

Amendment #1

Update to the Lower Neches Valley Authority Clean Rivers Program FY 2022/2023 QAPP

*Prepared by the Lower Neches Valley
Authority 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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Justification

This document details the changes made to the basin-wide Quality Assurance Project Plan to update Appendix B for fiscal year 2023. This document also updates personnel changes, updates versions of referenced documentation, adds clarifying language about frequency of blank collection, and addresses any other changes made to the quality program since the last amendment.

Summary of Changes

Section/Figure/Table	Page	Change	Justification
Section A1	3, 5	<p>Replaced Rebecca DuPont with Kyle Girten as Acting CRP Work Leader</p> <p>Replaced Rebecca DuPont with Luis Medina as CRP Project Quality Assurance Specialist</p> <p>Replaced Dana Squires with Jason Natho as Acting Lead CRP Quality Assurance Specialist</p> <p>Replaced Natalia Bondar with Tiffany Guerrero as EEL Technical Director</p> <p>Replaced Tiffany Guerrero with Emily McGregor as EEL Quality Assurance Manager</p>	<p>Personnel changes at TCEQ</p> <p>Personnel changes at Eastex Environmental Lab (EEL)</p>
Section A3	9	<p>Replaced Dana Squires with Jason Natho as Acting Lead CRP Quality Assurance Specialist</p> <p>Replaced Natalia Bondar with Tiffany Guerrero as EEL Technical Director</p> <p>Replaced Tiffany Guerrero with Emily McGregor as EEL Quality Assurance Manager</p>	<p>Personnel changes at TCEQ</p> <p>Personnel changes at Eastex Environmental Lab (EEL)</p>
Section A4	10-12	<p>Replaced Sarah Kirkland with Scott Delgado as CRP Data Manager</p> <p>Replaced Rebecca DuPont with Kyle Girten as Acting CRP Work Leader</p>	<p>Personnel changes at TCEQ</p>

		<p>Replaced Rebecca DuPont with Luis Medina as CRP Project Quality Assurance Specialist</p> <p>Replaced Dana Squires with Jason Natho as Acting Lead CRP Quality Assurance Specialist</p> <p>Replaced Natalia Bondar with Tiffany Guerrero as EEL Technical Director.</p> <p>Replaced Tiffany Guerrero with Emily McGregor as EEL Quality Assurance Manager.</p>	<p>Personnel changes at Eastex Environmental Lab (EEL)</p>
Figure A4.1	13	<p>Replaced Sarah Kirkland with Scott Delgado as CRP Data Manager</p> <p>Replaced Rebecca DuPont with Kyle Girten as Acting CRP Work Leader</p> <p>Replaced Rebecca DuPont with Luis Medina as CRP Project Quality Assurance Specialist</p> <p>Replaced Dana Squires with Jason Natho as Acting Lead CRP Quality Assurance Specialist</p> <p>Replaced Natalia Bondar with Tiffany Guerrero as EEL Technical Director</p> <p>Replaced Tiffany Guerrero with Emily McGregor as EEL Quality Assurance Manager</p>	<p>Personnel changes at TCEQ</p> <p>Personnel changes at EEL</p>
Section A6	14	<p>Added statement that EEL is primary testing laboratory for nutrients, conventionals, and bacteria with SRA as the secondary. Also added statement that designates SRA as the primary laboratory for total and dissolved metals</p>	<p>Designates the primary and secondary testing laboratory</p>

Section B2	20-21	Table B2.1 Sample Storage, Preservation and Handling Requirements for SRA updated to include total and dissolved metals	Addition of total and dissolved metals samples to be collected at station 15355, Beech Creek
Section B3	22-23	Added statement that EEL is primary testing laboratory for nutrients, conventionals, and bacteria with SRA as the secondary. Also added statement that designates SRA as the primary laboratory for total and dissolved metals	Designates the primary and secondary testing laboratory for all of the water quality parameters
Appendix A	38-44	Metals in Water Table added Table A7.7 added to Appendix A	Addition of metals in water sampling on station 15355 by SRA and their subcontractor Eurofins Xenco.
Appendix B	47	Updated sample design rationale for FY2023; added description of additional 24 HR DO stations and metals in water for station 15355	Describes changes to monitoring design for FY2023 based on the FY2022 Coordinated Monitoring Meetings
Appendix B Table B1.1	49-51	Updated Table B1.1; 24 HR DO added to Station 15345 and 10602 added table B1.1	Describes changes to monitoring design for FY2023 based on the FY2022 Coordinated Monitoring Meetings
Appendix C	52	Map of monitoring station 15355, Beech Creek added	Describes changes to monitoring design for FY2023 based on the FY2022 Coordinated Monitoring Meetings

