Amendment #1 to the Rio Grande Basin Clean Rivers Program FY 2014/2015 QAPP

Prepared by the U.S. International Boundary and Water Commission 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 (QAPP) for FY14-15, including the addition of a partner, correction of contact information, an updated organizational chart, an updated Table A7, and an updated Coordinated Monitoring Schedule.

Detail of Changes

List each section in which a change is proposed and provide a description of the change(s) in the table below.

Section/Figure/Table	Page	Change	Justification
A3	15	Addition of partner and partner information.	Adding a partner, Midland College.
A4	22	Addition of partner and partner information.	Adding a partner, Midland College.
Figure 1	23	Addition of partner	Adding a partner, Midland College.
Figure 2	26	Updated map of basin	Addition of two new stations in the Pecos area.
A6	28	Updated first paragraph to change reference to "over 58 monitoring sites"	TCEQ requested more general language so this paragraph does not require update with each amendment or site addition or deletion.
Table 3	35	Added overall volume line for Chlorophyll-a and Pheophytin container. This matches format for all containers.	Matches other container format to be less confusing.
Table 3: B2.1 Sample Storage for A&B Footnote	37	Addition of Midland College to Footnote.	Footnote now includes all partners that use contract lab.
B3 Sample Handling Section	41	Addition of Midland College to list of partners that ship samples to A&B Laboratories In first paragraph under referenced section.	Added new partner to pertinent text throughout QAPP.
Table 8	53	Addition of new Collecting Entity.	Adding a partner, Midland College.
Table 10	55	Added row for Readiness Review for new partners	New partners require readiness review before the first sampling event to ensure proper training.
Appendix B	70	Addition of new Pecos station information.	Adding a partner, Midland College.
Table 15	73	Addition of partner information	Adding a partner, Midland College
Section/Figure/Table	Page	Change	Justification

Table 16	74	Addition of partner information	Adding a partner, Midland College
CMS	75	Addition of new stations in Pecos area	Adding a partner, Midland College
Appendix C	90	Updated maps showing two new Pecos stations	Adding a partner, Midland College
Table A7.1-4	Excel	Updated Footnotes to include new partner.	Adding a partner, Midland College
Table A7.2	Excel	Added footnote for Metals QC	Calcium, Magnesium, Potassium and Sodium are considered conventionals and do not follow metals in water QC.
Table A7.8	Excel	Added Selenium, Manganese, and Silver to the Metals-in-sediment table	They were supposed to have been included in the initial QAPP, QAO did not notice they were not.

Distribution

QAPP Amendments and Revisions to Appendices will be distributed to all personnel on the distribution list maintained by the USIBWC CRP.

These changes will be incorporated into the QAPP document and TCEQ and the USIBWC will acknowledge and accept these changes by signing this amendment.

Texas Commission on Environmental Quality

Water Quality Planning Division

Signed Electronically Effective January 14, 2013

Allison Fischer Date
Project Quality Assurance Specialist
CRP

Signed Electronically Effective January 14, 2013

Patricia Wise, Work Leader Date
CRP

Signed Electronically Effective January 14, 2013

Sarah Eagle Date
Project Manager, CRP
CRP

Monitoring Division

Signed Electronically Effective January 14, 2013

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Lead CRP Quality Assurance Specialist
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Elisabeth Ramirez Date
USIBWC CRP Program Manager

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Yuhui Zhang Date
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The USIBWC 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 USIBWC 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

TCEQ

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.

Sarah Eagle
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.

Nancy Ragland
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.

United States Section, International Boundary and Water Commission (USIBWC)

Gilbert Anaya
USIBWC Environmental Management Division Chief
Responsible for oversight of the USIBWC CRP Program Manager and Clean Rivers Program at the USIBWC. Performs evaluations of USIBWC CRP personnel. Cost Center Manager for the USIBWC CRP budget.

Elisabeth Ramirez
USIBWC CRP Program 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 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. 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. Maintain quality-assured data on USIBWC internet sites.

Leslie Grijalva
USIBWCCRP 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 USIBWCCRP Program 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. 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. Maintain quality-assured data on USIBWC internet sites.

Yuhui Zhang
A&B Environmental Services, Inc., Laboratory Manager
Responsible for project coordination at A&B, providing support to IBWC at each program stage: QAPP development, sampling, sample receipt and login, analyses, and data reporting. Responsible for quality assurance of reported analyses performed by A&B and may perform validation and verification of data before the report is sent to USIBWC. Notifies the USIBWC CRP Program Manager of particular circumstances which may adversely affect the quality of data. Responsible for coordinating with A&B and USIBWC CRP Program Manager to resolve QA-related issues. Implements or ensures implementation of corrective actions needed to resolve nonconformance noted during assessments.

Rita Wells
A&B Environmental Services, Inc., Quality Assurance Officer
Responsible for the overall quality control and quality assurance of analyses performed by A&B. Monitors implementation of the QAM/QAPP within the laboratory to ensure complete compliance with QA data quality objectives, as defined by the contract and in the QAPP. Conducts in-house audits 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.

RIO GRANDE BASIN CRP PARTNERS

The Program Manager, QAO, and Data Manager for all of the below listed partners are the same as listed above for the USIBWC, unless otherwise noted.

US International Boundary and Water Commission, Field Offices
Manages data collection activities and generates the work orders for water quality monitoring at five field offices along the Texas portion of the Rio Grande. The project managers' direct activities on the local level as follows: Tony Solo – American Dam, Pablo Garza– Amistad Dam, Mario Gomez – Falcon Dam, Rodolfo Montero – Mercedes, and Hector Hernandez – Presidio. Samples collected by the Amistad Dam, Falcon Dam, Presidio, and Mercedes field offices are submitted to A&B Environmental Services, Inc. for analysis. American Dam submits their samples to the El Paso Water Utilities laboratory for analysis.

Lee Roy Atkinson, Laboratory Manager
Brownsville Public Utilities Board (BPUB)Laboratory
Responsible for water quality monitoring, analysis, and data review in the Brownsville area. Samples collected and logged into database and are analyzed by the BPUB accredited laboratory as part of their regular permit monitoring. Responsible for overseeing the analysis of *E.coli, Enterrococcus,* and the chemical analyses conducted from the samples of the multiple Rio Grande Basin monitoring stations before sending to the USIBWC CRP staff.

Michael McCall, Quality Assurance Specialist
Brownsville Public Utilities Board (BPUB)
Responsible for the review of laboratory data and laboratory techniques performed at the BPUB laboratory. Responsible for the overall quality control and quality assurance of analyses performed by the BPUB laboratory. Monitors implementation of the QM/QAPP within the laboratory to ensure complete compliance with QA data quality objectives, as defined by the QAPP. Conducts internal annual audits to ensure compliance with written SOPs and identify potential problems and initiate Corrective Action Reports and files. Responsible for supervising and verifying all aspects of the QA/QC in the laboratory. Responsible for reviewing the lab results of *E.coli, Enterrococcus,* and the chemical analyses conducted from the samples of the multiple Rio Grande Basin monitoring stations before sending to the USIBWC CRP staff.

Paul R. Rivas, Laboratory Services Manager
El Paso Water Utilities
Responsible for water quality laboratory analysis and data review in the El Paso area. Samples collected by USIBWC American Dam Field Office are analyzed by the El Paso Water Utilities laboratory, which is now an accredited laboratory. Responsible for sending data monthly to the USIBWC.

Richard Wilcox, Quality Assurance Chemist
El Paso Water Utilities
Responsible for the review of laboratory data and laboratory techniques performed at the El Paso Water Utilities.

Rebecca Castro, Technical Director/Quality Assurance Officer
City of Laredo Health Department Laboratory
Responsible for analysis and review of bacteria data for samples collected in the Laredo area. Samples collected are analyzed by City of Laredo accredited laboratory.

Samuel Gonzalez, Chief of Environmental Health Services
City of Laredo Health Department
Responsible for supervising water quality monitoring staff at the City of Laredo Health Department.

and

Daniel Maldonado and Lupe Luna, Sanitation Inspectors
City of Laredo Health Department
Responsible for water quality monitoring and review of field data for samples collected in the Laredo area of the Rio Grande. Samples collected are submitted to the City of Laredo Health Department Laboratory for analysis.

