA/DHL/ LCRA	21
B10	Data Management Table B10.1	39	Remove City of Boerne as a sub-participant. Remove BS monitoring for Bandera County.	City of Boerne will no longer conduct monitoring in support of the SARB Clean Rivers Program. Bandera County will not be doing BS monitoring.	SARA/City of Boerne	22
D2	Verification and Validation Methods Table D2.1	47	Remove City of Boerne as a sub-participant	City of Boerne will no longer conduct monitoring in support of the SARB Clean Rivers Program	City of Boerne/ SARA	23-24
Appendix A	Measurement Performance Specifications Table A7.1 and Table A7.2	51-52	Remove City of Boerne as a sub-participant	City of Boerne will no longer conduct monitoring in support of the SARB	City of Boerne/ SARA	25-26

Section	Sub-section/ Figure/Table	Page(s) in Basin- wide QAPP	Change	Justification	Affected Entity	Page(s) in this Amendment
				Clean Rivers Program		
Appendix B	Task 3 Work Plan & sampling Process Design	70-71	Updated fiscal year throughout from 2024 to 2025.	Changes to Appendix B in this amendment are to reflect FY 2025 monitoring, not FY 2024 monitoring.	SARA and BCRA GD	27-29
Appendix B	Table B1.1	73-80	Updated Table B1.1 to reflect modifications to sampling design for the new fiscal year (2025).	Sampling design has changed from FY 2024 to FY 2025 changes in sampling frequency and removal of City of Boerne as a sub-participant.	SARA and BCRA GD	30-36
Appendix C	Station Location Maps	82-83	Updated maps of monitoring stations to reflect modifications to sampling design for the new fiscal year (2025).	Sites were added and dropped for FY25 monitoring and removal of City of Boerne as a sub-participant.	SARA and BCRA GD	37-38
Appendix D	Forms	140	Add screenshots of Survey123 forms for nekton and habitat data collection. Remove City of Boerne.	Add alternative method of collecting nekton and habitat data for SARA. City of Boerne removed from QAPP.	SARA and City of Boerne	39-50

## Distribution

This QAPP amendment will be distributed by the San Antonio River Authority via email to all personnel on the distribution list (section A3 of the QAPP).

These changes will be incorporated into the QAPP document and TCEQ and the San Antonio River Authority will acknowledge and accept these changes by approving the final amendment draft electronically via email.

Replaces pages 2-8 in FY 2024-2025 QAPP.

## Texas Commission on Environmental Quality

### *Water Quality Planning Division*

Electronically Approved	8/19/2024
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Sarah Whitley, Team Leader Water Quality Standards and Clean Rivers Program	Date

Electronically Approved	8/19/2024
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Lawrence Grant Bassett Project Quality Assurance Specialist Clean Rivers Program	Date

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Lawrence Grant Bassett, Project Manager Clean Rivers Program	Date

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Cathy Anderson, Team Leader Data Management and Analysis	Date

### *Monitoring Division*

Electronically Approved	8/20/2024
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Jason Natho Acting Lead CRP Quality Assurance Specialist	Date

**San Antonio River Authority**

Electronically Approved      8/16/2024  
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CRP Project Manager

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Patricia M. Carvajal      Date  
CRP Quality Assurance Officer

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Electronically Approved      8/16/2024  
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Laboratory Supervisor

Electronically Approved      8/19/2024  
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Laboratory Quality Assurance Officer

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General Manager

Electronically Approved      8/16/2024  
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Cint Carter      Date  
Field Operations Manager

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Electronically Approved 8/16/2024

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Laboratory Lead Analyst

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Kylie Gudgell Date  
Quality Assurance Officer

## DHL Laboratory

Electronically Approved 8/16/2024

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John Dupont Date  
General Manager

Electronically Approved 8/16/2024

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Sherri Herschmann Date  
Quality Assurance Officer

## City of Boerne

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Ryan Bass  
Date  
Environmental Planner / Urban Forester

## Bio-West, Inc

Electronically Approved 8/16/2024

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Brad Littrell Date  
Aquatic Ecologist / Project Manager



## Detail of Changes

Replaces pages 11-12 of FY 2024-2025 QAPP.

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The San Antonio River Authority 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. The San Antonio River Authority will document distribution of the plan and any amendments and appendices, maintain this documentation as part of the project's quality assurance records, and ensure the documentation is available for review.

## **A4 PROJECT/TASK ORGANIZATION**

### **Description of Responsibilities**

#### ***TCEQ***

##### ***Sarah Whitley***

##### ***Team Leader, Water Quality Standards and Clean Rivers Program***

Responsible for Texas Commission on Environmental Quality (TCEQ) activities supporting the development and implementation of the Texas Clean Rivers Program (CRP). Responsible for verifying that the TCEQ Quality Management Plan (QMP) is followed by CRP staff. Supervises TCEQ CRP staff. Reviews and responds to any deficiencies, corrective actions, or findings related to the area of responsibility. Oversees the development of Quality Assurance (QA) guidance for the CRP. Reviews and approves all QA audits, corrective actions, reports, work plans, contracts, QAPPs, and TCEQ QMP. Enforces corrective action, as required, where QA protocols are not met. Ensures CRP personnel are fully trained.

##### ***Jason Natho***

##### ***Acting CRP Lead Quality Assurance Specialist***

Participates in the development, approval, implementation, and maintenance of written QA standards (e.g., Program Guidance, SOPs, QAPPs, QMP). Assists program and project manager in developing and implementing quality system. Conducts monitoring systems audits of Planning Agencies. Concurs with corrective actions. Conveys QA problems to appropriate management. Recommends that work be stopped in order to safeguard programmatic objectives, worker safety, public health, or environmental protection. Ensures maintenance of audit records for the CRP.

##### ***Grant Bassett***

##### ***CRP Project Manager***

Responsible for the development, implementation, and maintenance of CRP contracts. Tracks, reviews, and approves deliverables. Participates in the development, approval, implementation, and maintenance of written QA standards (e.g., Program Guidance, SOPs, QAPPs, QMP). Assists CRP Lead QA Specialist in conducting San Antonio River Authority audits. Verifies QAPPs are being followed by contractors and that projects are producing data of known quality. Coordinates project planning with the San Antonio River Authority Project Manager. Reviews and approves data and reports produced by contractors. Coordinates the review and approval of CRP QAPPs in coordination with the CRP Quality Assurance Specialist. Ensures maintenance of QAPPs. Notifies QA Specialists of circumstances which may adversely affect the quality of data derived from the collection and analysis of samples. Develops, enforces, and monitors corrective action measures to ensure contractors meet deadlines and scheduled commitments.

##### ***Cathy Anderson***

##### ***Team Leader, Data Management and Analysis (DM&A) Team***

Participates in the development, approval, implementation, and maintenance of written QA standards (e.g., Program Guidance, SOPs, QAPPs, QMP). Ensures DM&A staff perform data management-related tasks.

##### ***Scott Delgado***

##### ***CRP Data Manager, DM&A Team***

Responsible for coordination and tracking of CRP data sets from initial submittal through CRP Project Manager review and approval. Ensures that data are reported following instructions in the Data

Management Reference Guide, July 2019 or most current version (DMRG). Runs automated data validation checks in the Surface Water Quality Management Information System (SWQMIS) and coordinates data verification and error correction with CRP Project Managers. Generates SWQMIS summary reports to assist CRP Project Managers' data review. Identifies data anomalies and inconsistencies. Provides training and guidance to CRP and Planning Agencies on technical data issues to ensure that data are submitted according to documented procedures. Reviews QAPPs for valid stream monitoring stations. Checks validity of parameter codes, submitting entity code(s), collecting entity code(s), and monitoring type code(s). Develops and maintains data management-related SOPs for CRP data management. Coordinates and processes data correction requests. Participates in the development, implementation, and maintenance of written QA standards (e.g., Program Guidance, SOPs, QAPPs, QMP).

***Grant Bassett***

***CRP Project Quality Assurance Specialist***

Serves as liaison between CRP management and TCEQ QA management. Participates in the development, approval, implementation, and maintenance of written QA standards (e.g., Program Guidance, SOPs, QAPPs, QMP). Serves on planning team for CRP special projects. Reviews and approves CRP QAPPs in coordination with other CRP staff. Coordinates documentation and monitors implementation of corrective action for the CRP.

***SAN ANTONIO RIVER AUTHORITY***

***Rebecca S. Reeves***

***San Antonio River Authority Project Manager***

Responsible for implementing and monitoring CRP requirements in contracts, QAPPs, and QAPP amendments and appendices. Coordinates basin planning activities and work of basin partners. Ensures monitoring systems audits are conducted to ensure QAPPs are followed by San Antonio River Authority participants and that projects are producing data of known quality. Ensures that subparticipants are qualified to perform contracted work. Ensures CRP project managers and/or QA Specialists are notified of deficiencies and corrective actions, and that issues are resolved.

***Christopher Vaughn***

***San Antonio River Authority Watershed Monitoring Supervisor***

***Austin Davis***

***San Antonio River Authority Senior Aquatic Biologist***

Responsible for the sample collection activities and ensures that they are performed in accordance with the appropriate Clean Rivers Program requirements. Schedules sampling runs to meet the monitoring outlines in the Coordinated Monitoring Schedule. Ensures that the CRP Project Manager and/or QA staff are notified of deficiencies or corrective actions, and that issues are resolved.

***Patricia M. Carvajal***

***San Antonio River Authority Quality Assurance Officer***

Responsible for coordinating the implementation of the QA program. Responsible for writing and maintaining the QAPP and monitoring its implementation. Responsible for maintaining records of QAPP distribution, including appendices and amendments. Responsible for maintaining written records of sub-tier commitment to requirements specified in this QAPP. Responsible for identifying, receiving, and maintaining project QA records. Responsible for coordinating with the CRP Project QAS to resolve QA-related issues. Notifies the San Antonio River Authority Project Manager of particular circumstances which may adversely affect the quality of data. Coordinates and monitors deficiencies and corrective action. Coordinates and maintains records of data verification and validation. Coordinates the research and review of technical QA material and data related to water quality monitoring system design and analytical techniques. Ensures that monitoring systems audits are performed on project participants to determine compliance with project and program specifications, issues written reports, and follows through on findings. Ensures that field staff is

properly trained and that training records are maintained.

***Nicholas Johnson***

***San Antonio River Authority Quality Assurance Specialist***

Responsible for performing data review and validation of data collected in the field including field parameters, field observations, biological, habitat and benthic macroinvertebrate data. Participates in or conducts assessments of field activities of CRP partners.

***Michelle M. Garza***

***San Antonio River Authority Data Manager***

Responsible for delivering monitoring data to TCEQ in accordance with the program's requirements and timelines. Ensures data submittals comply and reconcile with the parameters and monitoring sites identified in the QAPP and amendments and generates data summary reports to document data deliverable content, inconsistencies, and errors. Oversees the transfer and management of program data into San Antonio River Authority public facing water quality viewers.

***SARA-REL***

***Zachary Jendrusch***

***Laboratory Supervisor***

Responsible for overall performance, administration, and reporting of analyses performed by SARA's Laboratory. Responsible for supervision of laboratory personnel involved in generating analytical data for the project. Ensures that laboratory personnel have adequate training and a thorough knowledge of this QAPP and related SOPs. Responsible for oversight of all laboratory operations ensuring that all QA/QC requirements are met, documentation is complete and adequately maintained, and results are reported accurately. Additionally, the lab supervisor ensures that all laboratory data is reviewed and verified for integrity and continuity, reasonableness and conformance to project requirements, and then validated against the data quality objectives listed in Appendix A of this QAPP.