Detail of Changes

A1 Approval Page

Texas Commission on Environmental Quality

Water Quality Planning Division

Electronically approved on 9/15/2022

Kyle Girten, Acting Work Leader Date
Clean Rivers Program

Electronically approved on 9/15/2022

Luis Medina Date
Project Quality Assurance Specialist
Clean Rivers Program

Electronically approved on 9/15/2022

Luis Medina, Project Manager Date
Clean Rivers Program

Electronically approved on 8/31/2022

Cathy Anderson, Team Leader Date
Data Management and Analysis

Monitoring Division

Electronically approved on 9/15/2022

Jason Natho Date
Acting Lead CRP Quality
Assurance Specialist

Lower Neches Valley Authority (LNVA)

Electronically approved on 8/31/2022

Jeannie Bowlen
LNVA Project Manager

Date

Electronically approved on 8/31/2022

Brielle Patronella
LNVA Quality Assurance Officer

Date

Electronically approved on 8/31/2022

Bethany Stanton
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Date

Eastex Environmental Laboratory (EEL) – Coldspring

Electronically approved on 9/13/2022

Tiffany Guerrero Date
EEL Technical Director

Electronically approved on 9/01/2022

Emily McGregor Date
EEL Quality Assurance Manager

Sabine River Authority (SRA)

Electronically approved on 8/31/2022

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Date

Electronically approved on 8/31/2022

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A4 Project Task/Organization

Description of Responsibilities

TCEQ

Kyle Girten

Acting CRP Work Leader

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 Quality Management Plan. Enforces corrective action, as required, where QA protocols are not met. Ensures CRP personnel are fully trained.

Jason Natho

Acting Lead CRP 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. Serves on planning team for CRP special projects. Coordinates the approval of CRP QAPPs. Prepares and distributes annual audit plans. Conducts monitoring systems audits of Planning Agencies. 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 QAPP records and audit records for the CRP.

Luis Medina

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 Basin Planning Agency audits. Verifies QAPPs are being followed by contractors and that projects are producing data of known quality. Coordinates project planning with the Basin Planning Agency Project Manager. Reviews and approves data and reports produced by contractors. 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).

Luis Medina

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 and reviews QAPPs in coordination with other CRP staff. Coordinates documentation and implementation of corrective action for the CRP.

Lower Neches Valley Authority (LNVA)

Jeannie Bowlen

LNVA 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 basin planning agency participants and that projects are producing data of known quality. Ensures that sub participants 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. Responsible for validating that data collected are acceptable for reporting to the TCEQ.

Brielle Patronella

LNVA 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 TCEQ QAS to resolve QA-related issues. Notifies the LNVA 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. Conducts monitoring systems audits 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.

Bethany Stanton

LNVA Data Manager

Responsible for ensuring that field data are properly reviewed and verified. Responsible for the transfer of basin quality-assured water quality data to the TCEQ in a format compatible with SWQMIS. Maintains quality-assured data on LNVA internet sites. Responsible for validating that data collected are acceptable for reporting to the TCEQ.

LNVA Environmental Analysts

Responsible for collecting data and water quality samples in the field in accordance with the TCEQ SWQM Manual and maintaining credible chain-of-custody records. Environmental Analysts must report any quality assurance issues to the LNVA Project Manager and/or LNVA QAO immediately. Reports to LNVA Project Manager.

Eastex Environmental Laboratory (EEL) -Coldspring

Tiffany Guerrero

Technical Director

Responsible for ensuring all analytical and operational activities are documented. Supervises all personnel. Ensures that all sample acceptance criteria are verified and that samples are logged into the sample tracking system and properly labeled and stored. Performs annual Management System Reviews. Ensures that the laboratory has the appropriate resources and facilities to perform requested work. Ensures that corrective actions relating to findings from internal audits are completed. Ensures that outside support services and supplies are of adequate quality to perform laboratory testing. Ensures all QC requirements and performance specifications are followed per this QAPP, and coordinates with the LNVA Project Manager on any deficiencies or corrective actions.