Mr. Riazul Mia
City of Laredo Environmental Services Department
Responsible for supervising water quality monitoring staff at the City of Laredo Environmental Services Department.

And

Lucky Roncinske
City of Laredo Environmental Services Department
Responsible for water quality monitoring and data review for samples collected on Manadas Creek in the Laredo area. Samples collected are submitted to A&B Environmental Services, Inc. for analysis.

Dr. Tom Vaughan
Rio Grande International Study Center (RGISC) and Texas A&M International University (TAMIU)

Responsible for water quality monitoring and data review in the Laredo area of the Rio Grande. Samples collected are submitted A&B Environmental Services, Inc. for analysis.

Mark Lockwood
Texas Parks and Wildlife Department, Natural Resources Program
Responsible for water quality monitoring and sample collection of stations in Big Bend Ranch State Park. Water samples collected are submitted to A&B Environmental Services, Inc. for analysis.

David Long
Texas Parks and Wildlife Department, Barton Warnock Education Center
Responsible for water quality monitoring and sample collection of stations in Big Bend Ranch State Park. Water samples collected are submitted to A&B Environmental Services, Inc. for analysis.

Mr. Jeff Bennett
Big Bend National Park
Responsible for water quality monitoring and data review in the Big Bend National Park and Rio Grande Wild and Scenic. Samples collected are submitted to A&B Environmental Services, Inc. for analysis.

Greg Larson
Midland College
Responsible for water quality monitoring and data review in the Pecos River area of the Rio Grande Basin. Samples collected are submitted to A&B Environmental Services, Inc. for analysis.

Dr. Elizabeth Heise
University of Texas at Brownsville
Responsible for water quality monitoring and data review in the Brownsville area of the Rio Grande. Samples collected are submitted to A&B Environmental Services, Inc. for analysis.

Dr. Kevin Urbanczyk
Sul Ross University
Responsible for water quality monitoring and data review of the Pecos River sub-basin in the Alpine area. Samples collected are submitted to A&B Environmental Services, Inc. for analysis.

Dr. Maria E. Alvarez, Professor of Biology, Biology District-Wide Coordinator,
and MBRS-RISE and MSEIP Program Director
El Paso Community College
Responsible for water quality monitoring and sample collection of several stations in the El Paso area. Water samples collected are submitted to A&B Environmental Services, Inc. for analysis.

Dr. Elizabeth Walsh
University of Texas at El Paso
Responsible for water quality monitoring and data review in the El Paso area of the Rio Grande. Samples collected are submitted to A&B Environmental Services, Inc. for analysis.

Dr. Vanessa Lougheed
University of Texas at El Paso
Responsible for water quality monitoring and data review in the Forgotten Stretch of the Rio Grande. Samples collected are submitted to A&B Environmental Services, Inc. for analysis.

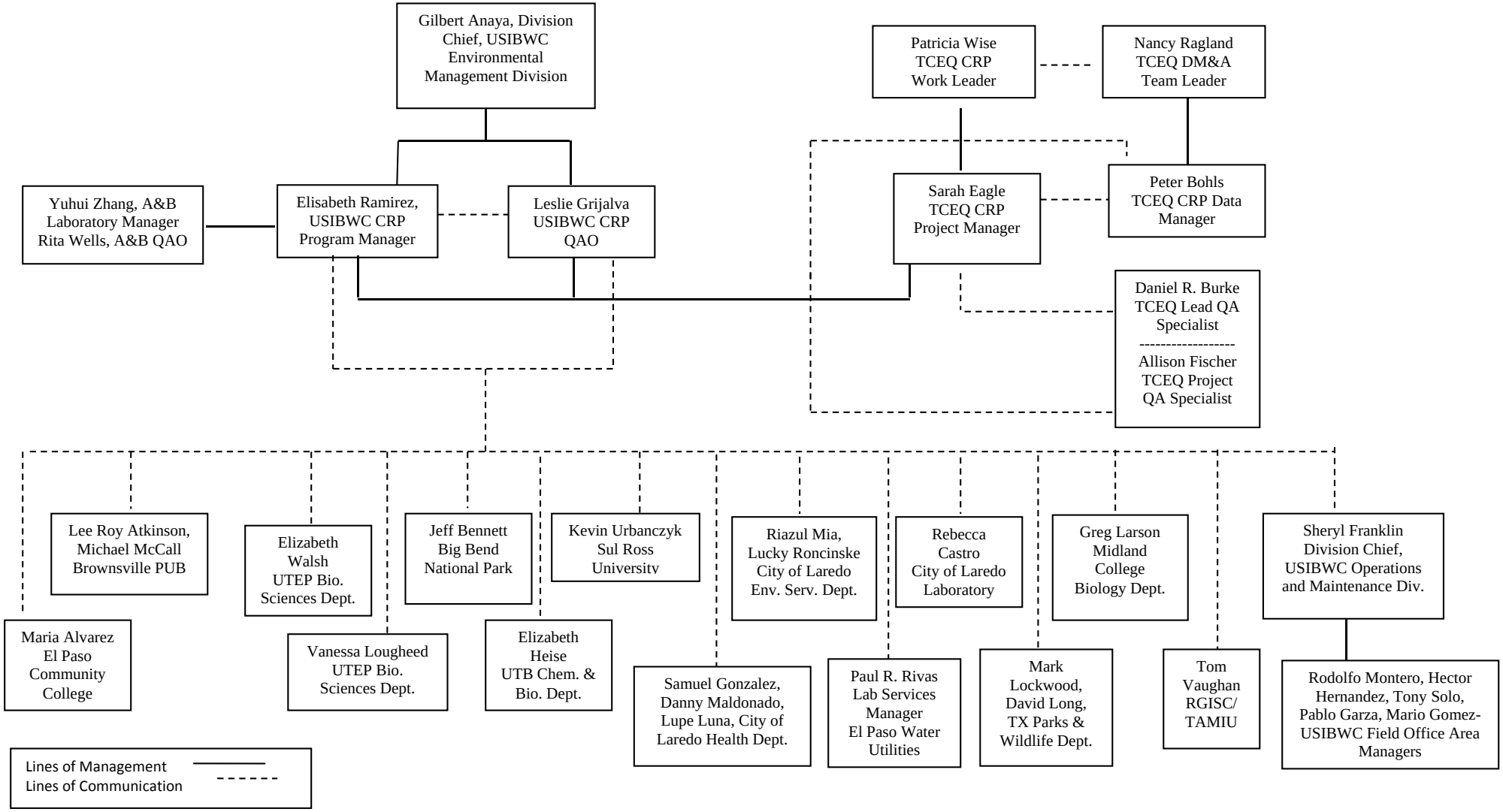
Terms of Agreement

The USIBWC Clean Rivers Program Sampling Partners agree to the long- term collection of water quality samples and environmental data at designated monitoring stations on a prescribed schedule. The types of samples and data collected by each partner may vary in time, commitment, and geography. A Sampling Partner's signature on the Section A1 Approval Page of the Rio Grande Basin Monitoring Program Quality Assurance Project Plan or on a Letter of Adherence (see Attachment 1) indicates acknowledgment that the Sampling Partner does not expect to be paid for his/her work, compensation for expenses associated with said volunteer work, and will abide by the Texas Commission on Environmental Quality procedures.

In addition, USIBWC non-federal entity Sampling Partners release, waive, discharge and covenant not to sue the USIBWC, including its officers and employees, with respect to any and all liability, claims or causes of action whatsoever related to any damages or injury that they may sustain, whether caused by the negligence of the USIBWC or otherwise, while performing tasks under this QAPP. USIBWC Sampling Partners are aware and fully responsible for guarding against any risks involved with such activity, and choose to participate voluntarily and at their own risk. They voluntarily assume full responsibility for any property damage or personal injury that they may sustain while participating in, or related to the above activity.