***Jeanette Hernandez***

***Laboratory Quality Assurance Officer***

Responsible for the overall quality control and quality assurance of analyses performed by SARA's Laboratory. Ensures that internal assessments are performed in accordance with laboratory accreditation requirements. Maintains operating procedures that are in compliance with this QAPP, amendments and appendices. Conducts in-house audits to ensure compliance with written SOPs, NELAP requirements and to identify potential problems. Reviews and verifies laboratory data for integrity and continuity, reasonableness and conformance to project requirements, and then validates against the measurement performance specifications listed in this QAPP.

***Bandera County River Authority & Groundwater District***

***David Mauk***

***General Manager***

Coordinates basin planning activities with the San Antonio River Authority. Ensures SARA CRP project manager and/or QA Specialists are notified of deficiencies and corrective actions, and that issues are resolved. Ensures that field staff is properly trained and that training records are maintained.

***Clint Carter***

***Field Operations Manager***

Responsible for conducting routine monitoring in support of this QAPP. Responsible for implementing and monitoring CRP requirements in QAPPs and QAPP amendments and appendices. Responsible for coordinating with the SARA QA staff to resolve QA-related issues. Notifies the SARA QA staff of particular circumstances which may adversely affect the quality of data. Coordinates and monitors deficiencies and corrective action. Coordinates the research and review of technical QA material and data related to water quality monitoring system design and analytical techniques.

***DHL Laboratory***

***John DuPont***

***General Manager***

Responsible for overall performance, administration, and reporting of analyses performed by DHL's Laboratory. Responsible for supervision of laboratory personnel involved in generating analytical data for the project. Ensures that laboratory personnel have adequate training and a thorough knowledge of this QAPP and related SOPs. Responsible for oversight of all laboratory operations ensuring that all QA/QC requirements are met, documentation is complete and adequately maintained, and results are reported accurately. Additionally, ensures that all laboratory data is reviewed and verified for integrity and continuity, reasonableness and conformance to project requirements, and then validated against the data quality objectives listed in Appendix A of this QAPP.

***Sherri Herschmann***

***Quality Assurance Officer***

Maintains operating procedures that are in compliance with this QAPP, amendments and appendices. Responsible for the overall quality control and quality assurance of analyses performed by DHL's Laboratory. Ensures that internal assessments are performed in accordance with laboratory accreditation requirements.

***GBRA Laboratory***

***Miliana Hernandez***

***Laboratory Lead Analyst***

Performs laboratory analyses and notifies the GBRA QAO of particular circumstances which may adversely affect the quality of data. Performs sample custodial duties. Reviews and verifies laboratory data for integrity, continuity, reasonableness, and validates the lab data against the measurement performance specifications listed in this QAPP.

***Kylie Gudgell***

***Quality Assurance Officer***

Maintains operating procedures that are in compliance with this QAPP, amendments and appendices. Responsible for the overall quality control and quality assurance of analyses performed by GBRA's Laboratory. Ensures that internal assessments are performed in accordance with laboratory accreditation requirements.

***City of Boerne***

***Ryan Bass***

***Environmental Planner/Urban Forester***

**Coordinates basin planning activities with the San Antonio River Authority. Ensures SARA CRP**

project manager and/or QA Specialists are notified of deficiencies and corrective actions, and that issues are resolved. Responsible for implementing and monitoring CRP requirements in QAPPs and QAPP amendments and appendices. Responsible for conducting monitoring in support of this QAPP. Notifies the SARA QA staff of particular circumstances which may adversely affect the quality of data. Coordinates and monitors deficiencies and corrective action. Coordinates the research and review of technical QA material and data related to water quality monitoring system design and analytical techniques.

**Larry Thomas**

***Field Data Collector***

Responsible for conducting routine monitoring in support of this QAPP. Responsible for implementing and monitoring CRP requirements in QAPPs and QAPP amendments and appendices. Responsible for ensuring that sample documentation is complete, sample containers are labeled, and sites identified. Ensures sample collection is consistent with SOPs and QAPP. Ensures all field documentation and instrument calibration data is complete.

**Bio-West**

**Brad Litrell**

***Aquatic Ecologist/Project Manager***

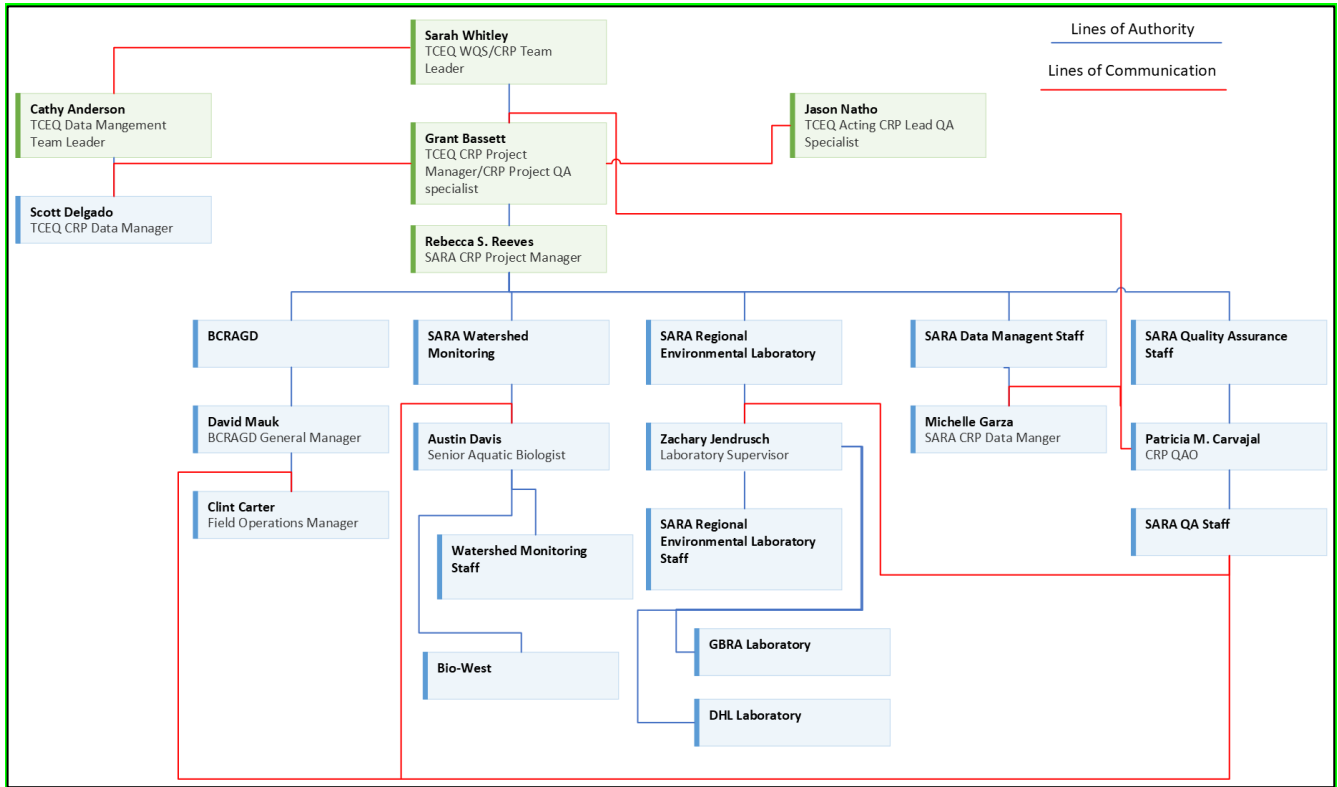
Responsible for the coordination of benthic macro-invertebrate organism identification activities and ensuring that the information is provided to the SARA Watershed Monitoring Team. Responsible for ensuring SARA staff are notified of issues which may adversely affect the quality of data. Coordinates and monitors deficiencies and corrective action related to the identification of benthic macroinvertebrate samples.



Replaces page 18 of FY 2024-2025 QAPP:

## Project Organization Chart

**Figure A4.1. Organization Chart - Lines of Communication**



Replaces portion of page 19 of FY 2024-2025 QAPP:

## A6 Project/Task Description

In support of the TCEQ CRP long term goal to maintain and improve water quality within each river basin in Texas, SARA maintains routine, systematic and biological monitoring stations to help characterize and detect any water quality changes within the San Antonio River Basin. The Bandera County River Authority and Groundwater District (BCRAGD) and city of Boerne (COB), sub-participant under SARA's QAPP, also collects routine water quality data in the basin and submits data to the TCEQ through the SARA CRP. Routine monitoring for FY2025 includes 69 stations monitored a minimum of four times per year for field, conventional, and bacteria parameter groups. Routine flow will be collected at 61 sites. Metals in water will be collected at 7 stations, biochemical oxygen demand will be collected at 5 stations and chlorophyll/pheophytin will be collected at 51 stations. In FY2025, habitat, nekton, and flow measurements will be collected at 14 stations. 24-hour diel measurements will be conducted at 17 stations. Benthic samples will be collected at 6 stations. With input from SARA's CRP Environmental Advisory Committee as well as other entities performing monitoring in the basin, the location, frequency, and variation of all monitoring sites and scheduled parameters are determined at the annual Coordinated Monitoring Meeting. Details of the monitoring schedule, parameters, and sampling locations are included in Appendix B.

GBRA Laboratory and DHL Laboratory are utilized as back-up laboratories and will be used in the event that the SARA Laboratory is unable to analyze samples.

Identification of benthic macroinvertebrate organisms will be performed by Bio-West staff.

See Appendix B for the project-related work plan tasks and schedule of deliverables for a description of work defined in this QAPP.

See Appendix B for sampling design and monitoring pertaining to this QAPP.

Modifies pages 21-22 of FY 2024-2025 QAPP:

## A7 Quality Objectives and Criteria

### Ambient Water Reporting Limits (AWRLs)

For surface water to be evaluated for compliance with Texas Surface Water Quality Standards (“TSWQS”) and screening levels, data must be reported at or below specified reporting limits. To ensure data are collected at or below these reporting limits, required ambient water reporting limits (“AWRL”) have been established. A full listing of AWRLs can be found at <https://www.tceq.texas.gov/assets/public/waterquality/crp/OA/awrlmaster.pdf>.

The limit of quantitation (LOQ) is the minimum reporting limit, concentration, or quantity of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence by the laboratory analyzing the sample. Analytical results shall be reported down to the laboratory’s LOQ (i.e., the laboratory’s LOQ for a given parameter is its reporting limit) as specified in Appendix A.

The following requirements must be met in order to report results to the CRP:

- The laboratory’s LOQ for each analyte must be set at or below the AWRL.
- Once the LOQ is established in the QAPP, that is the reporting limit for that parameter until such time as the laboratory amends the QAPP and lists an updated LOQ.
- The laboratory must demonstrate its ability to quantitate at its LOQ for each analyte by running an LOQ check sample for each analytical batch of CRP samples analyzed.
- ~~When reporting data, no results~~ Under reasonable circumstances (e.g., the use of a subcontracted lab), data may be reported above or below the LOQ stated in this QAPP, so long as the LOQ remains at or below the AWRL stated in this QAPP.
- Measurement performance specifications for LOQ check samples are found in Appendix A.

