Amendment # 4
to the Red River Authority of Texas'
Clean Rivers Program FY 2014-2015 QAPP

Prepared by the Red River Authority of Texas
In Cooperation with the
Texas Commission on Environmental Quality (TCEQ)

Questions concerning this QAPP should be directed to:

Red River Authority of Texas
Allen M. Pappas
Clean Rivers Program Project Manager
3000 Hammon Road
P.O. Box 240
Wichita Falls, Texas 76307-0240
(940) 723-8697
allen.pappas@rra.texas.gov

Effective: Immediately Upon Approval by all Parties

JUSTIFICATION

This document details the changes made to the Authority's basin-wide Quality Assurance Project Plan to update **Appendix A**, specifically **Table A7.1-C**, to include the analysis of Total Phosphorus by EPA 365.4, and **Table A7.1-E**, to include the analysis of Nitrate by EPA 353.2. Additionally, **Chart 1** was updated to reflect the change in CRP Project Manager for the North Texas Municipal Water District (NM), detail the Authority's Data Entry Technicians, and define a line of communication between the Authority's Data Manager and the TCEQ CRP Project Manager.

SUMMARY OF CHANGES

A4 - Project/Task Organization

Section **A4 – Project/Task Organization** was updated to reflect current personnel responsibilities.

Chart 1 – Organization Chart - Lines of Communication

The **Project Organizational Chart**, **Chart 1**, has been updated with current personnel and lines of communication.

Table A7.1-C – Measurement Performance Specifications (Red River Authority of Texas)

Table A7.1 is being modified to include the analysis of Total Phosphorus by EPA 365.4.

Table A7.1-E – Measurement Performance Specifications (North Texas Municipal Water District)

Table A7.1 is being modified to include the analysis of Nitrate by EPA 353.2.

DETAIL OF CHANGES

A4 – Project/Task Organization

Section **A4 – Project/Task Organization** has been updated to list Cathy Anderson as the TCEQ DM&A Team Leader and Jose Martinez as a Data Entry Technician for the Red River Authority of Texas.

Chart 1 – Organization Chart - Lines of Communication

The **Project Organizational Chart**, **Chart 1**, has been updated to list Elizabeth Turner as the NM CRP Project Manager, Allen Pappas and Jose Martinez as RRA CRP Data Entry Technicians, and to establish a line of communication between the Authority's CRP Data Manger and the TCEQ CRP Project Manager per the current CRP Guidance and Basin QAPP. Additionally, the TCEQ DM&A Team Leader has been changed from Nancy Ragland to Cathy Anderson.

Table A7.1-C – Measurement Performance Specifications (Red River Authority of Texas)

Table A7.1-C is being modified to include the analysis of Total Phosphorus by EPA 365.4. This will be the primary analysis method for all Clean Rivers Program samples submitted to the Red River Authority of Texas Environmental Services Laboratory for Total Phosphorus analysis. SM 4500 P-E will be retained in **Table A7.1-C** as a back-up method should there be an instrument failure which would prevent the samples from being analyzed within the 28 day holding time.

Table A7.1-E – Measurement Performance Specifications (North Texas Municipal Water District)

Table A7.1-E is being modified to include the analysis of Nitrate by EPA 353.2.

DISTRIBUTION

These changes will be incorporated into the Authority's FY 2014-15 QAPP document and TCEQ, the Authority and all program participants will acknowledge and accept these changes by signing this amendment.

Red River Authority of Texas / Red River Authority of Texas Environmental Services Laboratory

Approved Electronically Effective December 2, 2014

Allen M. Pappas (allen.pappas@rra.texas.gov), Date
Red River Authority Project Manager / Red River Authority CRP QA Officer
Red River Authority Laboratory QA Officer

Approved Electronically Effective December 2, 2014

Jill Simpson (jill.simpson@rra.texas.gov), Date
Red River Authority Laboratory Supervisor

City of Sherman / City of Sherman Laboratory

Approved Electronically Effective December 2, 2014

Wayne Kuse (waynek@ci.sherman.tx.us), Date
City of Sherman CRP Project Manager

Approved Electronically Effective December 2, 2014

Nathan Whiddon (nathanw@ci.sherman.tx.us), Date
City of Sherman CRP QA Officer / City of Sherman Laboratory Supervisor