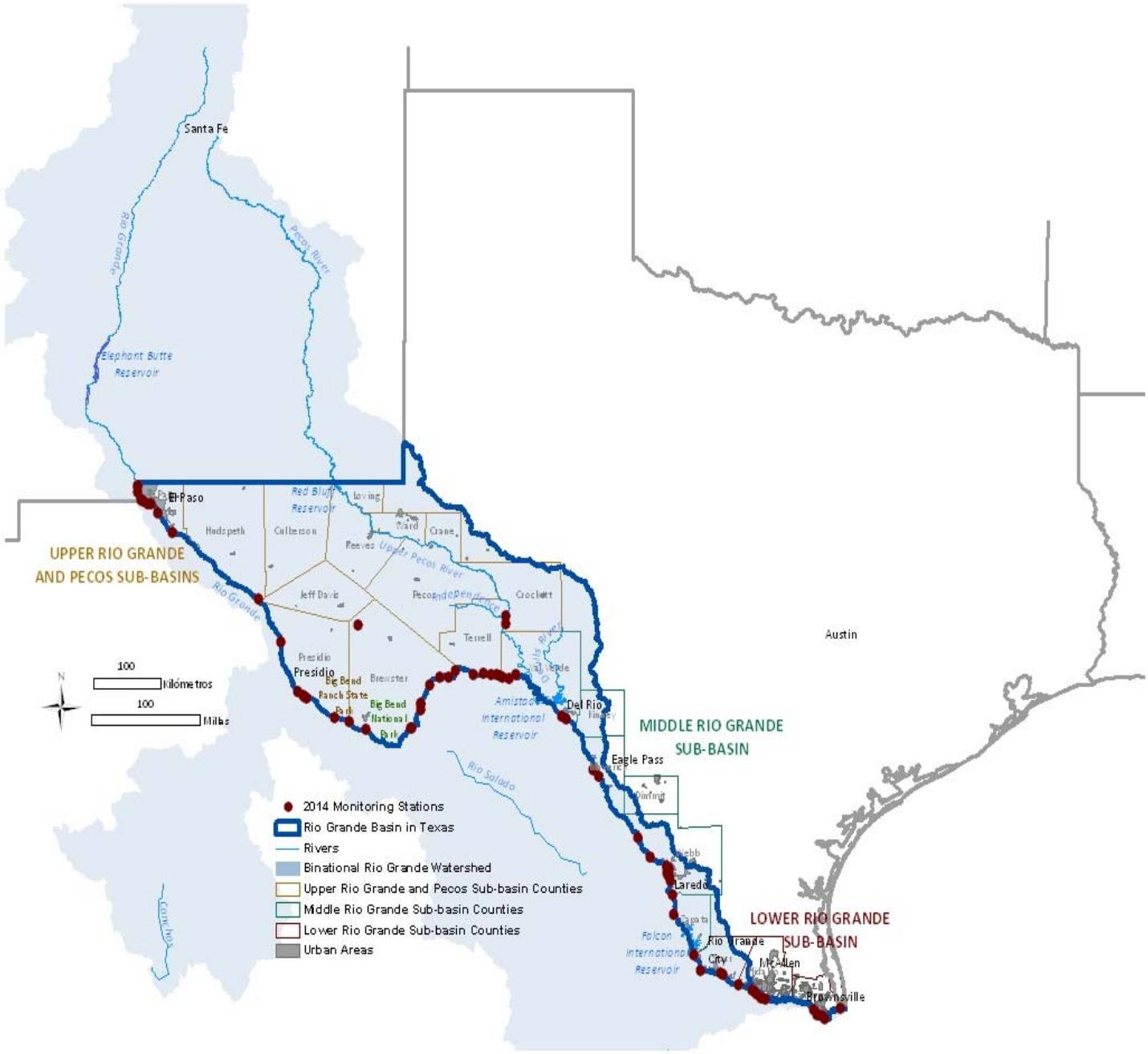
PROJECT ORGANIZATION CHART

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



City of Laredo Health Dept. uses the City of Laredo Health Dept. lab, BPUB analyzes their own data and the *enterrococcus* samples for the Brownville area, and American Dam uses the El Paso Water Utilities lab. All other partners use A&B.

Figure 2: A5.1 Map of Rio Grande Basin



A6 Project / Task Description

The coordinated program (USIBWC CRP, TCEQ) routinely collects surface water quality data from 91 sites throughout the region. Sampling includes collection of physicochemical, biological and hydrological data at varying frequencies. The program was established to collect, store and make available water quality data, which the participating agencies require to carry out their assigned functions. The USIBWC CRP collects this data and uses it for assessments of water quality under the Clean Rivers Program. The data is also widely used by state water quality managers, cities, counties, consultants, students and the general public. The USIBWC CRP and its partners collect routine samples from over 58 designated stream, reservoir and bay segments to monitor for the attainment of uses and numerical criteria. Smaller non-classified water bodies are also monitored in response to perceived risk for pollution and/or to define water quality. A map showing the locations of all fixed monitoring locations are included in Appendix C. Under this QAPP, there are over 58 monitoring sites collected by the USIBWC CRP and partners. TCEQ collected monitoring and monitoring sites are covered by a separate QAPP. (For a complete monitoring schedule of the Rio Grande Basin, see http://cms.lcra.org.)

Basin-wide monitoring program contains sites collected by USIBWC CRP staff, partners as listed in A4, and TCEQ field office staff throughout the basin. Monitoring sites are evaluated for location, frequency of collection, and parameters annually at coordinated monitoring meetings located at four locations in the basin. For FY2014-15, conventionals and bacteriological samples are routinely collected, and organics in sediment analyses have been dropped at most sites due to non- detects. Organics in sediment will only be analyzed at sites where organics have been detected in the previous two years. Metals and certain organics in water and sediment will still be collected at sites where they have historically shown levels of concern and where stakeholder interest requests continued collection. (For a more detailed description of the monitoring plan and how it is designed, please see Appendix B.)

The USIBWC CRP requires a large number of volunteer partners to collect samples throughout the Rio Grande Basin. The partners consist of universities, municipalities, non-profit organizations, and other agencies, and they assist the USIBWC CRP by collecting field data and water samples at the designated sites in their areas and shipping the samples to their designated laboratory. All USIBWC CRP partners are required to be trained by the USIBWC CRP, and they must agree to follow the QAPP by signing this document or an adherence letter. The USIBWC CRP provides them the supplies needed to sample. Various partners, including the City of Laredo Health Department, BPUB, the USIBWC American Dam field office, and UTEP, collect only specified field and/or laboratory parameters due to issues such as remoteness of the site, shipping problems, accreditation, or to a standing Memorandum of Agreement/Understanding between the entity and the USIBWC. The El Paso Water Utilities (EPWU), for example, has a long-standing agreement with the USIBWC that has the USIBWC American Dam personnel collect the water samples, and they analyze the data free of cost and voluntarily provide the data to the USIBWC. Only accredited data is reported to TCEQ, so the USIBWC CRP reports four parameters from the EPWU to TCEQ. UTEP has a site that is so remote, they do not make it back in time to ship their samples that same day, and so we cannot collect any 48 hour parameters. BPUB voluntarily provides the data their staff must collect for the City, and so only their accredited parameters are

reported and they do not collect field parameters. The City of Laredo Health Department has their sanitation inspectors collect the bacteria samples while doing their normal duties, but due to so many sites in the Laredo area and lack of time, they collect a condensed number of field parameters, use a much simpler YSI meter, and collect only bacteria. The City of Laredo Health Department lab analyzes the bacteria samples, and requests only bacteria testing supplies from the USIBWC CRP. For any partner reporting five parameters or less, the USIBWC CRP considers this as limited conventionals analysis. The UTEP partner that does not collect 48 hour parameters is said to collect a partial conventionals analysis.

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 USIBWC Program Manager to the CRP Project Manager electronically. The USIBWC CRP will submit a completed QAPP Amendment document, including a justification of the amendment, a table of changes, and all pages, sections or attachments affected by the amendment. Amendments are effective immediately upon approval by the USIBWC CRP Program Manager, the USIBWC CRP 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 has occurs after the execution of this QAPP should be addressed through a Corrective Action Plan (CAP). An Amendment may be a component of a CAP to prevent future recurrence of a deviation. Amendments will be incorporated into the QAPP by way of attachment and distributed to personnel on the distribution list by the USIBWC Program Manager or QAO.