Laboratory Measurement Quality Control Requirements and Acceptability Criteria are provided in Section B5.

Modifies specific text page 23 of FY 2024-2025 QAPP:

## A8 Special Training/Certification

Training for COB staff is performed in accordance with the procedures of the City of Boerne.

Replaces specific text from pages 23-24 of FY 2024-2025 QAPP:

## A9 Documents and Records

The documents and records that describe, specify, report, or certify activities are listed. The list below is limited to documents and records that may be requested for review during a monitoring systems audit.

**Table A9.1 Project Documents and Records**

Document/Record	Location	Retention (yrs)	Format
QAPPs, amendments and appendices	San Antonio River Authority, DHL, BCRA GD, GBRA, Bio-West, COB	Minimum 5 years	Paper/Electronic
Field SOPs	San Antonio River Authority, BCRA GD, COB	Minimum 5 years	Paper/Electronic
Laboratory Quality Manuals	San Antonio River Authority GBRA, DHL	Minimum 5 years	Paper/Electronic
Laboratory SOPs	San Antonio River Authority GBRA, DHL	Minimum 5 years	Paper/Electronic
QAPP distribution documentation	San Antonio River Authority	Minimum 5 years	Paper/Electronic
Field staff training records	San Antonio River Authority, BCRA GD, COB	Minimum 5 years	Paper/Electronic
Field equipment calibration/maintenance logs	San Antonio River Authority, BCRA GD, COB	Minimum 5 years	Paper/Electronic
Field instrument printouts	San Antonio River Authority, BCRA GD, COB	Minimum 5 years	Paper/Electronic
Field notebooks or data sheets	San Antonio River Authority, BCRA GD, Bio-West, COB	Minimum 5 years	Paper/Electronic
Chain of custody records	San Antonio River Authority GBRA, DHL, Bio-West, COB	Minimum 5 years	Paper/Electronic
Laboratory calibration records	San Antonio River Authority GBRA, DHL	Minimum 5 years	Paper/Electronic
Laboratory instrument printouts	San Antonio River Authority GBRA, DHL	Minimum 5 years	Paper/Electronic
Laboratory data reports/results	San Antonio River Authority GBRA, DHL	Minimum 5 years	Paper/Electronic
Laboratory equipment maintenance logs	San Antonio River Authority GBRA, DHL	Minimum 5 years	Paper/Electronic
Corrective Action Documentation	San Antonio River Authority, DHL, BCRA GD, GBRA, Bio-West, COB	Minimum 5 years	Paper/Electronic
Benthic Macroinvertebrate Identification Records	San Antonio River Authority, Bio-West	Minimum 5 years	Paper/Electronic

Replaces specific text from page 35 of the FY 2024-2025 QAPP:

## **B5 Quality Control**

### **Quality Control or Acceptability Requirements, Deficiencies, and Corrective Actions**

Sampling QC excursions are evaluated by the San Antonio River Authority CRP QAO, in consultation with the San Antonio River Authority CRP Project Manager. In that differences in sample results are used to assess the entire sampling process, including environmental variability, the arbitrary rejection of results based on predetermined limits is not practical. Therefore, the professional judgment of the San Antonio River Authority CRP Project Manager and San Antonio River Authority CRP QAO will be relied upon in evaluating results.

Field blanks and field equipment blanks are associated with batches of field samples. In the event of a field blank or equipment blank failure, any target analytes in the ambient sample associated with the field blank or equipment blank will not be reported.

Laboratory measurement quality control failures are evaluated by the laboratory staff. The disposition of such failures and the nature and disposition of the failure is reported to the Laboratory QAO. The Laboratory QAO will discuss the failure with the San Antonio River Authority CRP Project Manager and San Antonio River Authority CRP QAO. If applicable, the San Antonio River Authority Project Manager will include this information in a CAP and submit with the Progress Report which is sent to the TCEQ CRP Project Manager.

The definition of and process for handling deficiencies and corrective action are defined in Section C1.

Additionally, in accordance with CRP requirements and the 2016 TNI Standard (Volume 1, Module 2, Section 4.5, Subcontracting of Environmental Tests) when a laboratory that is a signatory of this QAPP finds it necessary and/or advantageous to subcontract analyses, the laboratory that is the signatory on this QAPP must ensure that the subcontracting laboratory is NELAP-accredited (when required) and understands and follows the QA/QC requirements included in this QAPP. This includes **confirming** that the sub-contracting laboratory **has LOQs at or below TCEQ AWRLs utilize the same reporting limits as the signatory laboratory** and performs all required quality control analysis outlined in this QAPP. The signatory laboratory is also responsible for quality assurance of the data prior to delivering it to San Antonio River Authority, including review of all applicable QC samples related to CRP data. As stated in section 4.5.5 of the 2016 TNI Standard, the laboratory performing the subcontracted work shall be indicated in the final report and the signatory laboratory shall make a copy of the subcontractor's report available to the client (San Antonio River Authority) when requested.

Replaces Table B10.1 and specific text from Record Keeping and Data Storage from page 39 of the FY 2024-2025 QAPP.

## B10 Data Management

**Table B10.1 Monitoring Entity**

Name of Entity	Tag Prefix	Submitting Entity	Collecting Entity	Monitoring Type(s)
San Antonio River Authority	SA	SA	SA	RT, BS
Bandera County River Authority and Groundwater District	SA	SA	BA	RT, BS
City of Boerne	SA	SA	BC	RT

### Data Errors and Loss

Each step of the data collection is reviewed by another analyst, supervisor(s) and/or the QA staff. In the San Antonio River Authority Laboratory, data is reviewed by a peer analyst prior to analysis validation. The SARA QA staff also conducts periodic internal audits; this includes conducting data reviews to ensure proper method, SOP, chemicals and techniques are used in the generation of data. Required quality control and calculations are clearly shown in each analysis's SOP. Generalized procedures are covered by the Laboratory's QAM or General Laboratory SOPs. The Laboratory Supervisor and the Laboratory QAO are provided with the CRP QAPP, so they are familiar with the program specific criteria.

The SARA QA staff conduct periodic data integrity reviews (where traceability and calculations are checked); this includes conducting observations to ensure proper methods and techniques are being used in the collection of field samples. A system is in place that identifies non-conformances and implements corrective actions.

The Data Manager notifies the QA staff when an error is suspected, or information is missing. If an error or missing information is confirmed, the QA staff coordinates corrective actions for resolution. Corrective actions can range from re-sampling, re-analysis, qualifying data, or omitting data from the deliverable. Data loss is identified in the data deliverable process through the Data Summary and Review Checklist (Appendix F). If resolution of errors requires modifying results, data is updated and notated on all associated documents and databases - chain of custody, benchsheets, spreadsheets, LIMS. If errors are found after the data has been submitted and approved by TCEQ, those errors are corrected by the Data Manager per TCEQ's Data Correction Request process.

To mitigate the potential for data loss, the databases and servers are backed up nightly and copies of the files are stored off-site. If the laboratory database or network server fails, the back-up files can be accessed to restore operation or replace corrupted files.

### Record Keeping and Data Storage

San Antonio River Authority record keeping and document control procedures are contained in the water quality sampling, laboratory SOPs and this QAPP. Original field and laboratory data sheets are stored in accordance with the record-retention schedule in Section A9. This includes field data collected by BCRA GD and COB. Laboratory data for outsourced laboratory analysis will be retained at their respective facilities in accordance with the schedule in Table A9.1.

Replaces Table D2.1 from page 47 of the FY 2024-2025 QAPP

## D2 Verification and Validation Methods

### Table D2.1: Data Review Tasks

Data to be Verified	Field Task	Laboratory Task	Quality Assurance Task	Lead Organization Data Manager Task
Sample documentation complete; samples labeled; sites identified	SARA WMS BCRAGD, COB	Lab QAO	SARA QAO	
Field QC samples collected for all analytes as prescribed in the TCEQ SWQM Procedures Manual	SARA WMS BCRAGD, COB		SARA QAO	
Standards and reagents traceable	SARA WMS BCRAGD, COB	SARA LS Lab QAO	QA Staff	
Chain of custody complete/acceptable	SARA WMS BCRAGD, COB	SARA LS Lab QAO	SARA QAO	
NELAP Accreditation is current		SARA LS	SARA QAO	
Sample preservation and handling acceptable		SARA LS Lab QAO	SARA QAO	
Holding times not exceeded		SARA LS	SARA QAO	
Collection, preparation, and analysis consistent with SOPs and QAPP	SARA WMS BCRAGD, COB	SARA LS Lab QAO	SARA QAO	
Field documentation (e.g., biological, stream habitat) complete	SARA WMS		SARA QAO	
Laboratory Instrument calibration data complete		SARA LS Lab QAO	QA staff	
Bacteriological records complete		SARA LS Lab QAO	SARA QAO	
QC samples analyzed at required frequency		SARA LS Lab QAO	SARA QAO	
QC results meet performance and program specifications		SARA LS Lab QAO	SARA QAO	
Analytical sensitivity (Limit of Quantitation/Ambient Water Reporting Limits) consistent with QAPP		SARA LS Lab QAO	SARA QAO	
Results, calculations, transcriptions checked		SARA LS		
Laboratory bench-level review performed		SARA LS		
All laboratory samples analyzed for all scheduled parameters		SARA LS Lab QAO	SARA QAO	
Corollary data agree		SARA LS Lab QAO	SARA QAO	
Nonconforming activities documented	SARA WMS BCRAGD, COB	SARA LS	SARA QAO	
Outliers confirmed and documented; reasonableness check performed		SARA LS Lab QAO	SARA QAO	SARA DM
Dates formatted correctly				SARA DM
Depth reported correctly and in correct units	SARA WMS BCRAGD, COB	Lab QAO	SARA QAO	
TAG IDs correct				SARA DM
TCEQ Station ID number assigned				SARA DM
Valid parameter codes			SARA QAO	SARA DM
Codes for submitting entity(ies), collecting entity(ies), and monitoring type(s) used correctly			SARA QAO	SARA DM
Time based on 24-hour clock			SARA QAO	SARA DM
Absence of transcription error confirmed		Lab QAO	SARA QAO	
Absence of electronic errors confirmed			SARA QAO	
Sampling and analytical data gaps checked (e.g., all sites for which			SARA QAO	SARA DM

Data to be Verified	Field Task	Laboratory Task	Quality Assurance Task	Lead Organization Data Manager Task
data are reported are on the coordinated monitoring schedule)				
Field instrument pre and post calibration results within limits	SARA WMS BCRAGD, COB		SARA QAO	
10% of data manually reviewed		SARA LS Lab QAO	SARA QAO	
SARA WMS - SARA Watershed Monitoring Supervisor SARA LS - Laboratory Supervisor Lab QAO - Laboratory Quality Assurance Officer SARA QAO - SARA Quality Assurance Officer	SARA DM - SARA Data Manager BCRAGD - Bandera County River Authority & Groundwater District Field Operations Manager COB - City of Boerne Field Sample Collector			



