

**Appendix G to the Cypress Creek Planning Agency / Clean Rivers  
Program FY 2004/2005 QAPP**

**Targeted Flow Monitoring**

Prepared by the Cypress Creek Basin Planning Agency  
(Northeast Texas Municipal Water District)

In Cooperation with the  
Texas Commission on Environmental Quality  
(TCEQ)

Effective Period  
March 1, 2004 – August 31, 2005

Questions concerning this QAPP should be directed to:

David Thomas  
Technical Coordinator  
Paul Price Associates, Inc.  
3006 Bee Caves Road, Suite D-230  
Austin, Texas 78746-5541  
(512) 329-0155  
(512) 329-0101 FAX  
dthomas@paulprice.com



## A2 TABLE OF CONTENTS

SS-A1 Approval Page .....	2
SS-A3 Distribution List .....	4
List of Acronyms .....	4
SS-A4 Project/Task Organization .....	4
SS-A5 Problem Definition/Background .....	5
SS-A6 Project/Task Description .....	5
SS-A7 Quality Objectives and Criteria.....	7
SS-A8 Special Training/Certification .....	8
SS-A9 Documents and Records .....	8
SS-B1 Sampling Process Design .....	9
SS-B2 Sampling Methods.....	11
SS-B3 Sample Handling and Custody.....	11
SS-B4 Analytical Methods .....	11
SS-B5 Quality Control .....	12
SS-B6 Instrument/Equipment Testing, Inspection, and Maintenance.....	12
SS-B7 Instrument Calibration and Frequency .....	12
SS-B8 Inspection/Acceptance for Supplies and Consumables .....	12
SS-B9 Non-Direct Measurements .....	12
SS-B10Data Management .....	12
SS-C1 Assessment and Response Actions .....	12
SS-C2 Reports to Management .....	13
SS-D1 Data Review, Verification and Validation .....	13
SS-D2 Verification and Validation Methods .....	13
SS-D3 Reconciliation with User Requirements .....	13

### Tables:

Table SS-A7: Measurement Performance Specifications .....	7
Table SS-B1: Sampling Sites and Monitoring Frequencies .....	9

### Figures:

Figure SS-A4: Targeted Flow Monitoring Project Organization Chart.....	6
Figure SS-B1: Targeted Flow Monitoring Sample Stations .....	10

### Attachments:

Appendix G Document Adherence Letters for Distribution to Sub-Tier Participants.....	14
Attachment 1 – Targeted Monitoring Data Report Example .....	19

## **LIST OF ACRONYMS**

As described in Section A2 on page 4 of the Cypress Creek Basin Fiscal Year 2004-2005 QAPP.

## **SS-A3 DISTRIBUTION LIST**

As described in Section A2 on page 5 of the Cypress Creek Basin Fiscal Year 2004-2005 QAPP.

## **SS-A4 PROJECT/TASK ORGANIZATION**

### **TCEQ**

Linda Brookins, CRP Program Manager, as described in Section A4 of the Cypress Creek Basin Fiscal Year 2004-2005 QAPP.

Sharon Coleman, CRP Lead Quality Assurance Specialist, as described for Bernard Ray in Section A4 of the Cypress Creek Basin Fiscal Year 2004-2005 QAPP.

Patricia Wise, CRP Project Manager, as described in Section A4 of the Cypress Creek Basin Fiscal Year 2004-2005 QAPP.

Eric Reese, CRP Data Manager, as described in Section A4 of the Cypress Creek Basin Fiscal Year 2004-2005 QAPP.

Laurie Curra, CRP Project Quality Assurance Specialist, as described in Section A4 of the Cypress Creek Basin Fiscal Year 2004-2005 QAPP.

### **Cypress Creek Basin Planning Agency Northeast Texas Municipal Water District**

Walt Sears, Jr., General Manager, as described in Section A4 of the Cypress Creek Basin Fiscal Year 2004-2005 QAPP.

### **Paul Price Associates, Inc.**

Paul Price, Cypress Creek Basin Project Manager, as described in Section A4 of the Cypress Creek Basin Fiscal Year 2004-2005 QAPP.

Peggy Jones, Cypress Creek Basin Data Manager and Quality Assurance Officer, as described in Section A4 of the Cypress Creek Basin Fiscal Year 2004-2005 QAPP.

David Thomas, Cypress Creek Basin Technical Coordinator, as described in Section A4 of the Cypress Creek Basin Fiscal Year 2004-2005 QAPP.