Approved Electronically Effective December 2, 2014

Nicole Moseley (nicolem@ci.serhman.tx.us), Date
City of Sherman Laboratory QA Officer

North Texas Municipal Water District / North Texas Municipal Water District Laboratory

Approved Electronically Effective December 2, 2014

Elizabeth Turner (eturner@NTMWD.com), Date
NTMWD CRP Project Manager

Approved Electronically Effective December 2, 2014

Wayne Gilliland (wgilliland@NTMWD.com), Date
NTMWD CRP QA Officer

North Texas Municipal Water District / North Texas Municipal Water District Laboratory (continued)

Approved Electronically Effective December 2, 2014

Ray Cotton (rcotton@NTMWD.com), Date
NTMWD Laboratory Manager

Approved Electronically Effective December 2, 2014

Russell Moody (rmoody@NTMWD.com), Date
NTMWD Laboratory QA Officer

Lower Colorado River Authority, ELS

Approved Electronically Effective December 2, 2014

Alicia Gill (alicia.gill@LCRA.org), Date
LCRA ELS Laboratory Manager

Approved Electronically Effective December 2, 2014

Roland Garcia (roland.garcia@LCRA.org), Date
LCRA ELS Quality Director

Texas Commission on Environmental Quality

Approved Electronically Effective December 2, 2014

Allison Fischer (allison.fischer@TCEQ.texas.gov), Date
CRP Project Manager / CRP Project QAS

Approved Electronically Effective December 2, 2014

Patricia Wise (patricia.wise@TCEQ.texas.gov), Date
CRP Group Leader

Approved Electronically Effective December 2, 2014

Daniel R. Burke (daniel.burke@TCEQ.texas.gov), Date
CRP Lead QAS

The 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, other units of government. The 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 will ensure the documentation is available for review.

A4 PROJECT/TASK ORGANIZATION

Description of Responsibilities

Texas Commission on Environmental Quality

Patricia Wise
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, reviews, 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.

Daniel R. Burke
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. Serves on planning team for CRP special projects. Coordinates the review and approval of CRP QAPPs. Prepares and distributes annual audit plans. Conducts monitoring systems audits of Planning Agencies. Concurs with and monitors implementation of 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 QAPPs and audit records for the CRP.

Allison Fischer
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, including coordination and tracking of CRP data sets from initial submittal through CRP Project Manager review and approval; ensuring that data is reported following instructions in the Surface Water Quality

Monitoring Data Management Reference Guide, January 2012, or most current version (DMRG); running automated data validation checks in Surface Water Quality Monitoring Information System (SWQMIS) and coordinating data verification and error correction with CRP Project Managers; generating SWQMIS summary reports to assist CRP Project Managers' data review; identifying data anomalies and inconsistencies; providing training and guidance to CRP and Planning Agencies on technical data issues to ensure that data are submitted according to documented procedures; reviewing QAPPs for valid stream monitoring stations, validity of parameter codes, submitting entity code(s), collecting entity code(s), and monitoring type code(s); developing and maintaining data management-related standard operating procedures (SOPs) for CRP data management; and coordinating and processing data correction requests.

Peter Bohls
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 is reported following instructions in the DMRG. Runs automated data validation checks in 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).

Allison Fischer
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.

Red River Authority of Texas

Allen M. Pappas
CRP Project Manager

Responsible for implementing and monitoring CRP requirements in contracts, QAPP(s), 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 subcontractors 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.

Allen M. Pappas
CRP 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 quality assurance records. Responsible for coordinating with the TCEQ QAS to resolve QA-related issues. 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. Conducts monitoring systems audits on project participants to determine compliance with project and program specifications, issues written reports, and follows through on findings.

Glen K. Hite
CRP 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 the Authority's website.

Jill Simpson
Laboratory Supervisor

Responsible for ensuring that all samples received in the Environmental Services Division Laboratory are within the allotted holding time, and that the chain-of-custody has been properly completed. Ensures that the samples are analyzed in accordance with standard accepted methods as described in the SOP manual. Ensures all analyses results are correctly performed and properly recorded on the laboratory data sheets and in the appropriate analytical log books prior to transmittal to the CRP Quality Assurance Officer.