Replaces pages 51-52 of the FY 2024-2025 QAPP

## Appendix A: Measurement Performance Specifications (Table A7.1–A7.11)

TABLE A7.1 Measurement Performance Specifications for SARA WM/BCRAGD/COB					
Field Parameters					
Parameter	Units	Matrix	Method	Parameter Code	Collecting Organization
TEMPERATURE, WATER (DEGREES CENTIGRADE)	DEG C	water	SM 2550 B and TCEQ SOP V1	00010	SARA-WM, BCRAGD, COB
TRANSPARENCY, SECCHI DISC (METERS)	meters	water	TCEQ SOP V1	00078	SARA-WM, BCRAGD, COB
SPECIFIC CONDUCTANCE, FIELD (US/CM @ 25C)	us/cm	water	EPA 120.1 and TCEQ SOP, V1	00094	SARA-WM, BCRAGD, COB
OXYGEN, DISSOLVED (MG/L)	mg/L	water	SM 4500-O G and TCEQ SOP V1	00300	SARA-WM, BCRAGD, COB
PH (STANDARD UNITS)	s.u	water	EPA 150.1 and TCEQ SOP V1	00400	SARA-WM, BCRAGD, COB
DAYS SINCE PRECIPITATION EVENT (DAYS) <sup>2</sup>	days	other	TCEQ SOP V1	72053	SARA-WM, BCRAGD, COB
DEPTH OF BOTTOM OF WATER BODY AT SAMPLE SITE <sup>1</sup>	meters	water	TCEQ SOP V2	82903	BCRAGD
RESERVOIR STAGE (FEET ABOVE MEAN SEA LEVEL) <sup>***1</sup>	FT ABOVE MSL	water	TWDB	00052	BCRAGD
RESERVOIR PERCENT FULL <sup>***1</sup>	% RESERVOIR CAPACITY	water	TWDB	00053	BCRAGD
RESERVOIR ACCESS NOT POSSIBLE LEVEL TOO LOW ENTER 1 IF REPORTING <sup>1</sup>	NS	other	TCEQ Drought Guidance	00051	BCRAGD
PRESENT WEATHER (1=CLEAR,2=PTCLDY,3=CLDY,4=RAIN,5=OTHER) <sup>2</sup>	NU	other	NA	89966	SARA-WM, BCRAGD, COB
WATER SURFACE(1=CALM,2=RIPPLE,3=WAVE,4=WHITECAP) <sup>1</sup>	NU	water	NA	89968	BCRAGD
WATER ODOR (1=SEWAGE, 2=OILY/CHEMICAL, 3=ROTTEN EGGS, 4=MUSKY, 5=FISHY, 6=NONE, 7=OTHER (WRITE IN COMMENTS)) <sup>2</sup>	NU	water	NA	89971	SARA-WM, BCRAGD, COB
WATER COLOR 1=BRWN 2=RED 3=GRN 4=BLCK 5=CLR 6=OT <sup>2</sup>	NU	water	NA	89969	SARA-WM, BCRAGD, COB

\*\*\* As published by the Texas Water Development Board on their website; <https://www.waterdatafortexas.org/reservoirs/statewide>

<sup>1</sup>Reported only by BCRAGD at reservoir sites

<sup>2</sup>Limited parameters recorded for River Recreation sites as appropriate

References:

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

U.S. Code of Federal Regulations (CFR). Title 40: Protection of Environment, Part 136

American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 23rd Edition, 2017.

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 A7.2 Measurement Performance Specifications for SARA WM/BCRAGD/~~COB~~**

Flow Parameters					
Parameter	Units	Matrix	Method	Parameter Code	Collecting organization
FLOW STREAM, INSTANTANEOUS (CUBIC FEET PER SEC) <sup>1</sup>	cfs	water	TCEQ SOP V1	00061	SARA-WM, BCRAGD, <del>COB</del>
FLOW SEVERITY:1=No Flow,2=Low,3=Normal,4=Flood,5=High,6=Dry <sup>1</sup>	NU	water	TCEQ SOP V1	01351	SARA-WM, BCRAGD, <del>COB</del>
STREAM FLOW ESTIMATE (CFS) <sup>1</sup>	cfs	Water	TCEQ SOP V1	74069	SARA-WM, BCRAGD, <del>COB</del>
FLOW MTH 1=GAGE 2=ELEC 3=MECH 4=WEIR/FLU 5=DOPPLER <sup>1</sup>	NU	other	TCEQ SOP V1	89835	SARA-WM, BCRAGD, <del>COB</del>

<sup>1</sup>Limited parameters reported for River Recreation sites as appropriate.

References:

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

U.S. Code of Federal Regulations (CFR). Title 40: Protection of Environment, Part 136

American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF), Standard

Methods for the Examination of Water and Wastewater, 23rd Edition, 2017.

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 B: Task 3 Work Plan & Sampling Process Design and Monitoring Schedule (Plan)**

### **Sample Design Rationale FY 2025**

The sample design is based on the legislative intent of CRP. Under the legislation, the Basin Planning Agencies have been tasked with providing data to characterize water quality conditions in support of the Texas Water Quality Integrated Report, and to identify significant long-term water quality trends. Based on Steering Committee input, achievable water quality objectives and priorities and the identification of water quality issues are used to develop work plans which are in accord with available resources. As part of the Steering Committee process, the San Antonio River Authority coordinates closely with the TCEQ and other participants to ensure a comprehensive water monitoring strategy within the watershed.

The TCEQ's Integrated Report (2022 IR) identifies impairments. An impairment is identified when a standard identified in Title 30, Chapter 307 of the Texas Administrative Code is not supported, evaluating the data according to the Guidance for Assessing and Reporting Surface Water Quality in Texas.

According to the 2022 Integrated Report the most common impairment in the San Antonio Watershed is *E. coli* bacteria. *E. coli* bacteria is an indicator of recent fecal contamination, and it is used to determine if the state's primary contact recreation standard is being met. *E. coli* bacteria impairments make up 73% of the impaired AUs in the San Antonio Watershed.

Samples have been collected to determine the source of the fecal contamination. Library dependent analyses were used to determine the sources. In each county tested, including Bexar County, greater than 50% of the isolates came from wildlife. This information can be used to target the source(s), by providing public outreach and education asking that the public not feed the wildlife near waterbodies. Two of the highest levels for *E. coli* bacteria are in Brackenridge Park and along the San Antonio River Walk. These are both areas with excessive wildlife because people are feeding the wildlife.

Fish communities are identified as impaired in 8% of the impaired assessment units and benthic macroinvertebrates are identified as impaired in 4% of the impaired assessment units. It is unclear the cause of these impairments. They may be due to water quality and / or habitat.

Dissolved oxygen is identified as an impairment in 7% of the impaired assessment units. Three out of four assessment units with dissolved oxygen impairments were streams with flows identified as intermittent with pools. The fourth station (Salado Creek) is identified as perennial but often had very low flows. The assessment unit with the impairment for dissolved oxygen is upstream of the re-use water discharge to augment flow in the creek. The dissolved oxygen impairments may be due more to low flows than water quality. PCBs in fish tissues are an impairment on a portion of Leon Creek only. This is believed to be a legacy pollutant released into the environment in and around the Lackland Air Force Base. A fish advisory has been issued advising the public not to eat any fish from a point 100 meters upstream of State Highway 16 northwest of San Antonio in Bexar County to its confluence with the Medina River due to PCB concentrations in fish tissue. Recently, Per-and polyfluoroalkyl substances (PFAS) have also been identified in fish tissue in the same area by the Texas Department of State Health Services.

The most common concerns in this basin are for nutrients (nitrate nitrogen 33%, total phosphorus 27%, and ammonia nitrogen 1%). The TCEQ determined each nutrient screening level by determining the 85th percentile from their surface water quality monitoring database. Nutrient

standards are needed that are specific for each river and creek to protect the aquatic ecosystem of rivers, creeks, bays and estuaries. Nutrients are needed for the development of aquatic plants and algae. These are the bases for the food web that support the aquatic ecosystems. Elevated levels of nutrients can cause algae blooms and overgrowth of aquatic plants. As algae and aquatic plants die and decompose, they consume oxygen and can cause fish kills, and dead zones. Determining the appropriate nutrient level is a delicate balancing act. If the values are too high, you can create fish kills and dead zones in our rivers, creeks, bays and estuaries. If the nutrient level is too low, you can starve the aquatic ecosystem and harm fisheries in our rivers, creeks, bays and estuaries.

Chlorophyll-a is a pigment found in algae, and plants. Excessive nutrient levels can cause rapid growth, which in turn can cause low dissolved oxygen.

Silver in sediment was found only in one assessment unit on Leon Creek. The origin of this is unknown.

## **San Antonio River Authority FY25 Coordinated Monitoring Meeting Summary of Changes**

The following **changes**, **additions**, or **deletions** have been made to the FY2025 Coordinated Monitoring Schedule to address monitoring issues identified by the involved monitoring entities or steering committee members:

1. All routine water quality monitoring previously conducted at six times per year will be conducted at a frequency of four times per year.
2. Bimonthly water quality monitoring will be removed for Station 12789, San Antonio River at US 77 on Refugio-Victoria County Line 8188570, due to unsafe sampling conditions.
3. Quarterly water quality monitoring will be added for Station 22485, San Antonio River 2.27 km downstream of US 77 southwest of McFaddin, including conventionals, bacteria, chlorophyll a, pheophytin, field parameters, and flow reported from 08188570. Total and dissolved metals will also be collected at a frequency of twice per year.
4. Flow measurements will be changed from manual measurements to USGS gage readings at Station 12792, San Antonio River at Southern Pacific RR Bridge in Goliad, using USGS gage 08188500.
5. 24 hour dissolved oxygen monitoring will be removed from Station 12741, Martinez Creek on North Gable Road south of Zuehl 8185100, as there have been no dissolved oxygen concerns since the 2016 Integrated Report.
6. Bimonthly routine water quality monitoring will be removed for Station 12784, Santa Clara Creek on CR 315 Santa Clara Rd Northwest of New Berlin 2.19 KM 1.34 MI upstream of the confluence with Cibolo Creek, due to poor sample quality from chronic low flow and dry conditions.
7. Quarterly routine water quality monitoring will be removed from Station 20823, Upper Cibolo Creek north shore 30 meters upstream of dam at River Road Park in Boerne, due duplicated monitoring efforts in the same assessment unit by the TCEQ office.
8. Flow measurements will be changed from manual measurements to USGS gage readings at Station 14200, Medina River at CR 484, using USGS gage 08180640.
9. Quarterly water quality monitoring will be added for Station 12819, Medina River 28 meters upstream from Loop 1604, including conventionals, bacteria, chlorophyll a, pheophytin, field parameters, and flow reported from USGS gage 08180700.
10. Bimonthly water quality monitoring will be removed from Station 12690, Rosillo Creek at W. W. White Road in San Antonio. The water quality listings in this assessment unit are unlikely to change and water quality monitoring downstream of the station's confluence with the mainstem Salado Creek will continue to be monitored.

11. Bimonthly water quality monitoring will be removed from Station 12693, Menger Creek immediately upstream of Coliseum Road. The water quality listings in this assessment unit are unlikely to change and water quality monitoring downstream of the station's confluence with the mainstem Salado Creek will continue to be monitored.
12. Bimonthly water quality monitoring will be removed from Station 12698, Walzem Creek at Holbrook Road. The water quality listings in this assessment unit are unlikely to change and water quality monitoring downstream of the station's confluence with the mainstem Salado Creek will continue to be monitored.
13. Bimonthly water quality monitoring and once yearly biological assessments will be removed from Station 12870, Salado Creek at Gembler Road, due to site access issues.
14. Biological assessments will be increased from once to twice yearly at Station 14929, Salado Creek at Comanche Park, to adjust to the monitoring change at Station 12870.
15. 24 hour dissolved oxygen monitoring will be removed from Station 18865, San Antonio River 57 meters upstream of Lexington Street Bridge and approximately 1.3 kilometers downstream of IH 35, to remove duplicated efforts by SARA in the assessment unit.