Special Project Appendices

Projects requiring QAPP appendices will be planned in consultation with the USIBWC 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 USIBWC CRP Program Manager, the USIBWC CRP QAO, the Laboratory (as applicable), and the CRP Project Manager, the CRP Project QA Specialist, the CRP Lead QA Specialist and other TCEQ personnel, as appropriate. Copies of approved QAPPs appendices will be distributed by the USIBWC to project participants before data collection activities commence.

Table 3:B2.1 Sample Storage, Preservation and Handling Requirements, A&B Environmental Services, Inc.

Routine Conventionals-in-Water Samples (8 containers: 3 unpreserved, 1 preserved with HNO_3, 2 preserved with H_2S0_4, 2 preserved with $Na_2S_2O_3$,)				
Parameters	Containers	Sample Volume (ml)	Preservation	Maximum Holding Time
CONTAINER 1				
	HDPE	500	Cool to <6 C; not frozen	
TSS(00530)/VSS (00535)		200	Cool to <6 C not frozen	7 days
Chloride (Cl) (00940)		50	Cool to <6 C not frozen	28 days
Sulfate (SO_4) (00945)		50	Cool to <6 C not frozen	28 days
Fluoride (00951)		50	Cool to <6 C not frozen	28 days
TDS(70300)		50	Cool to <6 C not frozen	7 days
Bromide (71870)		50	Cool to <6 C not frozen	28 days
Alkalinity (00410)		50	Cool to <6 C not frozen	14 days
CONTAINER 2				
	HDPE	250	1-2 ml conc.HNO_3 to pH <2 and cool to <6 C but not frozen	
Calcium (00916)		50	1-2 ml conc.HNO_3 to pH <2 and cool to <6 C but not frozen	6 months
Magnesium (00927)		50	1-2 ml conc.HNO_3 to pH <2 and cool to <6 C but not frozen	6 months
Sodium (00929)		50	1-2 ml conc.HNO_3 to pH <2 and cool to <6 C not frozen	6 months
Potassium (00937)		50	1-2 ml conc.HNO_3 to pH <2 and cool to <6 C not frozen	6 months
Hardness (00900)		50	1-2 ml conc.HNO_3 to pH <2 and cool to <6 C not frozen	6 months
CONTAINER 3				
	HDPE	250	1-2 ml conc.H_2SO_4 to pH <2 and Cool <6 C not frozen	
Ammonia (NH_3) (00610)		50	1-2 ml conc.H_2SO_4 to pH <2 and Cool <6 C not frozen	28 days
Total Phosphorus (TPO_4) (00665)		50	1-2 ml conc.H_2SO_4 to pH <2 and Cool <6 C not frozen	28 days
Nitrate + Nitrite (00630) ($NO_3 + NO_2$)		50	1-2 ml conc.H_2SO_4 to pH <2 and Cool <6 C not frozen	28 days
CONTAINER 4				
	Glass amber	1000	Cool to <6 C but not frozen, dark	

Parameters	Containers	Sample Volume (ml)	Preservation	Maximum Holding Time
Chlorophyll *a* (32211)	glass amber	500	Cool to <6 C but not frozen, dark	Filter within 48 hours. Filters may be stored frozen up to 24 days
Pheophytin-a (32218)	glass amber	500	Cool to <6 C but not frozen, dark	Filter within 48 hours Filters may be stored frozen up to 28 days
CONTAINER 5 and 6				
E. coli bacteria (31699)	Sterilized plastic container	100	Cool <6 C but not frozen Sodium thiosulfate	8 hours *extended 48 hours
E. coli bacteria (31699)	Sterilized plastic container	290	Cool <6 C but not frozen Sodium thiosulfate	8 hours *extended 48 hours
CONTAINER 7				
BOD (00310)	HDPE	1000	Cool <6 C but not frozen	48 hours
CONTAINER 8				
Total Organic Carbon (TOC) (00680)	H2SO4, cleaned plastic bottle	120	1.0 ml conc H2SO4 to pH <2 and Cool <6 C but not frozen	28 days
Metals -In-Water				
Parameters	Containers	Sample Volume (ml)	Preservation	Maximum Holding Time
CONTAINER 1				
TOTAL	HNO_3 cleaned plastic bottle	500	Pre-acidified container with 5 ml ultra-pure HNO_3 to pH<2	180 days
CONTAINER 2 and 3				
Total Mercury	2- 40-mL VOA vials	80	pre-cleaned, HCl-preserved	28 days
Metals in Sediment				
CONTAINER 1				
	1 pint glass jar with Teflon- lined lid	1000 grams		
Metals		500 grams	Cool <6 C but not frozen	180 days
CONTAINER 1				
Total Mercury		500 grams	Dark and Cool <6 C but not frozen	28 days

Organics in Water				
CONTAINER 1, 2, 3				
Parameters	Containers	Sample Volume (ml)	Preservation	Maximum Holding Time
BTEX	3- 40 ml VOA	120	Pre-acidified with 0.5 ml HCl	14 days
CONTAINER 4 and 5				
SVOCs	glass bottle with teflon lined lid	2x1000	Pre-rinsed, Cool <6 C but not frozen	7 days
Organics in Sediment				
CONTAINER 1				
	1 pint glass jar with Teflon- lined lid	1000 grams	Cool <6 C but not frozen	
Pesticides		500	Cool <6 C but not frozen	14 days
SVOC's		500	Cool <6 C but not frozen	14 days

*E.coli samples should always be processed as soon as possible and within 8 hours. When transport conditions necessitate delays in delivery longer than 6 hours, the holding time may be extended and samples must be processed as soon as possible and within 48 hours.

Collecting entities that use the A&B laboratory services include: USIBWC Amistad Dam Field Office, USIBWC Falcon Dam Field Office, USIBWC Mercedes Field Office, USIBWC Presidio Field Office, Big Bend National Park, Big Bend Ranch State Park, University of Texas at El Paso, University of Texas at Brownsville, Sul Ross State University, RGISC, El Paso Community College, Midland College.

Table 4: B2.2 Sample Storage, Preservation and Handling Requirements, City of Laredo Health Department Laboratory

E.Coli and Fecal Coliform Analysis- City of Laredo Health Department Laboratory (2 containers Preserved with Sodium Thiosulfate)				
Parameters	Containers	Sample Volume (ml)	Preservation	Maximum Holding Time
CONTAINER 1				
E. coli, Colilert, IDEXX Method (31699)	Polystyrene	290	Cool <6 C but not frozen Sodium Thiosulfate	8 hrs
CONTAINER 2				
Fecal Coliform (31616)	Polystyrene	120	Cool <6 C but not frozen Sodium Thiosulfate	8 hrs

Collecting entity that uses this lab: City of Laredo Health Department

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

Handling procedures for water, sediment and biological samples are discussed in detail in the TCEQ SWQM Procedures. Proper sample handling is a joint effort of the sampling crew, the sample transporter, and laboratory staff. Sample integrity must be protected by preventing sample contamination after the sample is placed in a container. USIBWC, Rio Grande International Study Center, Midland College, University of Texas at Brownsville, Sabal Palm Sanctuary, Sul Ross State University, Big Bend National Park, City of Laredo Environmental, El Paso Community College, Texas Parks and Wildlife Department, and the University of Texas at El Paso samples will collect and shipped to A&B Environmental Services, Inc. Please refer to the Chain of Custody section below for more details.

Field Data Reporting Forms (See Appendix D) are required for reporting field data. The first form, “Field Data Reporting Form”, is used when collecting grab samples. This form includes DO, temperature, pH, Specific conductance, Secchi disk, flow, flow severity, flow measurement method, stream width, stream depth, and days since significant precipitation (and turbidity for RGISC). A second form, “Field Data Reporting Form Sediment Samples”, is used for composite sampling of sediment samples. For all water or sediment samples collected, the COC Form(s) are submitted to the laboratory with the sample(s). A third field form, "Drought Field Data Reporting Form," is used during a prolonged drought periods where the water bodies are extremely low, pooled, or dry.