Allen M. Pappas
CRP Field Supervisor

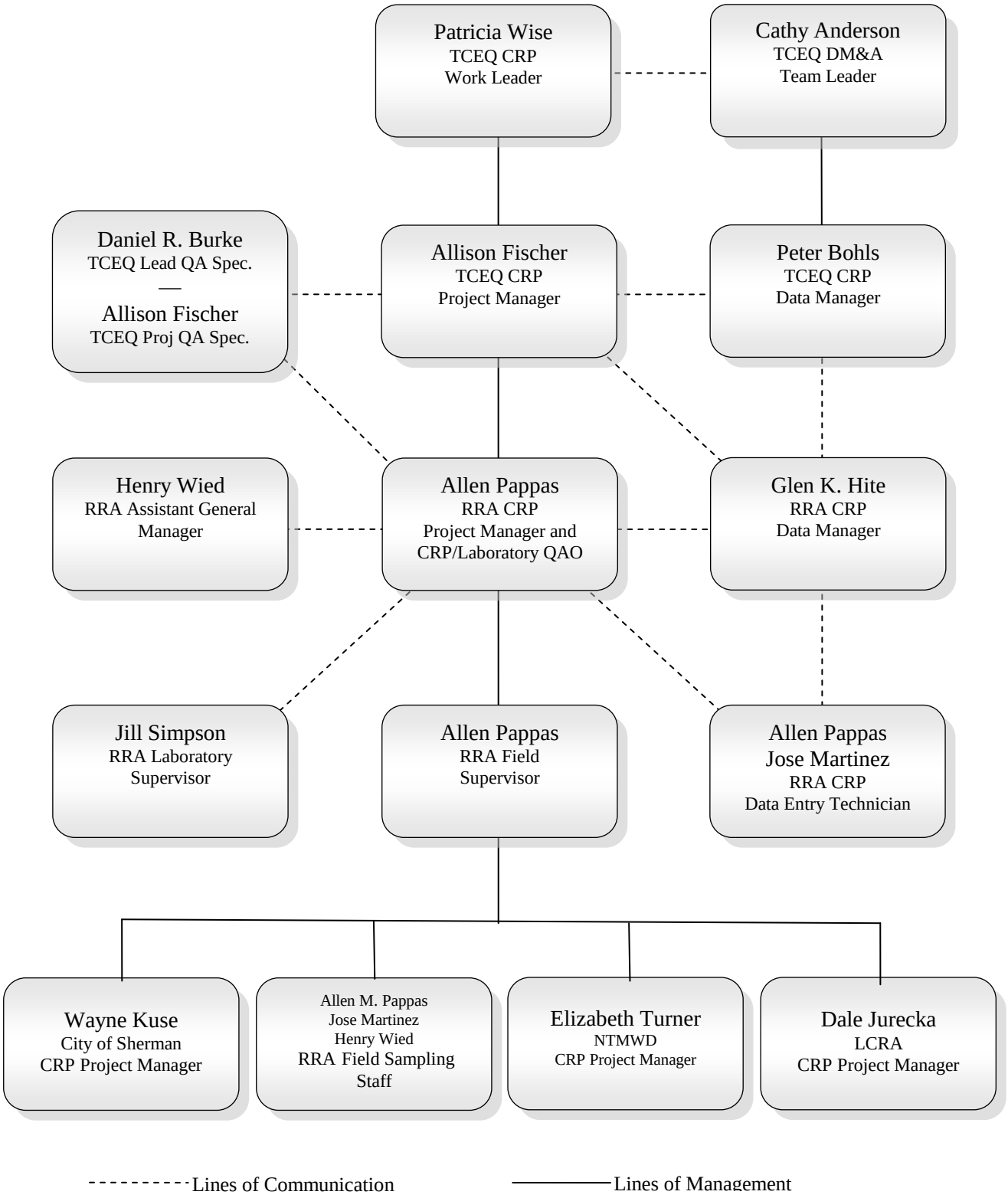
Responsible for overseeing the field personnel that conduct sampling events. Ensures that all field personnel are properly trained and that training records are maintained. Ensure that all field staff are equipped to conduct the necessary monitoring. Ensures that personnel and equipment are available at appropriate times. The Field Supervisor also ensures that all field data are collected as outlined by the QAPP and the *TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, August 2012 (RG-415)* or most current version. Serves as CRP Sample Custodian. Coordinates and maintains records of data verification and validation. Assists with monitoring systems audits on project participants to determine compliance with project and program specifications.