Dr. Roy Darville, East Texas Baptist University/Caddo Lake Institute, Sampling Coordinator. Dr. Darville will provide field collection support and the proper documentation management of

all sample events. His responsibility will involve the collection of monthly field parameters and stream flow measurements and subsequent data processing (i.e., stream flow calculations) following TCEQ field procedures at the six designated targeted monitoring study stations.

The Targeted Flow Monitoring Project Organization Chart is presented in Figure SS-A4.

#### **SS-A5 PROBLEM DEFINITION**

The TCEQ uses the seven-day, two-year low-flow (7Q2) and the harmonic mean flow to calculate water-quality based effluent limits and to establish whole effluent toxicity (WET) testing parameters in wastewater discharge permits. The TCEQ often has very little site-specific flow information upon which to base the 7Q2 and harmonic mean flow, and the uncertainty in the flows carries through to the permit limit calculations and the WET testing requirements. The TCEQ has identified sites at which flow information would improve the quality of permit limits and conditions. This QAPP appendix will address the flow monitoring to be conducted to allow the TCEQ to better characterize the flow regime of receiving streams and to determine the 7Q2 and the harmonic mean flow, as appropriate. This information will then be used by the TCEQ in setting permit discharge limits.

#### **SS-A6 PROJECT/TASK DESCRIPTION**

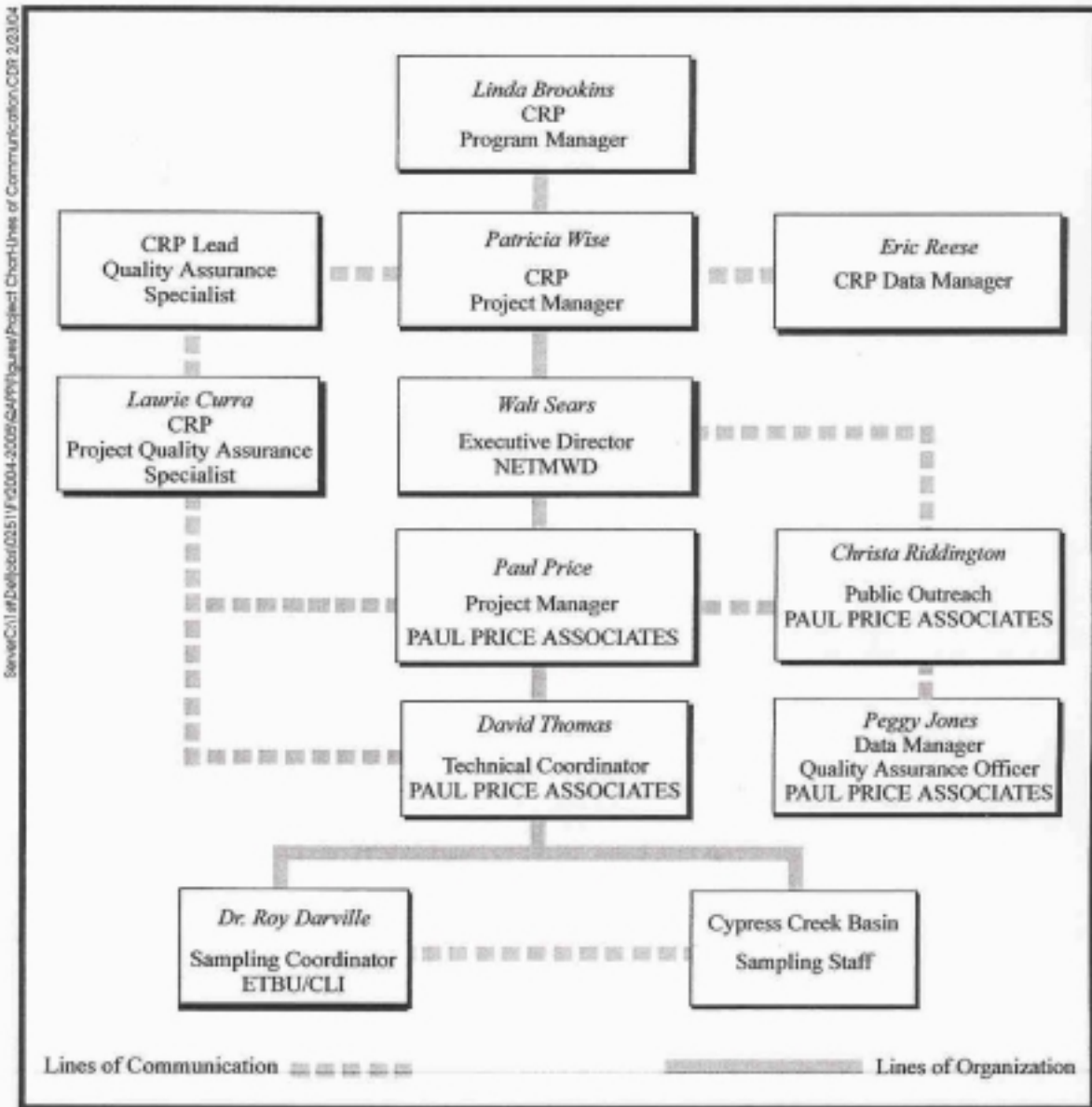
This study will involve reconnaissance and site selection; monthly stream flow measurements, photographs, and field observations and quarterly field measurements from each monitoring site; and a report when the study has been concluded. Stream flow will be measured and reported according to Exhibit 3D of the CRP Guidance and Reference Guide and the TCEQ *Surface Water Quality Monitoring Procedures Manual (SWQM) Volume 1*. Additionally, the CRP Partner will provide monitoring updates with the CRP quarterly progress report.