Chain of Custody forms are submitted with all water and/or sediment chemistry samples, as well as with all bacteria samples. If both water and sediment sampled are collected, separate COC for the water samples and sediment samples will be submitted. Routine water chemistry and metals in water analyses are requested on the same form.

The receiving laboratory sample custodian will examine all arriving samples for proper documentation and preservation. Internal sample handling, custody, and storage procedures for laboratories are described in the laboratory quality assurance manual. It is assumed that samples in tape-sealed ice chests are secure whether being transported by staff vehicle, by common carrier, or by commercial package delivery.

Samples will be put in the ice chest with enough ice to fill to the top, and enough ice in the chest to keep the samples cold until they reach the laboratory. This is especially important in the warm months of the year. COC will be placed in an envelope and taped to the top of the ice chest or they may be sealed in a plastic bag and taped to the inside of the ice chest lid. Ice chests will then be sealed with tape before shipping.

Sample Tracking Procedure Deficiencies and Corrective Action

All deficiencies associated with COC procedures, as described in this QAPP, are immediately reported to the USIBWC CRP Program 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 USIBWC CRP Program Manager in consultation with the USIBWC CRP 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 USIBWC CRP 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.

Table 8: B10.1 Submitting and Collecting Entity Codes

Name of Monitoring Entity	Tag Prefix	Submitting Entity	Collecting Entity
USIBWC American Dam Field Office	BD	IB	IB
USIBWC Amistad Dam Field Office	BA	IB	IB
USIBWC Falcon Dam Field Office	BF	IB	IB
USIBWC Presidio Office	BP	IB	IB
USIBWC Mercedes Field Office	BM	IB	IB
Univ. of TX at Brownsville	B	IB	UB
Rio Grande International Study Center	B	IB	RN
Big Bend National Park	B	IB	BB
City of Laredo Health Serv.	B	IB	LA
City of Laredo Env. Services	B	IB	LE
Sul Ross University	B	IB	SL
Univ. of TX at El Paso	B	IB	UE
Brownsville PUB	B	IB	BO
El Paso Community College	B	IB	EP
TX Parks and Wildlife Dept.	B	IB	PW
Midland College	B	IB	MC

Table 11: C1.1 Assessments and Response Requirements

Assessment Activity	Approximate Schedule	Responsible Party	Scope	Response Requirements
Status Monitoring Oversight, etc.	Continuous	USIBWC	Monitoring of the project status and records to ensure requirements are being fulfilled	Report to TCEQ in Quarterly Report
Monitoring Systems Audit of Basin Planning Agency	Dates to be determined by TCEQ CRP	TCEQ	Field sampling, handling and measurement; facility review; and data management as they relate to CRP	30 days to respond in writing to the TCEQ to address corrective actions
Monitoring Systems Audit of Program Subparticipants	Dates to be determined by the USIBWC (at least once every two years)	USIBWC	On-site audits include Field sampling, handling and measurement; facility review; and data management as they relate to CRP. Audits that are not on-site include desk reviews and data traceability analyses. Currently, the USIBWC CRP plans on doing 7 on-site audits and 9 audits that are not on-site. These may change if circumstances come up such as new personnel, etc.	30 days to respond in writing to the USIBWC. PM will report problems to TCEQ in Progress Report.
Readiness Review for new partners	Dates to be determined by the USIBWC (before first sampling event)	USIBWC	Readiness Reviews and on site audits included field sampling procedures, handling and measurement; facility review; and data management as they relate to CRP. A new partner shall be evaluated before the first sampling event.	30 days to respond in writing to the USIBWC. PM will report problems to TCEQ in Progress Report.

Assessment Activity	Approximate Schedule	Responsible Party	Scope	Response Requirements
Laboratory Inspection	Dates to be determined by TCEQ	TCEQ Laboratory Inspector	Analytical and quality control procedures employed at the laboratory and the contract laboratory	30 days to respond in writing to the TCEQ to address corrective actions

* Please note that the on-site audits of partners will be reserved for partners who the USIBWC CRP feel require additional training, have new personnel, or are deemed as high risk (multiple types of samples collected). Partners that do not pose a high risk will be audited using methods that do not require USIBWC CRP to be on-site.

**The USIBWC CRP would like to note that two partners (UTEP- Walsh, EPCC) do not sample independently, they sample with the USIBWC CRP, where the USIBWC CRP is assisted only in water sample collection. Auditing would essentially be auditing ourselves. However, UTEP's Dr. Walsh samples one site on her own, and would be audited based on that one site.

Appendix B Sampling Process Design and Monitoring Schedule (plan)

Sample Design Rationale FY 2014

The following changes or additions have been made to the monitoring schedule. These changes have come about because of concerns or requests of steering committee members or monitoring entities.

Lower:

- No changes.

Middle:

- No changes.

Upper:

- Station 13248 (Pecos River 0.1 km Upstream of the Confluence with Independence Creek Chandler Ranch) has been added to schedule. Site will be monitored by Midland College 3x/year for field, flow and basic conventionals (BOD, Total Alkalinity, Chloride, TSS, VSS, Nitrate+Nitrite, Sulfate, Fluoride, Chlorophyll-a, Ammonia, Total Phosphorus, TOC, Hardness, Calcium, Magnesium, Sodium, Potassium, Pheophytin-a, TDS) and bacteria (E.coli) , and 3x/year for only field and flow. This design rationale does not meet the preferred quarterly frequency but it does meet the minimum 2/year. The site will be monitored in December, March and August which includes summer and winter sampling as required. In addition field and flow measurements will occur 6 times/year.
- Station 14163 (Pecos River Approximately 0.5 miles Downstream from the Confluence with Independence Creek) has been added to the schedule. Site will be monitored by Midland College 3x/year for field, flow, and basic conventionals (BOD, Total Alkalinity, Chloride, TSS, VSS, Nitrate+Nitrite, Sulfate, Fluoride, Chlorophyll-a, Ammonia, Total Phosphorus, TOC, Hardness, Calcium, Magnesium, Sodium, Potassium, Pheophytin-a, TDS*)* and bacteria (E.coli)*,* and 3x/year for only field and flow. This design rationale does not meet the preferred quarterly frequency but it does meet the minimum 2/year. The site will be monitored in December, March and August which includes summer and winter sampling as required. In addition field and flow measurements will occur 6 times/year.

Table 15: Appendix B.2, shown below, contains the CRP partners and which lab each partner sends their samples to for analysis. The groups are arranged similarly to Table A7 found in Appendix A.

Table 15: Appendix B.2CRP Partners and their Affiliated Lab

Partner	A&B	EPWU	BPUB	Laredo Health
USIBWC American Dam Field Office		*E.coli* Chlorophyll-a Turbidity BOD		
USIBWC Amistad Dam Field Office	Conventionals Bacteria Metals in Sediment			
USIBWC Falcon Dam Field Office	Conventionals Bacteria			
USIBWC Presidio Field Office	Conventionals Bacteria Metals in Water			
USIBWC Mercedes Field Office	Conventionals Bacteria			
Big Bend National Park	Conventionals Bacteria Metals in Water			
Brownsville Public Utilities Board			Bacteria Ammonia TSS BOD TDS	
El Paso Community College (with CRP)	Conventionals Bacteria Metals is Water			
City of Laredo Environmental Services	Conventionals Bacteria Metals in Water Metals in Sediment			
City of Laredo Health Department				Bacteria
Rio Grande International Study Center	Conventionals Bacteria			

Partner	A&B	EPWU	BPUB	Laredo Health
Sul Ross State University	Conventionals Bacteria Org. in Water Org. in Sediment			
TX Parks and Wildlife Department	Conventionals Bacteria Metals in Water			
University of Texas at Brownsville**	Conventionals Bacteria (2)		Bacteria (Entero at 2)	
University of TX at El Paso-Lougheed***	Conventionals (no 48 hr parameters) Metals in Water			
University of TX at El Paso- Walsh (by herself and with CRP)	Conventionals Bacteria Metals in Water			
USIBWC CRP	Conventionals Bacteria Metals in Water			
Midland College	Conventionals, Bacteria			

*Falcon Dam Field Office Station 13103 collects only TDS, T. Phosphorus, Nitrate+Nitrite, Ammonia and bacteria when there is flow.