Emily McGregor

Quality Assurance Manager

Responsible for the oversight and/or review of quality control data. Responsible for auditing the implementation of the Quality System. Ensures that EEL staff are properly trained and that training records are maintained. Responsible for documenting the quality of all data reported by the laboratory and monitoring standards of performance in quality control and quality assurance. Responsible for QC requirements and performance specifications per this QAPP. Coordinates and monitors deficiencies and corrective actions, and maintains records of data verification and validation.

Sabine River Authority (SRA)

Pollie Holtham

SRA Technical Manager

Responsible for overall performance, administration, and reporting of analyses performed by SRA Environmental Services Division Laboratory. Responsible for supervision of laboratory personnel involved in generating analytical data for the Clean Rivers Program. Ensures that laboratory personnel have adequate training and thorough knowledge of the QAPP and related SOPs. Responsible for oversight of all laboratory operations ensuring that all requirements are met, documentation is complete and adequately maintained, and results are reported accurately.

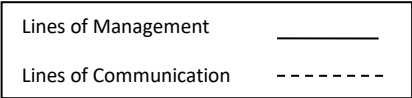
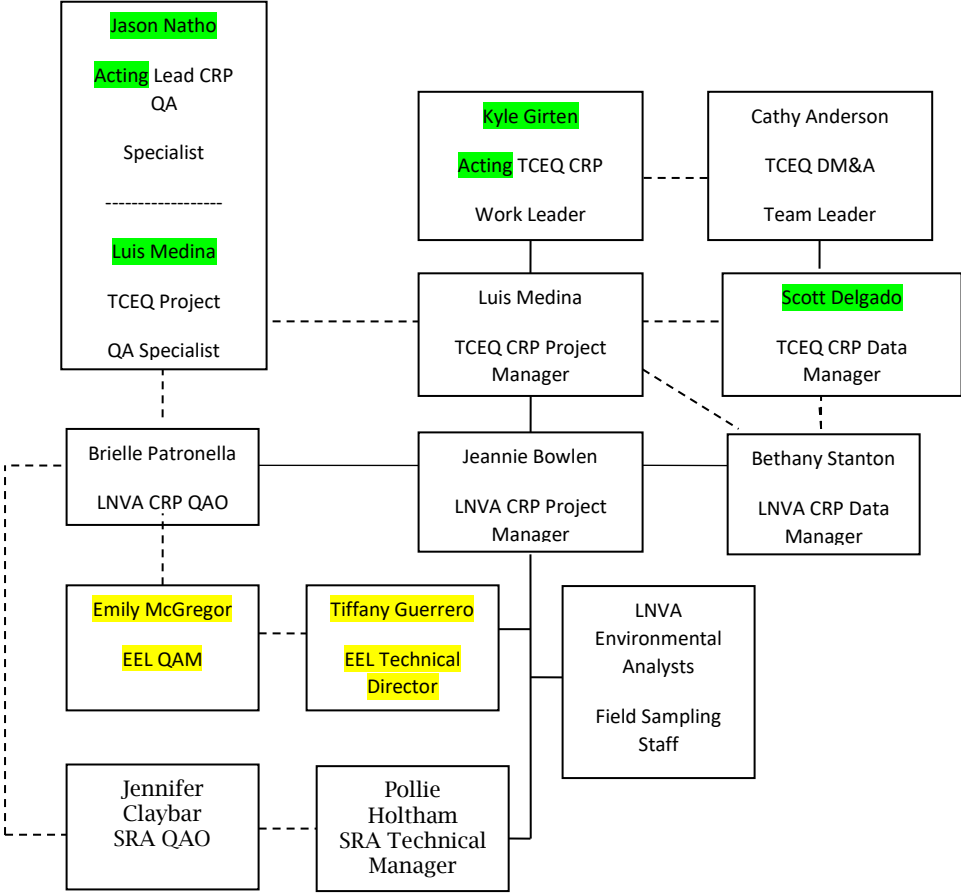
Jennifer Claybar

SRA Quality Assurance Officer

Responsible for the overall quality control and quality assurance performed by the SRA Environmental Services Division Laboratory. Monitors the implementation of the QAPP to ensure complete compliance with QA data quality objectives, as defined in this QAPP. Conducts in house audits in accordance with NELAP requirements to ensure compliance with written SOPs and to identify potential problems. Responsible for supervising and verifying all aspects of the QA/QC in the laboratory. Notifies the SRA Technical Manager of particular circumstances which may adversely affect the quality of data.