Stream discharge will be monitored monthly in six unclassified streams to benefit seven permit holders from March 2004 through August 2005 to help characterize flow conditions for the permitting process.

Stream flow will be measured at each site using an electronic Marsh-McBirney Flo-Mate Portable Flowmeter Model No. 2000. The stream discharge will be calculated consistent with TCEQ *SWQM Procedures, Volume 1*. Photographs will be taken at the point of flow measurement, upstream, and downstream of the measurement site. In addition to stream discharge, field parameters (water temperature, pH, dissolved oxygen, and specific conductance) will also be collected on a quarterly basis.

To avoid bias, flow measurements will be collected on a consistent basis (e.g., during the first week of each month). The exception will be if the stream is under the influence of a rainfall event. Since the normal, yearly flow conditions are being characterized with this type of monitoring, flow measurements will not be taken if the stream is visibly under an immediate elevated flow event that will subside fairly quickly (e.g., a day).

**Figure SS A4  
Targeted Flow Monitoring Project Organization Chart**



**Figure SS A4  
Project Chart-Lines of Communication  
Cypress Creek Basin  
Clean Rivers Program**

**Paul Price Associates, Inc.**

ECOLOGY, WATER QUALITY, CULTURAL RESOURCES, PLANNING

## S-A7 QUALITY OBJECTIVES AND CRITERIA FOR MEASUREMENT DATA

This study will involve monthly stream flow measurements, photographs, and field observations and quarterly field measurements at each of the sites. The purpose of this study is help the TCEQ characterize flow conditions for the permitting process.

The measurement performance specifications to support the project objectives for a data set are specified in Table SS- A7 and in the text following.

Table SS- A7  
Measurement Performance Specifications  
Targeted Flow Monitoring Study

PARAMETER	UNITS	MATRIX	METHOD	STORET	AWRL	Lab Reporting Limit (RL)	RECOVERY AT RLs	PRECISION (RPD of LCS/LCS dup)	BIAS (%Rec. of LCS)
<b>Field Parameters</b>									
pH	pH/ standard units	Water	EPA 150.1 and TCEQ SOP	00400	NA*	NA	NA	NA	NA
DO	mg/L	Water	EPA 360.1 and TCEQ SOP	00300	NA*	NA	NA	NA	NA
Conductivity	uS/cm	Water	EPA 120.1 and TCEQ SOP	00094	NA*	NA	NA	NA	NA
Temperature	° C	Water	EPA 170.1 and TCEQ SOP	00010	NA*	NA	NA	NA	NA
Days since last significant rainfall	days	NA	TCEQ SOP	72053	NA*	NA	NA	NA	NA
Flow	cfs	Water	TCEQ SOP	00061	NA*	NA	NA	NA	NA
Flow measurement method	1-gage 2-electric 3-mechanical 4-weir/flume 5-doppler	Water	TCEQ SOP	89835	NA*	NA	NA	NA	NA
Flow severity	1-no flow, 2-low, 3-normal, 4-flood, 5-high, 6-dry	Water	TCEQ SOP	01351	NA*	NA	NA	NA	NA

**References:**

United States Environmental Protection Agency (USEPA) "Methods for Chemical Analysis of Water and Wastes," Manual #EPA-600/4-79-020 TCEQ SOP - Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods for Water, Sediment, and Tissue, 2003.