**UTB samples four sites, two tidal and two non-tidal stations. The non-tidal station bacteria samples are sent to A&B for *E.coli* analysis, and the two tidal station bacteria samples are sent to BPUB for *Entero* analysis.

***No 48 hour parameters: No Bacteria, Chlorophyll-a, Pheophytin, or BOD

Table 16: Appendix B.3, shown below, contains the CRP partners and what field sheets each partner uses. An "X" in the column indicates that the partner uses that particular field sheet(s).

Table 16: Appendix B.3CRP Partners and their Field Sheets

Partner	Field form With Turbidity	Field form without turbidity	Sediment sample field form	Drought field form	Partial Field Form
USIBWC American Dam Field Office		X			
USIBWC Amistad Dam Field Office		X	X	X	
USIBWC Falcon Dam Field Office		X			
USIBWC Presidio Field Office		X		X	
USIBWC Mercedes Field Office		X			
Big Bend National Park		X		X	
Brownsville Public Utilities Board					
El Paso Community College (with CRP)		X		X	
City of Laredo Environmental Services		X	X	X	
City of Laredo Health Department					X
Rio Grande International Study Center	X				
Sul Ross State University			X		
TX Parks and Wildlife Department		X		X	
University of Texas at Brownsville		X			
University of TX at El Paso-Lougheed		X		X	
University of TX at El Paso- Walsh (by herself and with CRP)		X		X	
USIBWC CRP		X		X	
Midland College		X		X	

Monitoring Sites for FY 2014

Table 17: Appendix B.4 Sample Design and Schedule, FY 2014, Table available for download at http://cms.lcra.org

Site Description	Station ID	Water body ID	Basin	Region	SE	CE	MT	Field	Conv	Bact	Flow	24 hr DO	Aq Hab	Ben	Nek	Met Wat	Org Wat	Met Sed	Org Sed	Fish Tissue	Amb Tox Wat	Amb Tox Sed	Comments
RIO GRANDE AT SABAL PALM SANCTUARY AT NORTHEAST BOUNDARY OFF PARK ROAD APPROX 1MI SOUTH OF FM1419 NEAR PALM GROVE	16288	2301	23	15	IB	UB	RT	4	4	4													entero bacteria analyzed by BPUB. Conventionals by IBWC lab.
RIO GRANDE TIDAL AT SH 4 NEAR BOCA CHICA	13176	2301	23	15	IB	UB	RT	4	4	4													
RIO GRANDE 0.5 MI DOWNSTREAM ANZALDUAS DAM 12.2 MI FROM HIDALGO	13664	2302	23	15	IB	IB	RT	8	8	8	8												
RIO GRANDE 200M UPSTREAM OF PHARR INTERNATIONAL BRIDGE/US281	15808	2302	23	15	IB	IB	RT	8	8	8	8												
RIO GRANDE AT FM 886 NEAR LOS EBANOS	13184	2302	23	15	IB	IB	RT	7	7	7	7												
RIO GRANDE AT FORT RINGGOLD 1 MI DOWNSTREAM OF RIO GRANDE CITY	13185	2302	23	15	IB	IB	RT	12	12	12	12								1				

Site Description	Station ID	Water body ID	Basin	Region	SE	CE	MT	Field	Conv	Bact	Flow	24 hr DO	Aq Hab	Ben	Nek	Met Wat	Org Wat	Met Sed	Org Sed	Fish Tissue	Amb Tox Wat	Amb Tox Sed	Comments
RIO GRANDE DOWNSTREAM RIO ALAMO NEAR FRONTON	13186	2302	23	15	IB	IB	RT	8	8	8	8												
RIO GRANDE EL JARDIN PUMP STATION AT LOW WATER DAM 140 M DOWNSTREAM INTAKE	13177	2302	23	15	IB	IB	RT	8	8	8	8								1				
RIO GRANDE INTERNATIONAL BRIDGE AT US 281 AT HIDALGO	13181	2302	23	15	IB	IB	RT	8	8	8	8								1				
RIO GRANDE INTERNATIONAL BRIDGE ON US 77 AT BROWNSVILLE	13178	2302	23	15	IB	UB	RT	4	4	4									1				
RIO GRANDE NEAR RIVER BEND BOAT RAMP APPROXIMATELY 5 MI WEST OF BROWNSVILLE ON US 281	13179	2302	23	15	IB	UB	RT	4	4	4									1				
RIO GRANDE RIVER AT BROWNSVILLE PUB WATER TREATMENT PLANT NUMBER 1 INTAKE BETWEEN WTP RESERVOIR AND RIO GRANDE LEVEE 910 METERS WEST	20449	2302	23	15	IB	BO	RT		12	12													E. coli and limited conventionals

Site Description	Station ID	Water body ID	Basin	Region	SE	CE	MT	Field	Conv	Bact	Flow	24 hr DO	Aq Hab	Ben	Nek	Met Wat	Org Wat	Met Sed	Org Sed	Fish Tissue	Amb Tox Wat	Amb Tox Sed	Comments
AND 335 METERS SOUTH TO THE INTERSECTION OF WEST ELIZABETH STREET AND SOUTH MILITARY ROAD																							
ARROYO LOS OLMOS BRIDGE ON US 83 SOUTH OF RIO GRANDE CITY	13103	2302A	23	15	IB	IB	BF	3	3	3													Bacteria nitrates and field collected when flowing
FALCON LAKE AT INTERNATIONAL BOUNDARY MONUMENT I	13189	2303	23	16	IB	IB	RT	4	4	4													
FALCON RESERVOIR AT SAN YGNACIO WTP INTAKE WEST OF US 83 INTERSECTION WITH FM 3169	15818	2303	23	16	IB	RN	RT	2	2	2													
RIO GRANDE 115 METERS SOUTH AND 304 METERS WEST FROM THE INTERSECTION OF RANCHO VIEJO DRIVE/ZEBU COURT AND RIENDA DRIVE IN FATHER MCNABOE CITY PARK IN LAREDO	20650	2304	23	16	IB	LA	RT	12		12													ecoli and fecal
RIO GRANDE 12.8 MI	13208	2304	23	16	IB	IB	RT	2	2	2	2												

Site Description	Station ID	Water body ID	Basin	Region	SE	CE	MT	Field	Conv	Bact	Flow	24 hr DO	Aq Hab	Ben	Nek	Met Wat	Org Wat	Met Sed	Org Sed	Fish Tissue	Amb Tox Wat	Amb Tox Sed	Comments
DOWNSTREAM AMISTAD DAM NEAR GAGE 340 M UPSTREAM OF US 277 BRIDGE IN DEL RIO																							
RIO GRANDE 4.5 MI DOWNSTREAM OF DEL RIO AT MOODY RANCH	13560	2304	23	16	IB	IB	RT	4	4	4	4								1				frequency reduced FY12 to add another station in Eagle Pass (20997)
RIO GRANDE 50 YD UPSTREAM OF CONFLUENCE OF ZACATA CREEK AND RIO GRANDE	13200	2304	23	16	IB	LA	RT	12		12													site used to be reported as 13201 but site is still same - Azteca park
RIO GRANDE AT APACHE RANCH WEST OF INTERSECTION OF PRIVATE ROAD AND EASTERN AIRSTRIP NO BETWEEN LARADO AND EAGLE PASS	17596	2304	23	16	IB	IB	RT	4	4	4	4												
RIO GRANDE AT JUAREZ-LINCOLN INTERNATIONAL BRIDGE / BRIDGE #2 IN LAREDO	15814	2304	23	16	IB	LA	RT	12		12	12												E. coli and FC; flow from IBWC gage; field data
RIO GRANDE AT JUAREZ-LINCOLN INTERNATIONAL BRIDGE / BRIDGE #2 IN LAREDO	15814	2304	23	16	IB	RN	RT	4	4	4	4								1				