Replaces pages 73-80 of the FY 2024-2025 QAPP.

## Monitoring Sites for FY 2025

Table B1.1 Sample Design and Schedule, FY 2025

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	AqHab	Benthics	Nekton	MIW	Chlorophyll/ Pheophytin	BOD	Conv	Bacteria	Flow	Field	Comments
<b>Segment 1901 Lower San Antonio River</b>																		
SAN ANTONIO RIVER 2.27 KM DOWNSTREAM OF US 77 SOUTHWEST OF MCFADDIN	22485	1901	14	SA	SA	RT					2	4		4	4	4	4	Metals = total and dissolved. Flow reported from USGS gage 08188570.
SAN ANTONIO RIVER BRIDGE ON US 77-A AND 183 SOUTHEAST OF GOLIAD	12791	1901	14	SA	SA	RT						4		4	52	52	52	River Recreation Bacteria Station.* Flow reported from USGS gage 08188500.
SAN ANTONIO RIVER AT SOUTHERN PACIFIC RR BRIDGE IN GOLIAD	12792	1901	14	SA	SA	BS	2	2		2						2	2	Biologicals collected approximately 150 M upstream of 12792. Flow reported from USGS gage 08188500.
SAN ANTONIO RIVER AT SH 72 NEAR RUNGE	12794	1901	13	SA	SA	RT						4	4	4	52	52	52	River Recreation Bacteria station.* Flow reported from USGS gage 08188060.
SAN ANTONIO RIVER AT SH 80 SW OF HELENA	12795	1901	13	SA	SA	RT						4		4	4		4	No Flow Possible Safety Issue.
SAN ANTONIO RIVER AT CONQUISTA CROSSING 2.4 KM DOWNSTREAM OF FM 791 SW OF FALLS CITY	16580	1901	13	SA	SA	BS	2	2		2								BS samples will be collected along with RT events
SAN ANTONIO RIVER AT CONQUISTA CROSSING 2.4 KM DOWNSTREAM OF FM 791 SW OF FALLS CITY	16580	1901	13	SA	SA	RT						4	4	4	4	4	4	Flow will be collected from USGS gage 08183500.
SAN ANTONIO RIVER AT NORTH RIVERDALE RD 15 KM WEST OF GOLIAD TEXAS	17859	1901	14	SA	SA	RT						4		4	52		52	River Recreation Bacteria site.* Flow severity will be recorded. Flow estimate reported from USGS 08188500.
ESCONDIDO CREEK AT KARNES CR 331	18402	1901A	13	SA	SA	RT						4		4	4	4	4	
ECLETO CREEK AT FM 81 424 METERS EAST AND 103 METERS NORTH TO THE INTERSECTION OF KARNES CR 334 AND FM 81	20539	1901F	13	SA	SA	BS	2											BS samples will be collected along with RT events

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	AqHab	Benthics	Nekton	MIW	Chlorophyll/ Pheophytin	BOD	Conv	Bacteria	Flow	Field	Comments
ECLETO CREEK AT FM 81 424 METERS EAST AND 103 METERS NORTH TO THE INTERSECTION OF KARNES CR 334 AND FM 81	20539	1901F	13	SA	SA	RT						4		4	4	4	4	
<b>Segment 1902 Lower Cibolo Creek</b>																		
CIBOLO CREEK AT FM 81 EAST OF PANNA MARIA	12797	1902	13	SA	SA	RT						4		4	4	4	4	
CIBOLO CREEK AT FM 541 WEST OF KOSCIUSKO	12802	1902	13	SA	SA	BS	2	2		2						2	2	
CIBOLO CREEK AT FM 539	12805	1902	13	SA	SA	RT					2	4		4	4	4	4	Metals = total and dissolved. Flow reported from USGS gage 0815500.
CIBOLO CREEK AT SCULL CROSSING	14197	1902	13	SA	SA	BS	2	2		2								BS samples will be collected along with RT events
CIBOLO CREEK AT SCULL CROSSING	14197	1902	13	SA	SA	RT						4		4	4	4	4	
CIBOLO CREEK AT CR389 NEAR CESTOWA TEXAS	14211	1902	13	SA	SA	BS			2									BS samples will be collected along with RT events
CIBOLO CREEK AT CR389 NEAR CESTOWA TEXAS	14211	1902	13	SA	SA	RT						4	4	4	52	52	52	River Recreation Bacteria station.* Flow reported from USGS gage 08186000.
MARTINEZ CREEK ON NORTH GABLE ROAD SOUTH OF ZUEHL	12741	1902A	13	SA	SA	RT								4	4	4	4	Flow reported from USGS gage 08185100.
SALATRILLO CREEK AT AUTUMN RUN	14202	1902B	13	SA	SA	RT						4		4	4	4	4	
SAN ANTONIO RIVER AUTHORITY'S SALATRILLO WWTP 249 METERS DWSTRN FROM SCHAEFER RD	14923	1902B	13	SA	SA	RT								4	4	4	4	
CLIFTON BRANCH AT OLD FLORESVILLE ROAD/WILSON COUNTY ROAD 401 2.7 KILOMETERS WEST OF STOCKDALE	20776	1902C	13	SA	SA	RT								4	4	4	4	
<b>Segment 1903 Medina River Below Medina Diversion Lake</b>																		
MEDINA RIVER AT FM 1937 NEAR LOSOYA	12811	1903	13	SA	SA	RT						4		4	4	4	4	Flow information will be reported from USGS gauge 08181500.
MEDINA RIVER AT APPLEWHITE ROAD APPROXIMATELY 1.16 KILOMETERS NORTH OF NEAL ROAD AT THE SOUTHERN BOUNDARY OF THE TOYOTA PROPERTY CAMS ID 0769 USGS SITE ID 08180850	12814	1903	13	SA	SA	RT						4		4	4	4	4	

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	AqHab	Benthics	Nekton	MIW	Chlorophyll/ Pheophytin	BOD	Conv	Bacteria	Flow	Field	Comments
MEDINA RIVER 28 METERS UPSTREAM FROM LOOP 1604 ON NORTH BANK	12819	1903	13	SA	SA	RT						4		4	4	4	4	Flow will be reported from USGS gage 08180700.
MEDINA RIVER AT CR 2615 APPROX .5 MI DOWNSTREAM OF DIVERSION DAM NEAR RIO MEDINA	12824	1903	13	SA	BA	RT						4		4	4	4	4	
MEDINA RIVER AT CR 484	14200	1903	13	SA	SA	BS	2	2	2	2								BS samples will be collected along with RT events
MEDINA RIVER AT CR 484	14200	1903	13	SA	SA	RT					2	4		4	4	4	4	Metals = total and dissolved. Flow will be reported from USGS gage 08180640.
CITY OF SAN ANTONIO DOS RIOS WWTP DISCHARGE INTO MEDINA RIVER PERMIT WQ0010137-033	16584	1903	13	SA	SA	RT								4	4	4	4	
MEDINA RIVER 500 METERS DOWNSTREAM OF PLEASANTON ROAD IN BEXAR COUNTY	22225	1903	13	SA	SA	RT						4		4	4	4	4	Flow will be reported from USGS gage 08181500.
<b>Segment 1904 Medina Lake</b>																		
MEDINA LAKE AT MEDINA LAKE DAM WEST OF SAN ANTONIO	12825	1904	13	SA	BA	RT						4		4	4		4	
MEDINA LAKE NEAR RED COVE	12826	1904	13	SA	BA	RT								4	4		4	
MEDINA LAKE AT MORMON BLUFF	12827	1904	13	SA	BA	RT								4	4		4	
MEDINA LAKE BETWEEN CYPRESS AND SPETTEL COVES	12828	1904	13	SA	BA	RT								4	4		4	
<b>Segment 1904 Medina Lake</b>																		
MEDINA LAKE MID LAKE NEAR HEADWATER	12829	1904	13	SA	BA	RT						4		4	4		4	
<b>Segment 1905 Medina River Above Medina Lake</b>																		
MEDINA RIVER AT OLD ENGLISH CROSSING ABOVE BANDERA FALLS	12830	1905	13	SA	BA	RT								4	4	4	4	
MEDINA RIVER AT FM 470 WEST OF BANDERA	12832	1905	13	SA	BA	RT								4	4	4	4	
MEDINA RIVER AT SH 173 1.9 MI UPSTREAM FROM BANDERA CREEK 5.6 MI DOWNSTREAM FROM INDIAN CREEK	13638	1905	13	SA	BA	RT								4	4	4	4	
MEDINA RIVER AT PATTERSON AVENUE IN MOFFETT PARK MEDINA TEXAS	21125	1905	13	SA	BA	RT								4	4	4	4	



Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	AqHab	Benthics	Nekton	MIW	Chlorophyll/ Pheophytin	BOD	Conv	Bacteria	Flow	Field	Comments
MEDINA RIVER AT NORTH SIDE OF MAYAN RANCH, WEST OF CITY OF BANDERA AND 2.16 KILOMETERS UPSTREAM OF SCHMIDTKE ROAD CROSSING	21631	1905	13	SA	BA	RT						4		4	4	4	4	
MEDINA RIVER AT NORTH SIDE OF MAYAN RANCH, WEST OF CITY OF BANDERA AND 2.16 KILOMETERS UPSTREAM OF SCHMIDTKE ROAD CROSSING	21631	1905	13	SA	SA	BS	2	2		2								BS samples will be collected along with RT events
NORTH PRONG MEDINA RIVER AKA WALLACE CREEK IMMEDIATELY UPSTREAM OF SH 16	18447	1905A	13	SA	BA	RT						4		4	4	4	4	
NORTH PRONG MEDINA RIVER AT FM 2107 APPROX 80 METERS NORTHEAST OF THE INTERSECTION OF BREWINGTON CREEK ROAD AND FM 2107 NORTHWEST OF MEDINA TEXAS	21126	1905A	13	SA	BA	RT								4	4	4	4	
WEST PRONG MEDINA RIVER 11M UPSTREAM FROM COALKILN RD 3 KM WEST OF MEDINA AND IMMEDIATELY SOUTH OF SH337	15736	1905B	13	SA	BA	RT								4	4	4	4	
<b>Segment 1906 Lower Leon Creek</b>																		
LEON CREEK 24 METERS DOWNSTREAM FROM APPLEWHITE ROAD IN SAN ANTONIO	12835	1906	13	SA	SA	RT								4	4	4	4	For high flow events where flow is not possible, flow information will be reported from USGS gage 08181480.
LEON CREEK IMMEDIATELY UPSTREAM OF LOOP 13 SOUTH OF SAN ANTONIO	12844	1906	13	SA	SA	BS			2									
LEON CREEK UPSTREAM FROM LEON CREEK WWTP AND APPROX 980 METERS UPSTREAM OF THE CONFLUENCE WITH COMANCHE CREEK	14198	1906	13	SA	SA	BS	2	2		2								BS samples will be collected along with RT events
LEON CREEK UPSTREAM FROM LEON CREEK WWTP AND APPROX 980 METERS UPSTREAM OF THE CONFLUENCE WITH COMANCHE CREEK	14198	1906	13	SA	SA	RT					2	4		4	4	4	4	Metals = total and dissolved.
<b>Segment 1907 Upper Leon Creek</b>																		
LEON CREEK IN RAYMOND RUSSELL PARK AT LOW WATER BRIDGE	12851	1907	13	SA	SA	RT						4		4	4	4	4	