### **Ambient Water Reporting Limits (AWRLs)**

Not applicable to this QAPP.

### **Precision**

As described in Section A7 on page 24 of the Cypress Creek Basin FY2004-2005 QAPP.

### **Bias**

As described in Section A7 on page 24 of the Cypress Creek Basin FY2004-2005 QAPP.

### **Representativeness**

Site selection, the appropriate sampling regime, and the use of only approved field methods will assure that the measurement data represents the conditions at the site. This data collection scheme as outlined by the TCEQ Water Quality Division has been determined to be spatially and temporally representative of stream flow conditions at the site. At a minimum, stream flow measurements will be collected over at least 18 months to reflect inter-seasonal and inter-year variation. Although data may be collected during varying regimes of weather and flow, the data sets will not be biased toward unusual conditions of flow because flow will not be measured during visibly high flow events. The goal for meeting total representation of the water body will be tempered by the potential funding for complete representativeness.

### **Comparability**

Confidence in the comparability of this data set for this project is based on the commitment of project staff to use only approved sampling and analysis methods and QA/QC protocols in accordance with quality system requirements and as described in this QAPP and in TCEQ SOPs. Comparability is also guaranteed by reporting data in standard units, by using accepted rules for rounding figures, and by reporting data in a standard format as specified in Section B10.

### **Completeness**

A 100% completeness goal is required for this monitoring project.

### **SS-A8 SPECIAL TRAINING/CERTIFICATION**

As described in Section A8 on page 25 of the Cypress Creek Basin FY2004-2005 QAPP.

### **SS-A9 DOCUMENTS AND RECORDS**

As described in Section A9 on page 25 of the Cypress Creek Basin FY2004-2005 QAPP.



## Data Reports

An example of the data summary report as shown in Attachment 1 of this document will be submitted electronically on disk or CD at the termination of the project. Data events and results will be submitted in routine data submittals for inclusion in the TCEQ Regulatory Activities and Compliance System (TRACS) database. Additionally, monitoring updates will be provided with the CRP quarterly progress report

## SS-B1 SAMPLING PROCESS DESIGN

The data collection design is summarized in Table SS-B1 (Sampling Sites and Monitoring Frequencies) and Figure SS-B1 is a map of the special study area, with monitoring locations labeled.