Site Description	Station ID	Water body ID	Basin	Region	SE	CE	MT	Field	Conv	Bact	Flow	24 hr DO	Aq Hab	Ben	Nek	Met Wat	Org Wat	Met Sed	Org Sed	Fish Tissue	Amb Tox Wat	Amb Tox Sed	Comments
RIO GRANDE AT KICKAPOO CASINO BOAT RAMP SOUTH OF EAGLE PASS	20999	2304	23	16	IB	IB	RT	8	8	8	8								1				replaces 18795 and 18792
RIO GRANDE AT MAIN STREET BOAT RAMP APPROX 400 METERS UPSTREAM OF US 57/INTERNATIONAL BRIDGE IN EAGLE PASS	20997	2304	23	16	IB	IB	RT	4	4	4	4							2					new station FY12 to fill data gap in AU 2304_08
RIO GRANDE AT MASTERSON RD IN LAREDO 9.9KM DWNSTR INTL BRIDGE #1/WEST BRIDGE DWNSTR SOUTHSIDE WWTP AND UPSTREAM NUEVO LAREDO WWTP	15815	2304	23	16	IB	LA	RT	12		12													ecoli and fecal coliform, and field data
RIO GRANDE AT THE COLOMBIA BRIDGE 2.7KM UPSTREAM OF THE DOLORES PUMP STATION 45.1KM UPSTREAM OF THE LAREDO WTP INTAKE	15839	2304	23	16	IB	LA	RT	12		12	12												E. coli and FC; flow from IBWC gage; field data
RIO GRANDE AT WEBB/ZAPATA COUNTY LINE	15817	2304	23	16	IB	RN	RT	12	12	12	12								1				

Site Description	Station ID	Water body ID	Basin	Region	SE	CE	MT	Field	Conv	Bact	Flow	24 hr DO	Aq Hab	Ben	Nek	Met Wat	Org Wat	Met Sed	Org Sed	Fish Tissue	Amb Tox Wat	Amb Tox Sed	Comments
RIO GRANDE AT WORLD TRADE BRIDGE ON FM 3484	17410	2304	23	16	IB	RN	RT	4	4	4	4								1				
RIO GRANDE LAREDO WATER TREATMENT PLANT PUMP INTAKE	13202	2304	23	16	IB	LA	RT	12		12													E. coli and FC, and field
RIO GRANDE LAREDO WATER TREATMENT PLANT PUMP INTAKE	13202	2304	23	16	IB	RN	RT	4	4	4	4												
MANADAS CREEK AT FM 1472 NORTH OF LAREDO	13116	2304B	23	16	IB	LE	RT	4	4	4								4	1				Also collecting metals in water, lab-filtered not field filtered. therefore not submitted to SWQMIS but available on IBWC website.
RIO GRANDE 1.04 KILOMETERS EAST AND 367 METERS SOUTH FROM THE SOUTH END OF FOSTERS RANCH ROAD IN VAL VERDE COUNTY	20627	2305	23	16	IB	BB	RT	1															field data collected at least once a year by canoe
RIO GRANDE 1.35 KILOMETERS DOWNSTREAM FROM LANGTRY CREEK AND PUMP CANYON	20630	2305	23	16	IB	BB	RT	1															field data collected at least once a year by canoe

Site Description	Station ID	Water body ID	Basin	Region	SE	CE	MT	Field	Conv	Bact	Flow	24 hr DO	Aq Hab	Ben	Nek	Met Wat	Org Wat	Met Sed	Org Sed	Fish Tissue	Amb Tox Wat	Amb Tox Sed	Comments
AND 870 METERS EAST AND 350 METERS SOUTH FROM THE INTERSECTION OF STATE PARK ROAD 25 AND TORRES AVENUE IN VAL VERDE COUNTY																							
RIO GRANDE 3.03 KILOMETERS UPSTREAM OF RATTLESNAKE CANYON SOUTHWEST OF LANGTRY	20624	2305	23	16	IB	BB	RT	1															field data collected at least once a year by canoe
RIO GRANDE 1.3 KILOMETERS DOWNSTREAM OF BEAR CANYON AND APPROXIMATELY 9.3 KILOMETERS DOWNSTREAM OF COOK CREEK IN TERRELL COUNTY	20628	2306	23	7	IB	BB	RT	1															field data collected at least once a year by canoe
RIO GRANDE 1.895 KILOMETERS SOUTH AND 552 METERS WEST FROM THE INTERSECTION OF UNNAMED STREET AND FOSTER RANCH ROAD AND 10.1021	13223	2306	23	16	IB	BB	RT	1															field data will be reported at least once in the year.

Site Description	Station ID	Waterbody ID	Basin	Region	SE	CE	MT	Field	Conv	Bact	Flow	24 hr DO	Aq Hab	Ben	Nek	Met Wat	Org Wat	Met Sed	Org Sed	Fish Tissue	Amb Tox Wat	Amb Tox Sed	Comments
KILOMETERS SOUTH AND 4.37 KILOMETERS WEST FROM THE INTERSECTION OF US HIGHWAY 90 AND FOSTERS RANCH ROAD IN VAL VERDE COUNTY CAM																							
RIO GRANDE 449 METERS WEST AND 121 METERS SOUTH FROM THE INTERSECTION OF RANCH ROAD 170 AND RANCH ROAD 169 IN PRESIDIO COUNTY CAMS 758	13229	2306	23	6	IB	IB	RT	8	8	8	8					2			1				Metals - Total Mercury sampled FY12
RIO GRANDE 50 METERS UPSTREAM OF SILBER CANYON SOUTH OF SANDERSON IN BREWSTER COUNTY	20625	2306	23	6	IB	BB	RT	1															field data collected at least once a year by canoe
RIO GRANDE 570 METERS NORTH AND 605 METERS WEST FROM THE SOUTH END OF SHAFTER CROSSING ROAD AND 1.90 KILOMETERS DOWNSTREAM	20629	2306	23	7	IB	BB	RT	1															field data collected at least once a year by canoe

Site Description	Station ID	Water body ID	Basin	Region	SE	CE	MT	Field	Conv	Bact	Flow	24 hr DO	Aq Hab	Ben	Nek	Met Wat	Org Wat	Met Sed	Org Sed	Fish Tissue	Amb Tox Wat	Amb Tox Sed	Comments
OF BRITTON CANYON IN TERRELL COUNTY																							
RIO GRANDE 7.5 KILOMETERS UPSTREAM FROM THE CONFLUENCE WITH SAN FRANCISCO CREEK IN BREWSTER COUNTY	20632	2306	23	6	IB	BB	RT	1															field data collected at least once a year by canoe
RIO GRANDE AT BOAT RAMP AT RIO GRANDE VILLAGE IN BIG BEND NATIONAL PARK	16730	2306	23	6	IB	BB	RT	8	8	8	8					2							Metals - Total Mercury sampled FY12
RIO GRANDE AT BOQUILLAS CROSSING IN BIG BEND NATIONAL PARK	20619	2306	23	6	IB	BB	RT	1															field data collected at least once a year by canoe
RIO GRANDE AT FM 2627/GERSTACKER BRIDGE DOWNSTREAM BIG BEND	13225	2306	23	6	IB	BB	RT	1															field data will be reported at least once in the year
RIO GRANDE AT HORSE CANYON 2.4 MI DOWNSTREAM OF GERSTACKER BRIDGE	13224	2306	23	6	IB	BB	RT	1															field data will be reported at least once in the year
RIO GRANDE AT	18441	2306	23	6	IB	P	RT	4	4	4						2							Metals - Total