Project Organization Chart

Figure A4.1. Organization Chart - Lines of Communication



A6 Project/Task Description

Water quality monitoring in the basin will focus on collecting information to characterize water quality in a variety of locations and conditions. LNVA will conduct long-term water quality monitoring at routine monitoring sites, and coordinate all monitoring plans with TCEQ regional offices and other monitoring entities to avoid duplication of effort. The final number of sites, locations, frequencies, and parameters are based on available funding resources and priorities identified by the basin stakeholders and monitoring agencies at annual meetings.

The primary testing laboratory for nutrients, conventionals, and bacteria will be Eastex Environmental Labs (EEL) with Sabine River Authority (SRA) as a secondary laboratory for the testing of these parameters. The primary laboratory for the analysis for metals in water sampling, total and dissolved, will be SRA. The dissolved metals samples will be laboratory filtered by SRA.

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.

Amendments to the QAPP

Revisions to the QAPP 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 LNVA Project Manager to the CRP Project Manager electronically. The Basin Planning Agency will submit a completed QAPP Amendment document, including a justification of the amendment, a table of changes, and all pages, sections, and attachments affected by the amendment. Amendments are effective immediately upon approval by the LNVA Project Manager, the LNVA QAO, the CRP Project Manager, the CRP Lead QA Specialist, the CRP Project QA Specialist, and additional parties affected by the amendment. Amendments are not retroactive. No work shall be implemented without an approved 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 this QAPP. Any deviation or deficiency from this QAPP which occurs after the execution of this QAPP will 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 LNVA Project Manager. If adherence letters are required, the LNVA will secure an adherence letter from each sub-tier project participant (e.g., subcontractors, sub-participant, or other units of government) affected by the amendment stating the organization's awareness of and commitment to requirements contained in each amendment to the QAPP. The Basin Planning Agency will maintain this documentation as part of the project's QA records, and ensure that the documentation is available for review.

Special Project Appendices

Projects requiring QAPP appendices will be planned in consultation with the LNVA and the TCEQ Project Manager and TCEQ technical staff. Appendices will be written in an abbreviated format and will reference the Basin QAPP where appropriate. Appendices will be approved by the LNVA Project Manager, the LNVA QAO, the Laboratory (as applicable), and the CRP Project Manager, the CRP Project QA Specialist, the CRP Lead QA Specialist and additional parties affected by the Appendix, as appropriate. Copies of approved QAPP appendices will be distributed by the LNVA to project participants before data collection activities commence. The Basin Planning Agency will secure written documentation from each sub-tier project participant (e.g., subcontractors, sub participants, other units of government) stating the organization's awareness of and commitment to requirements

contained in each special project appendix to the QAPP. The LNVA will maintain this documentation as part of the project's QA records, and ensure that the documentation is available for review.

B2 Sampling Methods

Field Sampling Procedures

Field sampling will be conducted in accordance with the latest versions of the TCEQ Surface Water Quality Monitoring Procedures Volume 1: Physical and Chemical Monitoring Methods for Water, Sediment, and Tissue, 2012 (RG-415) and Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data, 2014 (RG-416), collectively referred to as "SWQM Procedures." Updates to SWQM Procedures are posted to the Surface Water Quality Monitoring Procedures website (https://www.tceq.texas.gov/waterquality/monitoring/swqm_guides.html), and shall be incorporated into the LNVA's procedures, QAPP, SOPs, etc., within 60 days of any final published update. Additional aspects outlined in Section B below reflect specific requirements for sampling under CRP and/or provide additional clarification.

Table B2.1 Sample Storage, Preservation and Handling Requirements SRA

Container	Volume	Parameter	Matrix	Additional Preservation†	Hold Time
Plastic bottle	120mL	Nitrate	Water	None	48 hours
		Nitrite			28 days
		Sulfate			
		Chloride			
Plastic bottle	250mL	Total Phosphorus Ammonia	Water	H2SO4 to pH <2	28 days
Plastic bottle	250mL	Total Hardness	Water	HNO3 to pH <2	6 months
Plastic bottle	1000mL	TSS	Water	None	7 days
Plastic bottle	1000mL	Total Alkalinity	Water	None	14 days
Plastic bottle	250mL	Turbidity	Water	None	48 hours
Sterile plastic bottle	100mL	E. coli	Water	Na2S2O3‡	8 hours*
		Enterococcus			
Plastic bottle	250 mL	Dissolved Metals	Water	HNO3 to pH <2	6 months
Plastic bottle	250 mL	Total Metals	Water	HNO3 to pH <2	6 months

†All samples cooled to <6° C without freezing

‡Sodium thiosulfate is required only if residual chlorine is detected.