Table SS - B1  
Streams Monitored, Station Numbers, and Permit Numbers

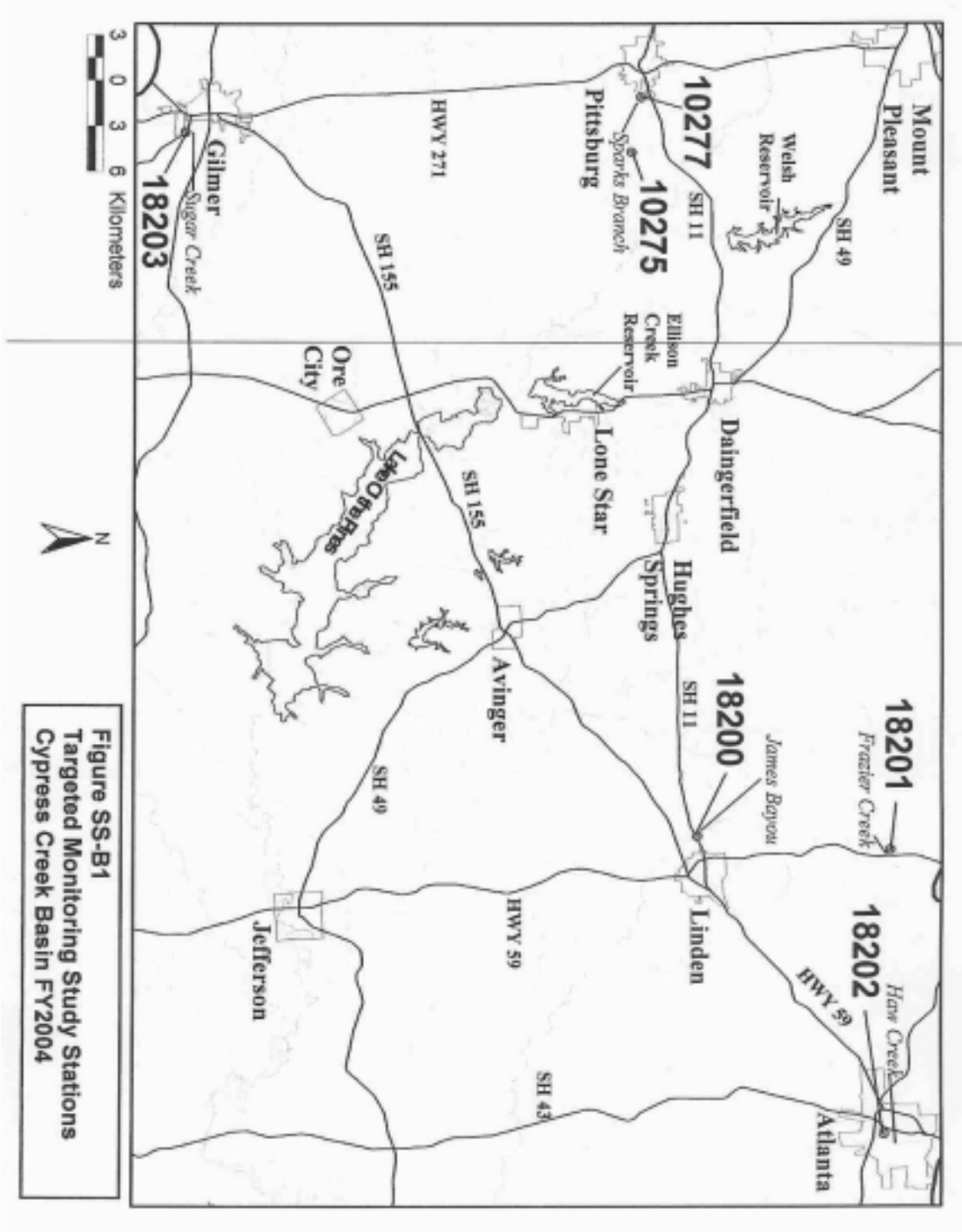
Stream	Station ID	Start Date	End Date	Monitoring Responsibility	Monitoring Type	Permit	Field	Instantaneous Flow
Haw Creek at FM 251 (Williams Road) in Atlanta, Texas	18202	03/01/2004	08/31/2005	NT/CL	FL	03811	6	18
Frazier Creek at FM 995 near Red Hill, Texas	18201	03/01/2004	08/31/2005	NT/CL	FL	04189	6	18
James Bayou at State Hwy 11 west of Linden, Texas	18200	03/01/2004	08/31/2005	NT/CL	FL	04190	6	18
Sugar Creek at State Hwy 300 southeast of Gilmer, Texas	18203	03/01/2004	08/31/2005	NT/CL	FL	01361	6	18
Sugar Creek at State Hwy 300 southeast of Gilmer, Texas	18203	03/01/2004	08/31/2005	NT/CL	FL	01052	6	18
Dry Creek at FM 557	10275	03/01/2004	08/31/2005	NT/CL	FL	01052	6	18
Sparks Branch 10m upstream of the City of Pittsburg WWTP	10277	03/01/2004	08/31/2005	NT/CL	FL	10250	6	18

## Sample Design Rationale and Site Selection Criteria

The flow monitoring sites were chosen by the TCEQ Water Quality Assessment Team. These sites were selected based on one of the following:

- 1) If the discharge is directly to a perennial or intermittent stream with perennial pools, the flow monitoring site should be located upstream of the discharge on the perennial or intermittent stream with perennial pools.

**Figure SS-B1**  
 Targeted Flow Monitoring Sample Sites



**Figure SS-B1**  
 Targeted Monitoring Study Stations  
 Cypress Creek Basin FY2004

2) If the discharge is directly to an intermittent stream, the flow monitoring site should be located downstream of the discharge, but upstream of the confluence of the first perennial or intermittent stream with perennial pools.

## **SS-B2 SAMPLING METHODS**

### **Field Sampling Procedures**

As described in Section B2 on page 28 of the Cypress Creek Basin FY2004-2005 QAPP.

### **Sample volume, container types, minimum sample volume, preservation requirements, and holding time requirements.**

Not applicable to this QAPP.

### **Sample Containers**

Not applicable to this QAPP.

### **Processes to Prevent Contamination**

Not applicable to this QAPP.

### **Documentation of Field Sampling Activities**

As described in Section B2 on page 30 of the Cypress Creek Basin FY2004-2005 QAPP.

### **Recording Data**

As described in Section B2 on page 30 of the Cypress Creek Basin FY2004-2005 QAPP.

### **Deficiencies, Nonconformances and Corrective Action Related to Sampling Requirements**

As described in Section B2 on page 30 of the Cypress Creek Basin FY2004-2005 QAPP.