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	AqHab	Benthics	Nekton	MIW	Chlorophyll/ Pheophytin	BOD	Conv	Bacteria	Flow	Field	Comments
<b>Segment 1909 Medina Diversion Lake</b>																		
MEDINA RIVER DOWNSTREAM MEDINA RESERVOIR IN MICO TX AT LOW WATER CROSSING	14205	1909	13	SA	BA	RT								4	4	4	4	
MEDINA DIVERSION LAKE NEAR WEST BANK 40 M UPSTREAM OF DAM AND APPROXIMATELY 1 MI UPSTREAM OF MEDINA RIVER CROSSING AT MEDINA CR 2615	18407	1909	13	SA	BA	RT						4		4	4		4	No flow possible.
<b>Segment 1910 Salado Creek</b>																		
SALADO CREEK AT SOUTHTON ROAD IN SAN ANTONIO	12861	1910	13	SA	SA	BS	2	2		2								BS samples will be collected along with RT events
SALADO CREEK AT SOUTHTON ROAD IN SAN ANTONIO	12861	1910	13	SA	SA	RT						4		4	4	4	4	
SALADO CREEK AT RITTIMAN ROAD IN SAN ANTONIO	12874	1910	13	SA	SA	BS	2											BS samples will be collected along with RT events
SALADO CREEK AT RITTIMAN ROAD IN SAN ANTONIO	12874	1910	13	SA	SA	RT						4		4	4	4	4	
SALADO CREEK AT EISENHAUER ROAD IN SAN ANTONIO	12875	1910	13	SA	SA	BS	2											BS samples will be collected along with RT events
SALADO CREEK AT EISENHAUER ROAD IN SAN ANTONIO	12875	1910	13	SA	SA	RT						4		4	4	4	4	
SALADO CREEK AT COMANCHE PARK	14929	1910	13	SA	SA	BS	2	2	2	2								BS samples will be collected along with RT events
SALADO CREEK AT COMANCHE PARK	14929	1910	13	SA	SA	RT					2	4		4	4	4	4	Metals = total and dissolved.
<b>Segment 1911 Upper San Antonio River</b>																		
SAN ANTONIO RIVER AT SH 97 NEAR FLORESVILLE	12881	1911	13	SA	SA	RT						4	4	4	52	52	52	River Recreation Bacteria Station.* Flow reported from USGS gage 08183200.
SAN ANTONIO RIVER AT DIETZFIELD ROAD CR 117 NORTHWEST OF FLORESVILLE	12883	1911	13	SA	SA	RT						4		4	4	4	4	Hardness Titration 4x/yr. Flow reported from USGS gage 8183200.
SAN ANTONIO RIVER MID CHANNEL 30 M DOWNSTREAM OF ST LOOP 1604 WEST OF ELMENDORF RT/CONTINUOUS MONITORING SITE CAMS 715	12886	1911	13	SA	SA	RT						4	4	4	4	4	4	Flow will be reported from USGS gage 08181800.

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	AqHab	Benthics	Nekton	MIW	Chlorophyll/ Pheophytin	BOD	Conv	Bacteria	Flow	Field	Comments
SAN ANTONIO RIVER AT IH 410 LOW WATER CROSSING CAMINO COAHUILATECHAN 0.25 KM BELOW THE BRIDGE IN SAN ANTONIO	12897	1911	13	SA	SA	RT						4		4	52	52	52	River Recreation Bacteria Station.* Flow reported from USGS gage 08178565.
SAN ANTONIO RIVER AT ALAMO ST IN SAN ANTONIO	12904	1911	13	SA	SA	RT						4		4	4	4	4	
SAN ANTONIO RIVER AT WOODLAWN AVE IN SAN ANTONIO	12908	1911	13	SA	SA	BS	1	1		1								BS samples will be collected along with RT events
SAN ANTONIO RIVER AT WOODLAWN AVE IN SAN ANTONIO	12908	1911	13	SA	SA	RT						4		4	4	4	4	
SAN ANTONIO RIVER AT MULBERRY ST IN SAN ANTONIO	12909	1911	13	SA	SA	BS	1	1		1								BS samples will be collected along with RT events
SAN ANTONIO RIVER AT MULBERRY ST IN SAN ANTONIO	12909	1911	13	SA	SA	RT								4	4	4	4	
SAN ANTONIO RIVER AT WELL NO. 2 AT JOSKES PAVILLION	12911	1911	13	SA	SA	RT						4		4	4	4	4	
SAN ANTONIO RIVER AT W. MITCHELL STREET IN DOWNTOWN SAN ANTONIO	14256	1911	13	SA	SA	RT						4		4	52	52	52	River Recreation Bacteria Station.* Flow reported from USGS gage 08178050.
SAN ANTONIO RIVER APPROX 835 METERS UPSTREAM OF THE MEDINA RIVER CONFLUENCE	16731	1911	13	SA	SA	BS	2	2		2								BS samples will be collected along with RT events
SAN ANTONIO RIVER APPROX 835 METERS UPSTREAM OF THE MEDINA RIVER CONFLUENCE	16731	1911	13	SA	SA	RT						4		4	4	4	4	
SAN ANTONIO RIVER AT MISSION ROAD IMMEDIATELY UPSTREAM OF RIVERSIDE MUNICIPAL GOLF COURSE 1.65 KM DOWNSTREAM OF SAN ANTONIO RIVER/SAN PEDRO CREEK CONFLUENCE IN SAN ANTONIO TX	17066	1911	13	SA	SA	RT						4		4	52	52	52	River Recreation Bacteria Station.* Flow will be reported from USGS gage 08178050 and 08178500.
SAN ANTONIO RIVER 57 METERS UPSTREAM OF LEXINGTON STREET BRIDGE AND APPROXIMATELY 1.3 KILOMETERS DOWNSTREAM OF IH 35	18865	1911	13	SA	SA	RT						4		4	4		4	No Flow Possible - Barge Traffic
SAN ANTONIO RIVER LOOP 111 METERS DOWNSTREAM OF MARKET STREET AT LITTLE RHEIN STEAKHOUSE IN SAN ANTONIO	20122	1911	13	SA	SA	RT						4		4	4		4	No Flow Possible - Barge Traffic

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	AqHab	Benthics	Nekton	MIW	Chlorophyll/ Pheophytin	BOD	Conv	Bacteria	Flow	Field	Comments	
SAN ANTONIO RIVER 675 METERS DOWNSTREAM OF CAMINO COAHUILTECA IN SAN ANTONIO	22335	1911	13	SA	SA	BS	2	2	2	2						2	2		
SAN ANTONIO RIVER 450 METERS DOWNSTREAM OF FM541 5 KM WEST AND 3.5 KM SOUTH OF POTH	22419	1911	13	SA	SA	RT						4		4	4	4	4	4	For high flow events where instantaneous flow is not possible, flow information will be collected from USGS gage 08183500.
ELMENDORF LAKE NEAR NORTHEAST BANK 25 M UPSTREAM OF DAM NEAR 19TH STREET BRIDGE	18733	1911B	13	SA	SA	RT						4		4	4		4	4	No flow possible.
APACHE CREEK AT BRAZOS STREET APPROXIMATELY 0.7 KM UPSTREAM OF THE CONFLUENCE WITH ALAZAN CREEK	18735	1911B	13	SA	SA	RT						4		4	4	4	4	4	
ALAZAN CREEK AT TAMPICO ST IN SAN ANTONIO	12715	1911C	13	SA	SA	RT						4		4	4	4	4	4	
SAN PEDRO CREEK AT FURNISH ST IN SAN ANTONIO PERMIT 0000968 UNION STOCK YARDS	12707	1911D	13	SA	SA	RT					2			4	4	4	4	4	Metals = total and dissolved. Flow reported from USGS gage 08178500.
MARTINEZ CREEK AT RUIZ STREET IN SAN ANTONIO	12751	1911I	13	SA	SA	RT								4	4	4	4	4	
<b>Segment 1912 Medio Creek</b>																			
MEDIO CREEK AT HIDDEN VALLEY CAMPGROUND	12916	1912	13	SA	SA	BS	2	2	2	2									BS samples will be collected along with RT events
MEDIO CREEK AT HIDDEN VALLEY CAMPGROUND	12916	1912	13	SA	SA	RT					2	4		4	4	4	4	4	Metals = total and dissolved.
MEDIO CREEK AT US 90 WEST	12735	1912A	13	SA	SA	RT						4		4	4	4	4	4	
<b>Segment 1913 Mid Cibolo Creek</b>																			
CIBOLO CREEK 40 METERS DOWNSTREAM FROM IH 10/US 90 ON EAST BANK	12919	1913	13	SA	SA	RT						4		4	4	4	4	4	Flow reported from USGS gage 08185065.
CIBOLO CREEK AT SCHAEFFER RD 3 MI EAST OF RANDOLPH AIR FORCE BASE	12924	1913	13	SA	SA	RT						4		4	4	4	4	4	
CIBOLO CREEK UPSTREAM CIBOLO CREEK MUNICIPAL AUTHORITY'S WWTP PERMIT 0011269-001 OFF RIVER ROAD	14212	1913	13	SA	SA	RT						4		4	4	4	4	4	
*Limited parameters recorded for River Recreation sites identified in Tables A7.1 and A7.2																			