**E. coli* samples should always be processed as soon as possible and incubated no later than 8 hours from time of collection. When transport conditions necessitate sample incubation after 8 hours from time of collection, the holding time may be extended and samples must be processed as soon as possible and within 30 hours.

B3 Sample Handling and Custody

Sample Tracking

Proper sample handling and custody procedures ensure the custody and integrity of samples beginning at the time of sampling and continuing through transport, sample receipt, preparation, and analysis.

A sample is in custody if it is in actual physical possession or in a secured area that is restricted to authorized personnel. The Chain of Custody (COC) form is a record that documents the possession of the samples from the time of collection to receipt in the laboratory. The following information concerning the sample is recorded on the COC form (See Appendix E). The following list of items matches the COC form in Appendix E.

- Date and time of collection
- Site identification
- Sample matrix
- Number of containers
- Preservative used
- Was the sample filtered
- Analyses required
- Name of collector
- Custody transfer signatures and dates and time of transfer
- Bill of lading, if applicable

Sample Labeling

Samples from the field are labeled on the container, or on a label, with an indelible marker. Label information includes:

- Site identification
- Date and time of collection
- Preservative added, if applicable
- Indication of field-filtration for metals, as applicable
- Sample type (i.e., analyses) to be performed

Sample Handling

All samples collected and/or analyzed are logged into the respective LIMS. A unique identifier label is generated and attached to each sample bottle. Appropriate personnel in each lab confirm receipt by signing the appropriate Chain of Custody Form (See Appendix D).

The sample login information includes sample ID, project, location, sample type, date and time sampled, date and time of receipt, sample matrix, collector's name, analyte(s), preservative, and field comments. The laboratory checks samples for the following qualities, where appropriate, to evaluate sample acceptance: temperature, pH, preservative type, bottle type, sample integrity, fully required documentation (see above), and holding times. Samples are then stored in the designated refrigerators until analysis. Holding times are monitored by the appropriate personnel in each laboratory.

The primary testing laboratory for nutrients, conventionals, and bacteria will be Eastex Environmental Labs (EEL) with Sabine River Authority (SRA) as a secondary laboratory for the testing of these parameters. The primary laboratory for the analysis for metals in water sampling, total and dissolved will be SRA. The dissolved metals samples will be laboratory filtered by SRA.

SRA and/or EEL are contacted and a pickup time is determined same-day prior to sampling.

- For EEL, the samples remain in the designated sample refrigerator or field cooler(s) until EEL arrives and the chain of custody form is completed (see Appendix E). EEL then transports the sample to their laboratory for testing.
- For SRA, the samples remain in the designated field cooler(s) until either SRA arrives or the samples can be dropped off at the SRA laboratory, and the chain of custody form is completed (see Appendix E). When appropriate, SRA then transports the sample to their laboratory for testing.

Sample handling procedures including Sample Receipt/Tracking, Sample Acceptance, Sample Storage, Chain of Custody, and Sample Disposal are detailed in the EEL QA Manual, Section 4.0: Sample Handling and SRA-TX FY 2022-2023 QAPP for the Clean Rivers Program. Samples analyzed by contract laboratories will be included on the appropriate Chain of Custody forms.

Sample Tracking Procedure Deficiencies and Corrective Action

All deficiencies associated with COC procedures, as described in this QAPP, are immediately reported to the Basin Planning Agency Project Manager. These include such items as delays in transfer resulting in holding time violations; violations of sample preservation requirements; incomplete documentation, including signatures; possible tampering of samples; broken or spilled samples, etc. The LNVA Project Manager in consultation with the LNVA QAO will determine if the procedural violation may have compromised the validity of the resulting data. Any failures that have reasonable potential to compromise data validity will invalidate data and the sampling event should be repeated. The resolution of the situation will be reported to the TCEQ CRP Project Manager in the project progress report. CAPs will be prepared by the Lead Organization QAO and submitted to TCEQ CRP Project Manager along with project progress report.