Allen M. Pappas / Jose Martinez
SWQM Data Entry Technician

Responsible for entering quality assured SWQM data into the Authority's water quality database. Assists during data collection events and serves as alternate CRP Sample Custodian.

PROJECT ORGANIZATION CHART

Chart 1 – Organization Chart - Lines of Communication



Red River Authority of Texas
Clean Rivers Program

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

Table A7.1-C Measurement Performance Specifications

Parameter	Units	Matrix	Method	Parameter Code	AWRL	Limit of Quantitation (LOQ)	LOQ Check Standard %Rec	Precision (RPD of LCS/LCSD)	Bias % Rec. of LCS	Lab
CONVENTIONAL PARAMETERS										
Alkalinity, Total (mg/L as $CaCO_3$)	mg/L	Water	SM 2320 B	00410	20	20	NA	20	NA	RR
Carbon, Total Organic, NPOC (TOC) (mg/L)	mg/L	Water	SM 5310 B	00680	2	1	70-130	20	80-120	RR
Chemical Oxygen Demand, 0.025N $K_2CR_2O_7$ (mg/L)	mg/L	Water	HACH 8000	00335	10	10	70-130	20	80-120	RR
Chloride (mg/L as Cl)	mg/L	Water	EPA 300.0	00940	5	10[1]	70-130	20	80-120	RR
Chlorophyll-A, Fluorometric Method, (ug/L)	ug/L	Water	EPA 445.0	70953	3	2	NA	20	80-120	RR
Chlorophyll-A, Spectrophotometric Acid Method, (ug/L)	ug/L	Water	EPA 446.0[3]	32211	3	2	NA	20	80-120	RR
Nitrate Nitrogen, Total (mg/L as N)	mg/L	Water	EPA 300.0	00620	0.05	0.05	70-130	20	80-120	RR
Nitrite Plus Nitrate-N, Total One Lab Determined Value (mg/L as N)	mg/L	Water	EPA 353.2	00630	0.05	0.05	70-130	15	90-110	RR
Nitrogen, Ammonia, Total (mg/L as N)	mg/L	Water	SM 4500-NH3D	00610	0.1	0.05	70-130	20	80-120	RR
Pheophytin-A, Fluorometric Method, (ug/L)	ug/L	Water	EPA 445.0	32213	3	2	NA	NA	NA	RR
Pheophytin-A, Spectrophotometric Acid Method, (ug/L)	ug/L	Water	EPA 446.0[3]	32218	3	2	NA	NA	NA	RR
Phosphorus, Total, Wet Method (mg/L as P)	mg/L	Water	EPA 365.4	00665	0.06	0.02	70-130	20	80-120	RR
Phosphorus, Total, Wet Method (mg/L as P)	mg/L	Water	SM 4500 P E[3]	00665	0.06	0.06	70-130	20	80-120	RR
Residue, Total Dissolved, Unspec. Calculation Based on Conductivity (mg/L)	mg/L	Water	Calculation	70294	NA	NA	NA	NA	NA	RR
Residue, Total Filterable (Dried at 180°C) (mg/L)	mg/L	Water	SM 2540 C	70300	10	50[2]	NA	20	80-120	RR
Residue, Total Non-Filterable (mg/L)	mg/L	Water	SM 2540 D	00530	4	2.5	NA	20	NA	RR
Residue, Volatile Non-Filterable (mg/L)	mg/L	Water	EPA 160.4	00535	4	2.5	NA	NA	NA	RR
Sulfate (mg/L as SO_4)	mg/L	Water	EPA 300.0	00945	5	10[1]	70-130	20	80-120	RR
Turbidity, Lab Nephelometric Turbidity Units (NTU)	NTU	Water	SM 2130 B	82079	0.5	0.5	70-130	20	80-120	RR

RR – Red River Authority of Texas Notes

[1] The LOQ for chloride and sulfate is higher than the established AWRL since concentrations for these parameters are extremely high in both the Canadian and Red River Basins and values are typically not observed at concentrations below 10 mg/L.

[2] The LOQ for total dissolved solids (TDS) is higher than the established AWRL since concentrations for this parameter are extremely high in both the Canadian and Red River Basins and values are typically not observed at concentrations below 50 mg/L.

[3] Listed as a backup in case instrument error would prevent samples from being analyzed within specified holding times.