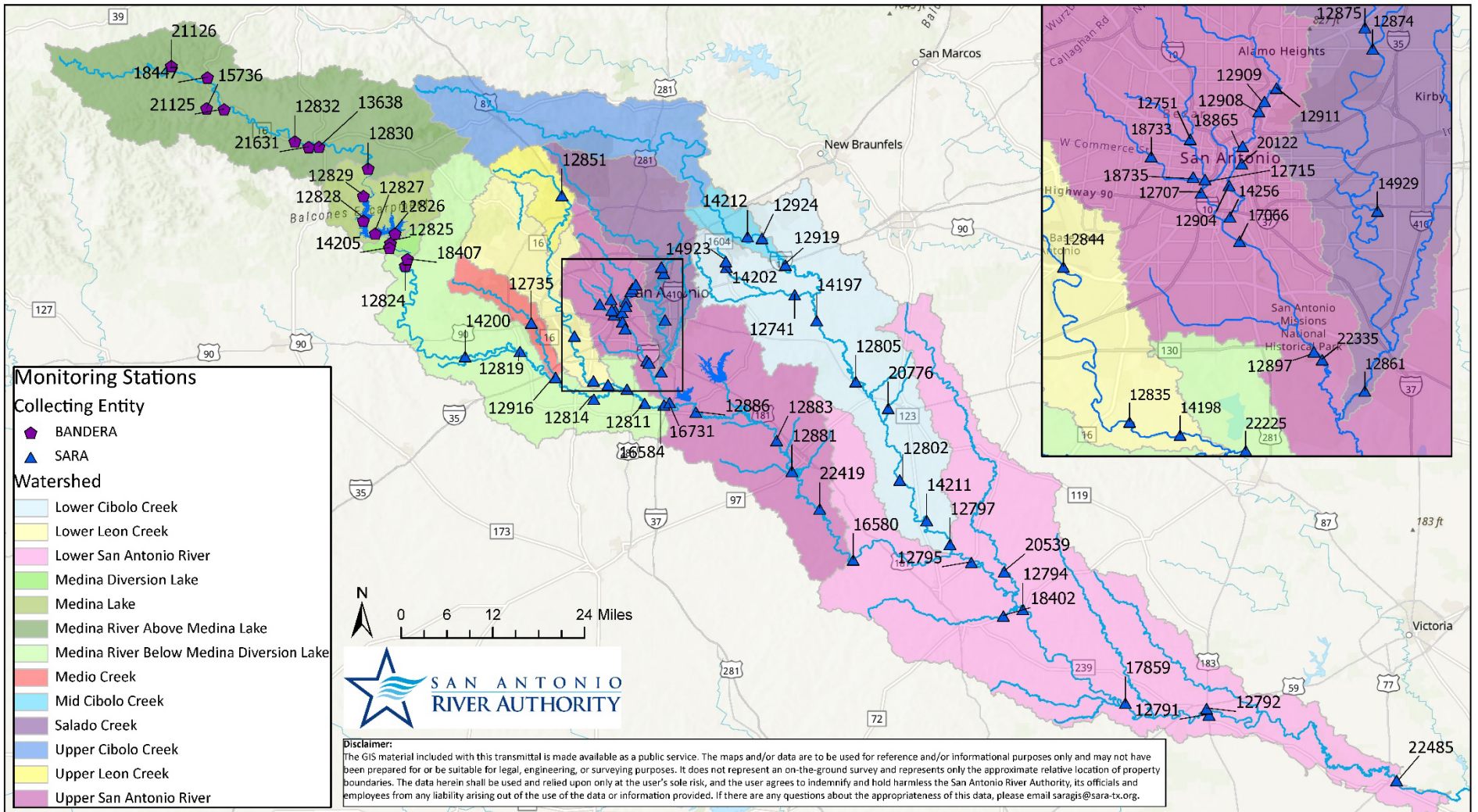
Replaces pages 82-83 of the FY 2024-2025 QAPP:

## **Appendix C: Station Location Maps**

### **Station Location Maps**

Maps of stations monitored by the San Antonio River Authority are provided below. The maps were generated by the San Antonio River Authority. 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 Austin Davis at 210-302-3221.

# FY 2025 Monitoring Map



## **Appendix D: Field Data Collection Forms**

(Most Recent Revision)

Removal of field sheet for the City of Boerne - pages 112-113



**Insert after page 132 of the FY 2024-2025 QAPP:**

Addition of Survey123 as a method of collection of habitat and nekton data in the field. Screenshots of the forms are included below. This will be used on SARA devices.

✕
**TESTNekton Electrofishing**
🔔 ☰

### Sample Information

<b>LIMS Sample #</b> (XX#####) * <input style="width: 90%;" type="text" value="AB38525"/>	<b>Station ID</b> (#####) * <input style="width: 90%;" type="text" value="12861"/>
<b>Start Date *</b> <input style="width: 90%;" type="text" value="📅 Thursday, June 9, 2022"/>	<b>End Date *</b> <input style="width: 90%;" type="text" value="📅 Thursday, June 9, 2022"/>
<b>Start Time *</b> <input style="width: 90%;" type="text" value="🕒 9:10 AM"/>	<b>End Time *</b> <input style="width: 90%;" type="text" value="🕒 11:22 AM"/>
<b>Start Depth (#.##) *</b> <input style="width: 90%;" type="text" value="0.01"/>	<b>End Depth (#.##) *</b> <input style="width: 90%;" type="text" value="0.75"/>
<b>Collectors (AB/XYZ/LM/EFG/PQ...)</b> * <input style="width: 90%;" type="text" value="ZN/SB/AR/OR"/>	
<b>Data Recorder Initials *</b> <input style="width: 90%;" type="text" value="SB"/>	<b>Data Reviewer Initials *</b> <input style="width: 90%;" type="text" value="ZN"/>
<b>Sample Comments</b> <input style="width: 90%; height: 40px;" type="text" value="1 Guadalupe bass x Spotted bass"/>	
<b>Nekton Method*</b> <input type="radio"/> Seining <input checked="" type="radio"/> Electrofishing	
<small>Nekton method is locked once effort parameters are entered; to unlock, clear all effort parameters.</small>	
<b>Electrofishing Effort</b> <input checked="" type="radio"/> 1 (Boat)	<b>Duration *</b> (seconds, min 900)



# Nekton Counts

## ▼ Master List Selection

### ► Help

#### Lock Master List Selections?

Lock

Unlock

#### Choose Species Sort Order \*

Sorted by Family/Group

Sorted Alphabetically

#### Select All Species to Include

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> Alligator Gar                  | <input type="checkbox"/> Amazon Molly                | <input type="checkbox"/> American eel                 |
| <input type="checkbox"/> Bigscale Logperch              | <input type="checkbox"/> Black Bullhead              | <input type="checkbox"/> Blackstripe Topminnow        |
| <input type="checkbox"/> Blacktail Shiner               | <input type="checkbox"/> Blue Catfish                | <input type="checkbox"/> Blue Tilapia                 |
| <input type="checkbox"/> Bluegill                       | <input checked="" type="checkbox"/> Bullhead Minnow  | <input type="checkbox"/> Burrhead Chub                |
| <input checked="" type="checkbox"/> Central Stoneroller | <input checked="" type="checkbox"/> Channel Catfish  | <input type="checkbox"/> Common Carp                  |
| <input type="checkbox"/> Fathead Minnow                 | <input checked="" type="checkbox"/> Flathead Catfish | <input type="checkbox"/> Freckled Madtom              |
| <input type="checkbox"/> Freshwater Drum                | <input type="checkbox"/> Ghost Shiner                | <input type="checkbox"/> Gizzard Shad                 |
| <input type="checkbox"/> Golden Shiner                  | <input type="checkbox"/> Goldfish                    | <input checked="" type="checkbox"/> Green Sunfish     |
| <input type="checkbox"/> Green Swordtail                | <input type="checkbox"/> Greenthroat Darter          | <input checked="" type="checkbox"/> Grey Redhorse     |
| <input checked="" type="checkbox"/> Guadalupe Bass      | <input type="checkbox"/> Inland Silverside           | <input checked="" type="checkbox"/> Largemouth Bass   |
| <input checked="" type="checkbox"/> Longear Sunfish     | <input type="checkbox"/> Longnose Gar                | <input type="checkbox"/> Mexican Tetra                |
| <input checked="" type="checkbox"/> Mimic Shiner        | <input type="checkbox"/> Mountain Mullet             | <input type="checkbox"/> Mozambique Tilapia           |
| <input type="checkbox"/> Orangespotted Sunfish          | <input type="checkbox"/> Orangethroat Darter         | <input type="checkbox"/> <i>Pterygoplichthys</i> sp.  |
| <input type="checkbox"/> Red Belly Tilapia              | <input checked="" type="checkbox"/> Red Shiner       | <input checked="" type="checkbox"/> Redbreast Sunfish |
| <input type="checkbox"/> Redear Sunfish                 | <input type="checkbox"/> Redspotted Sunfish          | <input type="checkbox"/> Ribbon Shiner                |
| <input type="checkbox"/> Rio Grande Cichlid             | <input type="checkbox"/> River Carpsucker            | <input type="checkbox"/> River darter                 |
| <input type="checkbox"/> Sailfin Molly                  | <input type="checkbox"/> Sand Shiner                 | <input type="checkbox"/> Sheepshead Minnow            |
| <input type="checkbox"/> Slough Darter                  | <input type="checkbox"/> Smallmouth Bass             | <input type="checkbox"/> Smallmouth buffalo           |

<p>Species *</p> <ul style="list-style-type: none"> <li><input type="radio"/> Bullhead Minnow</li> <li><input type="radio"/> Central Stoneroller</li> <li><input type="radio"/> Channel Catfish</li> <li><input type="radio"/> Flathead Catfish</li> <li><input type="radio"/> Green Sunfish</li> <li><input type="radio"/> Grey Redhorse</li> <li><input type="radio"/> Guadalupe Bass</li> <li><input type="radio"/> Largemouth Bass</li> <li><input checked="" type="radio"/> Longear Sunfish</li> <li><input type="radio"/> Mimic Shiner</li> <li><input type="radio"/> Red Shiner</li> <li><input type="radio"/> Redbreast Sunfish</li> <li><input type="radio"/> Texas Logperch</li> <li><input type="radio"/> Spotted x Guadalupe</li> </ul>	
	Longear Sunfish
	Count *
	<input type="text" value="3"/>
<p>Record is read-only. Only the current (last) record may be modified. This record may be deleted. To adjust counts, create a new record and use +/- as necessary.</p>	

1 of 160 >

**Diseased Fish Counts**

(not calculated as part of counts above; species counts must be entered separately)

Select Changes to Display

When reviewing, only the last record will result in ALL changes showing

All

Recent

**All Fish Entries  
(oldest to newest)**

Entry #	Species	Count
1	Longear Sunfish	3

**QA Section**

FXXX\_RevXX

ReferenceError: FXXX\_RevXX is not defined in expression: FXXX\_RevXX

Issued by SARA QA: XX

Effective: m/d/yyyy

**Site-Wide Information**

**Overall Sample and Station Info**

LIMS Sample # (XX#####) *	Station ID (#####) *	Sample Comments
AB38528	12861	
Collectors (AB/XYZ/LM/EFG/PQ...)* ZN/SB/AR/OR		
Data Recorder Initials *	Data Reviewer Initials *	
ZN	SB	

**Start Date \***

Thursday, June 9, 2022

**End Date \***

Thursday, June 9, 2022

**Start Time \***

1:12 PM

**End Time \***

3:15 PM

**Start Depth (#.##) \***

0.01

**End Depth (#.##) \***

1.46

<b>Stream Type*</b> <input checked="" type="radio"/> Perennial <input type="radio"/> Intermittent <input type="radio"/> Intermittent w/ Pools <input type="radio"/> Unknown		<b>Ecoregion*</b> <input type="radio"/> 30 <input type="radio"/> 31 <input checked="" type="radio"/> 32 <input type="radio"/> 33 <input type="radio"/> 34	
Stream Segment ID*	Stream Order (#)*	Streambed Slope over Evaluated Reach (m/km; #.###)*	Approximate Drainage Area (sq. km; #.####)*
1910	5	2.340	573.2048
<b>Dominant Substrate*</b> <input type="radio"/> Clay <input type="radio"/> Silt <input type="radio"/> Sand <input checked="" type="radio"/> Gravel <input type="radio"/> Cobble <input type="radio"/> Boulder <input type="radio"/> Bedrock <input type="radio"/> Other		<b>Aesthetics*</b> <input type="radio"/> Wilderness <input checked="" type="radio"/> Natural <input type="radio"/> Common <input type="radio"/> Offensive	
		<b>Land Development Impact*</b> <input type="radio"/> Unimpacted <input checked="" type="radio"/> Low <input type="radio"/> Moderate <input type="radio"/> High	
		<b>Habitat Flow Status*</b> <input type="radio"/> No Flow <input type="radio"/> Low <input checked="" type="radio"/> Moderate <input type="radio"/> High	