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

Appendix A: Measurement Performance Specifications (Table A7.7- Measurement Performance Specifications for LNVA Contract Laboratories)

TABLE A7.7 Measurement Performance Specifications for LNVA Contract Laboratory-Sabine River Authority										
Metals in Water										
Parameter	Units	Matrix	Method	Parameter Code	TCEQ AWRL	LOQ	LOQ Check Sample %Rec	Precision (mm)	Bias %Rec. of LCS	Lab
HARDNESS, TOTAL (MG/L AS CaCO3)*	mg/L	water	SM 2340 B or C	00900	5	5	NA	20	80-120	SRA
CALCIUM, DISSOLVED (MG/L AS Ca)**	mg/L	water	EPA 200.7	00915	NA	NA	70-130	20	80-120	Eurofins Xenco Houston
SODIUM, DISSOLVED (MG/L AS Na)**	mg/L	water	EPA 200.7	00930	NA	NA	70-130	20	80-120	Eurofins Xenco Houston
POTASSIUM, DISSOLVED (MG/L AS K)**	mg/L	water	EPA 200.7	00935	NA	NA	70-130	20	80-120	Eurofins Xenco Houston
ARSENIC, DISSOLVED (UG/L AS AS)	µg/L	water	EPA 200.8	01000	5	5	70-130	20	80-120	SRA
CADMIUM, DISSOLVED (UG/L AS Cd)	ug/L	water	EPA 200.8 Rev 5-4 (1998)	01025	0.1 for waters <50mg/L hardness ----- 0.3 for waters >50mg/L hardness	0.1 for waters <50mg/L hardness ----- 0.3 for waters >50mg/L hardness	70-130	20	80-120	SRA
CHROMIUM, DISSOLVED (UG/L AS Cr)	ug/L	water	EPA 200.8 Rev 5-4 (1998)	01030	10	10	70-130	20	80-120	SRA
COPPER, DISSOLVED (UG/L AS Cu)	ug/L	water	EPA 200.8 Rev 5-4 (1998)	01040	1 for waters < 50mg/L hardness ----- 3 for waters >= 50mg/L hardness	1 for waters < 50mg/L hardness ----- 3 for waters >= 50mg/L hardness	70-130	20	80-120	SRA

IRON, DISSOLVED (UG/L)**	ug/L	water	EPA 200.7	01046	NA	NA	70- 130	20	80- 120	Eurofins Xenco Houston
LEAD, DISSOLVED (UG/L AS PB)	ug/L	water	EPA 200.8 Rev 5.4 (1998)	01049	0.1 for waters < 85 mg/L hardness ----- 1 for waters >= 85 mg/L hardness	0.1 for waters < 85 mg/L hardness ----- 1 for waters >= 85 mg/L hardness	70- 130	20	80- 120	SRA
NICKEL, DISSOLVED (UG/L AS NI)	ug/L	water	EPA 200.8 Rev 5.4 (1998)	01065	10	10	70- 130	20	80- 120	SRA
SILVER, DISSOLVED (UG/L AS AG)**	ug/L	water	EPA 200.8 Rev 5.4 (1998)	01075	0.5	0.5	70- 130	20	80- 120	Eurofins Xenco Houston
ZINC, DISSOLVED (UG/L AS ZN)	ug/L	water	EPA 200.8 Rev 5.4 (1998)	01090	5	5	70- 130	20	80- 120	SRA
ALUMINUM, DISSOLVED (UG/L AS AL)**	ug/L	water	EPA 200.7 Rev 4.4 (1994)	01106	200	200	70- 130	20	80- 120	Eurofins Xenco Houston
SELENIUM, TOTAL (UG/L AS SE)	ug/L	water	EPA 200.8 Rev 5.4 (1998)	01147	2	2	70- 130	20	80- 120	SRA
MERCURY, TOTAL, WATER, METHOD 1631 ug/L**	ug/L	water	EPA 1631	71960	0.006	0.006	70- 130	20	80- 120	Eurofins Xenco Pensacola, FL

*Hardness is not used for regulatory purposes but is used to assess metals in water at inland sites (estuarine sites do not require hardness analysis).