Site Description	Station ID	Water body ID	Basin	Region	SE	CE	MT	Field	Conv	Bact	Flow	24 hr DO	Aq Hab	Ben	Nek	Met Wat	Org Wat	Met Sed	Org Sed	Fish Tissue	Amb Tox Wat	Amb Tox Sed	Comments
LAJITAS RESORT/FM 170 BOAT RAMP 240 M UPSTREAM OF BLACK HILLS CREEK CONFLUENCE NEAR LAJITAS						W																	Mercury sampled FY12
RIO GRANDE AT PRESIDIO RAILROAD BRIDGE 3.25KM DOWNSTREAM OF US67 SOUTH OF PRESIDIO	17000	2306	23	6	IB	IB	RT	8		8	8												
RIO GRANDE AT PRESIDIO/OJINAGA TOLL BRIDGE/INTERNATIONAL 0.75KM DOWNSTREAM OF US67 IN PRESIDIO	17001	2306	23	6	IB	IB	RT	8		8	8												
RIO GRANDE AT STILLWELL CROSSING	13226	2306	23	6	IB	BB	RT	1															field data collected by canoe at least once a year.
RIO GRANDE AT TAYLORS FARM SOUTHWEST OF SANDERSON	20623	2306	23	6	IB	BB	RT	1															field data collected at least once a year by canoe
RIO GRANDE AT THE CONFLUENCE WITH INDIAN CREEK IN TERRELL COUNTY	20631	2306	23	7	IB	BB	RT	1															field data collected at least once a year by canoe

Site Description	Station ID	Water body ID	Basin	Region	SE	CE	MT	Field	Conv	Bact	Flow	24 hr DO	Aq Hab	Ben	Nek	Met Wat	Org Wat	Met Sed	Org Sed	Fish Tissue	Amb Tox Wat	Amb Tox Sed	Comments
RIO GRANDE AT THE MOUTH OF SANTA ELENA CANYON	13228	2306	23	6	IB	BB	RT	8	8	8	8					2							Metals - Total Mercury sampled FY12
RIO GRANDE DOWNSTREAM OF RODEO RAPIDS SOUTH OF SANDERSON IN BREWSTER COUNTY	20626	2306	23	6	IB	BB	RT	1															field data collected at least once a year by canoe
RIO GRANDE IMMEDIATELY DOWNSTREAM FROM MOUTH OF LOZIER CANYON 44 KM SE OF DRYDEN	13722	2306	23	7	IB	BB	RT	1															field data collected at least once a year by canoe
RIO GRANDE RIVER AT COLORADO CANYON APPROX 30KM SE OF REDFORD ON RR170 IN PRESIDIO COUNTY	16862	2306	23	6	IB	P W	RT	4	4	4						2							Metals - Total Mercury sampled FY12; sampling frequency reduced to quarterly
RIO GRANDE 3.38 KILOMETERS UPSTREAM FROM THE CONFLUENCE WITH THE RIO CONCHOS 6.72 KILOMETERS WEST AND 2.445 KILOMETERS NORTH FROM THE	13230	2307	23	6	IB	IB	RT	8	8	8	8					2							Metals - Total Mercury sampled FY12

Site Description	Station ID	Water body ID	Basin	Region	SE	CE	MT	Field	Conv	Bact	Flow	24 hr DO	Aq Hab	Ben	Nek	Met Wat	Org Wat	Met Sed	Org Sed	Fish Tissue	Amb Tox Wat	Amb Tox Sed	Comments
INTERSECTION OF RANCH ROAD 170 AND RODRIQUEZ ROAD IN PRESIDIO COUNTY CAMS 757																							
RIO GRANDE AT GUADALUPE POINT OF ENTRY BRIDGE AT FM 1109 WEST OF TORNILLO	15704	2307	23	6	IB	UE	RT	4	4	4	4					2			1				Metals - Total Mercury collected FY12
RIO GRANDE 1.3 KM DOWNSTREAM FROM HASKELL ST WWTP OUTFALL	15528	2308	23	6	IB	IB	RT	12	12	12	12												partial conventional analysis
RIO GRANDE 2.4 KM UPSTREAM FROM HASKELL ST WWTP OUTFALL SOUTH OF BOWIE HIGH SCHOOL FOOTBALL STADIUM IN EL PASO	15529	2308	23	6	IB	IB	RT	12	12	12	12												partial conventional analysis
RIO GRANDE AT RIVERSIDE CANAL 1.8 KM DOWNSTREAM OF ZARAGOSA INTERNATIONAL BRIDGE	14465	2308	23	16	IB	IB	RT	12	12	12	12												partial conventional analysis
PECOS RIVER 0.1 KM UPSTREAM	13248	2310	23	7	IB	MC	RT	6	3	3	6												Collecting conv, flow,

Site Description	Station ID	Water body ID	Basin	Region	SE	CE	MT	Field	Conv	Bact	Flow	24 hr DO	Aq Hab	Ben	Nek	Met Wat	Org Wat	Met Sed	Org Sed	Fish Tissue	Amb Tox Wat	Amb Tox Sed	Comments
OF THE CONFLUENCE WITH INDEPENDENCE CREEK CHANDLER RANCH																							field, bacteria 3x/yr, field and flow only 3x/yr
PECOS RIVER APPROXIMATELY 0.5 MILES DOWNSTREAM FROM THE CONFLUENCE WITH INDEPENDENCE CREEK	14163	2310	23	7	IB	MC	RT	6	3	3	6												Collecting conv, flow, field, bacteria 3x/yr, field and flow only 3x/yr
KOKERNOT SPRINGS 105 METERS SOUTH 20 METERS EAST FROM THE INTERSECTION OF ALPINE CREEK AND HENDRYX DRIVE/HARRISON STREET/SH 223 AND 40 METERS EAST OF THE KOKERNOT LODGE ON SUL ROSS UNIVERSITY CAMPUS IN ALPINE	20558	2311	23	6	IB	SL	RT	4	4	4							2		2				
RIO GRANDE 40M SOUTH OF VINTON BRIDGE APPROXIMATELY 4 KM S OF	13275	2314	23	6	IB	IB	RT	4	4	4						2			1				in support of Paso del Norte Watershed Councils 319h grant and for

Site Description	Station ID	Waterbody ID	Basin	Region	SE	CE	MT	Field	Conv	Bact	Flow	24 hr DO	Aq Hab	Ben	Nek	Met Wat	Org Wat	Met Sed	Org Sed	Fish Tissue	Amb Tox Wat	Amb Tox Sed	Comments
ANTHONY																							stakeholder concerns for bacteria. Total Mercury collected twice a year.
RIO GRANDE AT ANAPRA BRIDGE ON SUNLAND PARK DRIVE 4.2 KM UPSTREAM OF AMERICAN DAM IN NEW MEXICO	17040	2314	23	6	IB	EP	RT	4	4	4						2							total mercury collected twice a year
RIO GRANDE AT BORDERLAND RD NW OF EL PASO	13274	2314	23	6	IB	IB	RT	4		4						2							added for FY12 in response to public concerns about recreation. Metals in water is Total Mercury.
RIO GRANDE AT COURCHESNE BRIDGE 1.7 MI UPSTREAM FROM AMERICAN DAM CAMS 718	13272	2314	23	6	IB	IB	RT	12	12	12	12												partial conventional analysis. Additional non-accredited data available with IBWC for metals, organics, and other conventionals.
RIO GRANDE IMMED UPSTREAM OF THE CONFL WITH	13276	2314	23	6	IB	IB	RT	4	4	4						2							In support of Paso del Norte Watershed Councils 319h

Site Description	Station ID	Water body ID	Basin	Region	SE	CE	MT	Field	Conv	Bact	Flow	24 hr DO	Aq Hab	Ben	Nek	Met Wat	Org Wat	Met Sed	Org Sed	Fish Tissue	Amb Tox Wat	Amb Tox Sed	Comments
ANTHONY DRAIN WEST OF LA TUNA PRISON NEAR THE STATE LINE																							grant and for stakeholder recreation concerns. Total Mercury collected twice a year
RIO GRANDE RIVER AT AMERICAN EAGLE BRICK FACTORY BRIDGE ABANDONED RR 0.1 MI DOWNSTREAM FROM SOUTHERN PACIFIC RR AT SMELTERTOWN	15089	2314	23	6	IB	IB	RT	3	3	3						2							total mercury twice a year
RIO GRANDE RIVER AT AMERICAN EAGLE BRICK FACTORY BRIDGE ABANDONED RR 0.1 MI DOWNSTREAM FROM SOUTHERN PACIFIC RR AT SMELTERTOWN	15089	2314	23	6	IB	UE	RT	2		2													

Figure 5: Map of the Upper Rio Grande Basin, Southern Half