Reach Length of Stream Evaluated* 200 Depth of Bottom at Sample Point (#.##)* 0.52 Channel Obstructions or Modifications* BRIDGE Observed Stream Uses* NONE	<b>Riparian Vegetation for Entire Reach</b>	
	Left Bank	Right Bank
	Grasses,Forbs (%) *	Grasses,Forbs (%) *
	35	25
	Trees (%) *	Trees (%) *
	60	70
	Shrubs (%) *	Shrubs (%) *
	5	5
	Cultivated Field (%) *	Cultivated Field (%) *
0	0	
Other (%) *	Other (%) *	
0	0	

Pools and Geomorphology			
Pool Dimensions*			
<b>Pool #</b> <b>1</b> Enter 0's if no pools exist	<b>Width *</b> (##.#) <input type="text" value="25.0"/>	<b>Length *</b> (##.#) <input type="text" value="36.0"/>	<b>Depth *</b> (###) <input type="text" value="1.46"/>
1 of 1			
<b>Largest Pool</b>	<b>Width</b> 25.0 m	<b>Length</b> 36.0 m	<b>Depth</b> 1.46 m
Stream Geomorphology			
<b>Number of Riffles in Reach*</b> <input type="text" value="5"/>	# of Stream Bends		
	Well-defined*	Moderately-defined*	
	<input type="text" value="2"/>	<input type="text" value="0"/>	
	Poorly-defined*	Total	
<input type="text" value="0"/>	<input type="text" value="2"/>		

Transect 1 Data*	
Transect Location	
Coordinates	
Latitude (##.#####) * <input type="text" value="29.297350"/>	Get GPS Coordinates <input type="text" value=""/>
Longitude (-##.#####) * <input type="text" value="-98.422260"/>	
Transect Photos	
Have all photos for this transect been taken? *	
<input checked="" type="radio"/> Yes <input type="radio"/> No	

▼ Stream Physical Characteristics				
<b>Depths Across Transect (m; #.##)</b>		<b>Start Edge*</b> <input type="radio"/> RES <input checked="" type="radio"/> LES	<b>Cover Types *</b> (select all present)	
1	4.50 * 0.05	Stream Width (m; #.#) * 11.6	<input type="checkbox"/> NO COVER PRESENT <input checked="" type="checkbox"/> Gravel <input checked="" type="checkbox"/> Woody Debris <input type="checkbox"/> Ledges <input type="checkbox"/> Litter <input type="checkbox"/> Other <input checked="" type="checkbox"/> Undercut Banks <input type="checkbox"/> Macrophytes <input checked="" type="checkbox"/> Boulders <input checked="" type="checkbox"/> Tree Roots <input checked="" type="checkbox"/> Overhanging Vegetation	
2	5.66 * 1.00	Depth Increments (m; #.##) * 1.16	<b>Erosion Potential (%)</b>	
3	6.82 * 1.40	Tape Measurement at Edge (m; #.#) 4.5		
4	7.98 * 1.60		Left Bank * 80	Right Bank * 40
5	9.14 * 1.62	<b>Habitat Type*</b> <input type="radio"/> Riffle <input type="radio"/> Run <input checked="" type="radio"/> Glide <input type="radio"/> Pool	<b>Riparian Vegetation</b>	
6	10.30 * 1.70	<b>Dominant Substrate*</b> <input type="radio"/> Mud silt <input type="radio"/> Sand <input type="radio"/> Gravel <input type="radio"/> Cobble <input checked="" type="radio"/> Boulders <input type="radio"/> Lg Boulders <input type="radio"/> Bedrock	Left Bank	Right Bank
7	11.46 * 1.80		Grasses, Forbs (%) * 20	Grasses, Forbs (%) * 5
8	12.62 * 1.62	% Gravel or Larger * 80	Trees (%) * 75	Trees (%) * 85
9	13.78 * 1.28	Instream Cover (%) * 2	Shrubs (%) * 5	Shrubs (%) * 10
	14.94 *	<b>Macrophyte Abundance*</b> <input type="radio"/> Abundant <input type="radio"/> Common	Cultivated Field (%) *	Cultivated Field (%) *

10	14.94 * 0.73	<input type="radio"/> Abundant <input type="radio"/> Common <input type="radio"/> Rare <input checked="" type="radio"/> Absent	Field (%) * 0	Field (%) * 0	
11	16.10 * 0.10	<b>Algae Abundance*</b> <input type="radio"/> Abundant <input type="radio"/> Common <input checked="" type="radio"/> Rare <input type="radio"/> Absent	Other (%) * 0	Other (%) * 0	
Thalweg (m; #.##) * 1.80		<input checked="" type="radio"/> >    20		<b>Riparian Buffer Width</b> (m; 0-20, >20) <input checked="" type="radio"/> >    20	
<b>Bank Slope (°)</b>		<b>Tree Canopy Coverage (#/17)</b>			
Left Bank *	Right Bank *	Left Bank *	Left Center *	Right Center *	Right Bank *
20	75	16	7	10	17
1 of 6 >					
<b>--End of Transect 1 Data--</b>					
FXXX_RevXX		Issued by SARA QA: XX		Effective: m/d/yyyy	

Transects 2-6 are identical to the screenshots above.



Addition of Survey123 as an option for collection of routine water quality field parameters and field observations are included below.

✕
ESD Routine Water Quality
📶 ☰

▼ **Sample 1 of 4**

<b>LIMS Sample #</b> (XX#####) * <input style="width: 90%;" type="text" value="AB45678"/>	<b>Date *</b> <input style="width: 90%;" type="text" value="Wednesday, May 22, 2024"/>			
<b>Station ID</b> (#####) * <input style="width: 90%;" type="text" value="17066"/>	<b>Time *</b> <input style="width: 90%;" type="text" value="10:57 AM"/>			
<b>Collectors (AB/XYZ/LM/EFG/PQ...)</b> * <input style="width: 90%;" type="text" value="AD/CP"/>	<b>Sample Comments</b> <div style="border: 1px solid #ccc; height: 40px;"></div>			
<b>Field Dissolved Oxygen *</b> mg/L, #.# <input style="width: 90%;" type="text" value="5.3"/>	<b>Field Water Temperature *</b> °C, #.# <input style="width: 90%;" type="text" value="22.4"/>			
<b>Field pH *</b> #.# <input style="width: 90%;" type="text" value="8.1"/>	<b>Field Conductivity *</b> μS/cm, ###00, ###0, ###, ##, #.# <input style="width: 90%;" type="text" value="1030"/>			
<b>Secchi Depth *</b> m, #.# or 0.## <input style="width: 90%;" type="text" value="0.85"/>	<b>End Depth</b> m, ### or 0.3 <input style="width: 90%;" type="text" value="0.14"/>			
<table style="width: 100%; border: none;"> <tr> <td style="width: 33%; border: none; vertical-align: top;"> <b>Flow Severity*</b>  <input type="radio"/> No Flow  <input checked="" type="radio"/> Normal  <input type="radio"/> High  <input type="radio"/> Not Recorded  <input type="radio"/> Low  <input type="radio"/> Flood  <input type="radio"/> Dry                 </td> <td style="width: 33%; border: none; vertical-align: top;"> <b>Field Water Color*</b>  <input type="radio"/> Brown  <input checked="" type="radio"/> Green  <input type="radio"/> Clear  <input type="radio"/> Not Recorded  <input type="radio"/> Reddish  <input type="radio"/> Black  <input type="radio"/> Other                 </td> <td style="width: 33%; border: none; vertical-align: top;"> <b>Field Water Odor*</b>  <input type="radio"/> Sewage  <input type="radio"/> H2S  <input type="radio"/> Fishy  <input type="radio"/> Other  <input type="radio"/> Oily/Chemical  <input type="radio"/> Musky  <input checked="" type="radio"/> None  <input type="radio"/> Not Recorded                 </td> </tr> </table>		<b>Flow Severity*</b> <input type="radio"/> No Flow <input checked="" type="radio"/> Normal <input type="radio"/> High <input type="radio"/> Not Recorded <input type="radio"/> Low <input type="radio"/> Flood <input type="radio"/> Dry	<b>Field Water Color*</b> <input type="radio"/> Brown <input checked="" type="radio"/> Green <input type="radio"/> Clear <input type="radio"/> Not Recorded <input type="radio"/> Reddish <input type="radio"/> Black <input type="radio"/> Other	<b>Field Water Odor*</b> <input type="radio"/> Sewage <input type="radio"/> H2S <input type="radio"/> Fishy <input type="radio"/> Other <input type="radio"/> Oily/Chemical <input type="radio"/> Musky <input checked="" type="radio"/> None <input type="radio"/> Not Recorded
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## ESD Routine Water Quality

<b>Present Weather *</b> <input type="radio"/> Clear <input checked="" type="radio"/> Partly Cloudy <input type="radio"/> Cloudy <input type="radio"/> Rain <input type="radio"/> Other <input type="radio"/> Not Recorded	<b>Rainfall (Inches, Gauge Data) previous 24 hours *</b> #.## <input style="width: 100%;" type="text" value="Not Recorded"/> <span style="float: right;">⊗</span> <small>243</small>														
<b>Days Since Last Precipitation Event *</b> <1, 1-75, >75 <input style="width: 100%;" type="text" value="5"/> <span style="float: right;">⊗</span>	<b>Rainfall in 1 day Inclusive Prior to Sample *</b> #.## <input style="width: 100%;" type="text" value="Not Recorded"/> <span style="float: right;">⊗</span>														
<b>Instantaneous Flow *</b> see rules to right <input style="width: 100%;" type="text" value="9.8"/> <span style="float: right;">⊗</span>	<table style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left;">Flow Rounding Value</th> <th style="text-align: left;">Report</th> </tr> <tr> <td>&gt;=10</td> <td>round to whole number</td> </tr> <tr> <td>&lt;10, &gt;=0.1</td> <td>#.#</td> </tr> <tr> <td>&lt;0.1, &gt;=0.01</td> <td>do not round</td> </tr> <tr> <td>&lt;0.01</td> <td>&lt;0.01</td> </tr> <tr> <td>no flow/pools</td> <td>0.0</td> </tr> <tr> <td>dry</td> <td>Not Recorded</td> </tr> </table>	Flow Rounding Value	Report	>=10	round to whole number	<10, >=0.1	#.#	<0.1, >=0.01	do not round	<0.01	<0.01	no flow/pools	0.0	dry	Not Recorded
Flow Rounding Value		Report													
>=10		round to whole number													
<10, >=0.1	#.#														
<0.1, >=0.01	do not round														
<0.01	<0.01														
no flow/pools	0.0														
dry	Not Recorded														
<b>Estimated Flow *</b> see rules to right <input style="width: 100%;" type="text" value="Not Recorded"/> <span style="float: right;">⊗</span>															
<b>Flow Method *</b> <input checked="" type="radio"/> Gauge <input type="radio"/> Electric <input type="radio"/> Mechanical <input type="radio"/> Weir/Flume <input type="radio"/> Doppler <input type="radio"/> Not Recorded															
1 of 4 <span style="float: right;">➤</span>															
Enter number of samples below to activate data entry section.															
<b>Number of Samples *</b> (1-9; all samples must be completed) <input style="width: 100%;" type="text" value="4"/> <span style="float: right;">⊗</span>															
Form Revision: FXXX_01	Issued By SARA QA: XX, Effective Date: M/D/YYYY														

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