**Total mercury and dissolved silver, calcium, sodium, potassium, iron, and aluminum are subcontracted by SRA to Eurofins Xenco, whose adherence letters are on file for their Stafford and Pensacola locations. A courier will transport metals samples from SRA to the Eurofins Xenco Houston located in Stafford, Texas. The analysis of the dissolved metals will be performed in Stafford. Eurofins Xenco Houston in Stafford will ship the total mercury sample to their location in Pensacola, Florida for analysis.

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 Sampling Process Design and Monitoring Schedule (plan)

Sample Design Rationale **FY 2023**

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 Lower Neches Valley Authority coordinates closely with the TCEQ and other participants to ensure a comprehensive water monitoring strategy within the watershed.

The following changes or additions have been made to the monitoring schedule. These changes have come about as a results of requests made by steering committee members and monitoring entities.

24 Hour DO monitoring events will continue at stations 15367 (Pine Island Bayou at SH 105 0.65 KM Southwest of FM 770/SH 105 intersection near Batson, on segment 0607), 16127 (Boggy Creek at FM 421 1.75 KM Southwest of FM 421/ US 69 intersection near Lumberton on segment 0607A), and 16126 (Mill Creek at FM 418, 4.5 KM Northwest of Silsbee on segment 0608) in FY 2023 in order to provide data to TCEQ in the event of a standard change approval by EPA. 24 Hour DO was also added to station 10602 (Pine Island Bayou at US 69/US 96/US287 at Voth Rd and station 15345 (Willow Creek at unnamed road 4.87 KM North Northwest of Nome 6.78 KM Upstream of Pine Island Bayou confluence/SH 326) for the same reason.

Metals in water sampling will occur on Station 15355 (Beech Creek AT FM 1943 7 KM West of FM 1943/FM 92 Intersection 7.3 KM West- Southwest of the city of Fred). This has been added at the request of monitoring entities in order to accumulate recent data for assessment purposes.

Monitoring Sites for FY 2023

Table B1.1 Sample Design and Schedule, FY 2023

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	Metals Water	Bacteria	Conv	Flow	Field	Comments
NECHES RIVER 217 METERS EAST AND 2.11 KILOMETERS NORTH TO THE INTERSECTION OF COLEMAN STREET AND EAST LUCAS DRIVE AT LNVA SALINITY STATION Y 1.8 KILOMETERS DOWNSTREAM OF NECHES RIVER SALTWATER BARRIER	20774	0601	10	LV	LV	RT			4	4	4	4	USGS Station 08041780
NECHES RIVER AT FM 1013 IN THE BIG THICKET NATIONAL PRESERVE EAST OF SPURGER IN JASPER COUNTY	10581	0602	10	LV	LV	RT			4	4	4	4	USGS Station 08040600
NECHES RIVER AT HIGH LINE CROSSING 0.55 KM DOWNSTREAM OF PINE ISLAND BAYOU 5.85 KM EAST NORTHEAST OF SH 105/US 69 INTERSECTION	10579	0602	10	LV	LV	RT			4	4	4	4	USGS Station 08041780
NECHES RIVER NEAR LAKEVIEW 1 KM WEST OF FM 1131 12.24 KM UPSTREAM OF PINE ISLAND BAYOU CONFLUENCE	15343	0602	10	LV	LV	RT			4	4	4	4	USGS Station 08041000 and 08041500
SANDY CREEK AT FM 777 2.15 KM SOUTHWEST OF FM 777/US 190 INTERSECTION 14.7 KM SOUTHWEST OF JASPER	10484	0603A	10	LV	LV	RT			4	4	4	4	
WOLF CREEK AT FM 256 5.6 KM UPSTREAM OF BA. STEINHAGEN RESERVOIR 2.3 KM NNW OF US 190/FM 256 INTERSECTION 16.8 KM NE OF WOODVILLE	15344	0603B	10	LV	LV	RT			4	4	4	4	
PINE ISLAND BAYOU AT LNVA LOWER PUMP STATION 6.62 KM UPSTREAM OF NECHES RIVER CONFLUENCE 2.86 KM EAST OF US 69	10599	0607	10	LV	LV	RT			4	4	4	4	USGS Station 08041780