References:

1. United States Environmental Protection Agency (USEPA) Methods for Chemical Analysis of Water and Wastes, Manual #EPA-600/4-79-020
2. American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998. (Note: The 21st edition may be cited if it becomes available.)
3. TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods for Water, 2012 (RG-415).
4. TCEQ SOP, V2 - TCEQ Surface Water Quality Monitoring Procedures, Volume 2: Methods for Collecting and Analyzing Biological Community and Habitat Data, 2007 (RG-416)

Table A7.1-E Measurement Performance Specifications

Parameter	Units	Matrix	Method	Parameter Code	AWRL	Limit of Quantitation (LOQ)	LOQ Check Standard %Rec	Precision (RPD of LCS/LCSD)	Bias % Rec. of LCS	Lab
CONVENTIONAL PARAMETERS										
Alkalinity, Total (mg/L as $CaCO_3$)	mg/L	Water	SM 2320 B	00410	20	20	NA	20	NA	NM
Carbon, Total Organic, NPOC (TOC) (mg/L)	mg/L	Water	SM 5310 C	00680	2	0.50	70-130	20	80-120	NM
Chemical Oxygen Demand, 0.025N $K_2CR_2O_7$ (mg/L)	mg/L	Water	HACH 8000	00335	10	10	70-130	20	80-120	NM
Chloride (mg/L as Cl)	mg/L	Water	EPA 300.0	00940	5	1	70-130	20	80-120	NM
Chlorophyll-A, Spectrophotometric Acid Method, (ug/L)	ug/L	Water	SM 10200 H	32211	3	3	NA	20	80-120	NM
Nitrate Nitrogen, Total (mg/L as N)	mg/L	Water	EPA 353.2	00620	0.05	0.02	70-130	20	80-120	NM
Nitrite Nitrogen, Total (mg/L as N)	mg/L	Water	SM 4500 NO_2 B	00615	0.05	0.02	70-130	20	80-120	NM
Nitrite Plus Nitrate-N, Total One Lab Determined Value (mg/L as N)	mg/L	Water	EPA 353.2	00630	0.05	0.05	70-130	20	80-120	NM
Nitrogen, Ammonia, Total (mg/L as N)	mg/L	Water	EPA 350.1	00610	0.1	0.1	70-130	20	80-120	NM
Nitrogen, Kjeldahl, Total (mg/L as N)	mg/L	Water	EPA 351.2	00625	0.2	0.2	70-130	20	80-120	NM
OrthoPhosphate Phosphorus, (Diss. field filter <15 min)	mg/L	Water	EPA 365.3	00671	0.04	0.02	70-130	20	80-120	NM
Pheophytin-A, Spectrophotometric Acid Method, (ug/L)	ug/L	Water	SM 10200 H	32218	3	3	NA	NA	NA	NM
Phosphorus, Total, Wet Method (mg/L as P)	mg/L	Water	EPA 365.3	00665	0.06	0.02	70-130	20	80-120	NM
Residue, Total Dissolved, Unspec. Calculation Based on Conductivity (mg/L)	mg/L	Water	Calculation	70294	NA	NA	NA	NA	NA	NM
Residue, Total Filterable (Dried at 180°C) (mg/L)	mg/L	Water	SM 2540 C	70300	10	10	NA	20	80-120	NM
Residue, Total Non-Filterable (mg/L)	mg/L	Water	SM 2540 D	00530	4	2.5	NA	20	NA	NM
Residue, Volatile Non-Filterable (mg/L)	mg/L	Water	EPA 160.4	00535	4	2.5	NA	NA	NA	NM
Sulfate (mg/L as SO_4)	mg/L	Water	EPA 300.0	00945	5	1	70-130	20	80-120	NM
Turbidity, Lab Nephelometric Turbidity Units (NTU)	NTU	Water	EPA 180.1	82079	0.5	0.2	70-130	20	80-120	NM

NM – North Texas Municipal Water District

References:

1. United States Environmental Protection Agency (USEPA) Methods for Chemical Analysis of Water and Wastes, Manual #EPA-600/4-79-020
2. American Public Health Association (APHA), American Water Works Association (AWWA), and Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998. (Note: The 21st edition may be cited if it becomes available.)

3. TCEQ SOP, V1 - TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods for Water, 2012 (RG-415).
4. TCEQ SOP, V2 - TCEQ Surface Water Quality Monitoring Procedures, Volume 2: Methods for Collecting and Analyzing Biological Community and Habitat Data, 2007 (RG-416)