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	Metals in Water	Bacteria	Conv	Flow	Field	Comments
PINE ISLAND BAYOU AT SOUR LAKE ROAD 7.5 KM SOUTHEAST OF INTERSECTION OF SH 326/SH 105 IN CITY OF SOUR LAKE	10607	0607	10	LV	LV	RT			4	4	4	4	USGS Station 08041700
PINE ISLAND BAYOU AT US 69 /US 96/US 287 AT VOTH	10602	0607	10	LV	LV	RT	4		4	4	4	4	USGS Station 08041749
PINE ISLAND BAYOU AT SH 105 0.65 KM SOUTHWEST of FM 770/SH 105 INTERSECTION NEAR CITY OF BATSON	15367	0607	10	LV	LV	RT	4		4	4	4	4	
BOGGY CREEK AT FM 421 1.75 KM SOUTHWEST OF FM 421/US 69 INTERSECTION NEAR LUMBERTON	16127	0607A	10				4				4		TCEQ Region 10 CRP Site
LITTLE PINE ISLAND BAYOU AT SH 326 5.68 KM NORTH OF CITY OF SOUR LAKE	15346	0607B	10	LV	LV	RT			4	4	4	4	
WILLOW CREEK AT UNNAMED ROAD 4.87 KM NORTH NORTHWEST OF NOME 6.78 KM UPSTREAM OF PINE ISLAND BAYOU CONFLUENCE/SH 326	15345	0607C	10	LV	LV	RT	4		4	4	4	4	
VILLAGE CREEK AT 418 5.04 KM NORTHEAST OF KOUNTZE	13625	0608	10	LV	LV	RT			4	4	4	4	
BEECH CREEK AT FM 1013 1.13 KM WEST OF SPURGER	10529	0608A	10	LV	LV	RT			4	4	4	4	
BEECH CREEK AT FM 1943 7 KM WEST OF FM 1943/ FM 92 INTERSECTION 7.3 KM WEST- SOUTHWEST OF CITY OF FRED	15355	0608A	10	LV	LV	RT		4					
BIG SANDY CREEK AT FM 942 2.07 KM SOUTHWEST OF FM 942/FM 2500 INTERSECTION 10.47 KM SOUTHEAST OF LEGGETT	15354	0608B	10	LV	LV	RT			4	4	4	4	
CYPRESS CREEK AT US 69/US 287 3.4 KM SOUTHEAST OF KOUNTZE	15352	0608C	10	LV	LV	RT			4	4	4	4	

Site Description	Station ID	Waterbody ID	Region	SE	CE	MT	24 hr DO	Metals in Water	Bacteria	Conv	Flow	Field	Comments
HICKORY CREEK AT US 69 0.73 KM NORTH OF FM 2827/US 69 INTERSECTION 5.8 KM SOUTH OF WARREN	15349	0608D	10	LV	LV	RT			4	4	4	4	
MILL CREEK AT FM 418 4.5 KM NORTHWEST OF SILSBEE	16126	0608E	10	LV	LV	RT	4				4		
TURKEY CREEK AT FM 1013 3.57 KM EAST NORTHEAST OF US 287/FM 1013 INTERSECTION 3.17 KM EAST NORTHEAST OF HILLISTER	15356	0608F	10	LV	LV	RT			4	4	4	4	
TURKEY CREEK AT GORE STORE ROAD 6.3 KM SOUTHEAST OF FM 2827/US 69 INTERSECTION 11.7 KM SOUTHEAST OF WARREN	15350	0608F	10	LV	LV	RT			4	4	4	4	
ANGELINA RIVER AT SH 63 2.10 KM SOUTHEAST OF SH 63/REC RD 255 INTERSECTION 19.56 KM NORTH OF JASPER	10610	0609	10	LV	LV	RT			4	4	4	4	
SAM RAYBURN RESERVOIR USGS SITE AC 2.5 KM EAST NORTHEAST OF FM 705/FM 3127 INTERSECTION	15673	0610	10	LV	LV	RT			4	4		4	
SAM RAYBURN RESERVOIR USGS SITE FC 7.21 KM SOUTHWEST OF FM 3173/FM 705 INTERSECTION	15671	0610	10	LV	LV	RT			4	4		4	
SAM RAYBURN RESERVOIR USGS SITE LC 1.7 KM NORTHWEST OF MILL CREEK PARK SWIMMING AREA 3.96 KM NW OF ST LOOP 149/ US 96 INTERSECTION	15674	0610	10	LV	LV	RT			4	4		4	

Appendix C: Station Location Maps

Station Location Maps

Maps of station 15355 monitored by the Lower Neches Valley Authority is provided below. The map was generated by the Lower Neches Valley 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 Jeannie Bowlen at (409) 892-4011.