## **SS-B3 SAMPLING HANDLING AND CUSTODY**

Section is not applicable to this QAPP.

## **SS-B4 ANALYTICAL METHODS**

Section is not applicable to this QAPP.

## **SS-B5 QUALITY CONTROL**

### **Sampling Quality Control Requirements and Acceptability Criteria**

As described in Section B5 on page 34 of the Cypress Creek Basin FY2004-2005 QAPP.

### **Laboratory Measurement Quality Control Requirements and Acceptability Criteria**

Not applicable to this QAPP.

### **Failures in Field and Laboratory Quality Control and Corrective Action**

As described in Section B5 on page 36 of the Cypress Creek Basin FY2004-2005 QAPP.

## **SS-B6 INSTRUMENT/EQUIPMENT TESTING, INSPECTION AND MAINTENANCE**

As described in Section B6 on page 38 of the Cypress Creek Basin FY2004-2005 QAPP.

## **SS-B7 INSTRUMENT CALIBRATION AND FREQUENCY**

As described in Section B7 on page 38 of the Cypress Creek Basin FY2004-2005 QAPP.

## **SS-B8 INSPECTION/ACCEPTANCE FOR SUPPLIES AND CONSUMABLES**

As described in Section B8 on page 38 of the Cypress Creek Basin FY2004-2005 QAPP.

## **SS-B9 NON-DIRECT MEASUREMENTS**

As described in Section B9 on page 39 of the Cypress Creek FY2004-2005 QAPP

## **SS-B10 DATA MANAGEMENT**

As described in Section B10 on page 39 of the Cypress Creek Basin FY2004-2005 QAPP

## **SS-C1 ASSESSMENTS AND RESPONSE ACTIONS**

As described in Section C1 on page 45 of the Cypress Creek Basin FY2004-2005 QAPP.

### **Corrective Action**

As described in Section C1 on page 45 of the Cypress Creek Basin FY2004-2005 QAPP.

## **SS-C2 REPORTS TO MANAGEMENT**

### **Reports to the Cypress Creek Basin Planning Agency Project Management**

As described in Section C2 on page 46 of the Cypress Creek Basin FY2004-2005 QAPP.

### **Reports to TCEQ Project Management**

As described in Section C2 on page 46 of the Cypress Creek Basin FY2004-2005 QAPP.

### **Reports by TCEQ Project Management**

As described in Section C2 on page 46 of the Cypress Creek Basin FY2004-2005 QAPP.

## **SS-D1 DATA REVIEW, VERIFICATION, AND VALIDATION**

As described in Section D1 on page 47 of the Cypress Creek Basin FY2004-2005 QAPP.

## **SS-D2 VERIFICATION AND VALIDATION METHODS**

As described in Section D2 on page 47 of the Cypress Creek Basin FY2004-2005 QAPP.

## **SS-D3 RECONCILIATION WITH USER REQUIREMENTS**

As described in Section D2 on page 48 of the Cypress Creek Basin FY2004-2005 QAPP.

**Letter to document adherence to the Basin-wide QAPP Appendix G**

DATE: date

TO: Walt Sears, Jr. and Howard Pafford  
Northeast Texas Municipal Water District (NETMWD)

FROM: David Thomas  
Paul Price Associates, Inc. (PPAI)

RE: Appendix G to the Cypress Creek Basin Planning Agency FY2004-05 CRP QAPP

Please sign and return this form by date to:

David Thomas  
Paul Price Associates, Inc.  
3006 Bee Caves Road, Suite D-230  
Austin, Texas 78746

I acknowledge receipt of the referenced document(s). I understand the document(s) describe quality assurance, quality control, data management and reporting, and other technical activities that must be implemented to ensure the results of work performed will satisfy stated performance criteria.

---

Signature \_\_\_\_\_ Date \_\_\_\_\_

---

Signature \_\_\_\_\_ Date \_\_\_\_\_

*Copies of the signed forms should be sent by the Planning Agency to the TCEQ CRP Project Manager within 60 days of TCEQ approval of the QAPP.*

**Letter to document adherence to the Basin-wide QAPP Appendix G**

DATE: date

TO: Dwight K. Shellman and Dr. Roy Darville  
Caddo Lake Institute (CLI) / East Texas Baptist University (ETBU)

FROM: David Thomas  
Paul Price Associates, Inc. (PPAI)

RE: Appendix G to the Cypress Creek Basin Planning Agency FY2004-05 CRP QAPP

Please sign and return this form by date to:

David Thomas  
Paul Price Associates, Inc.  
3006 Bee Caves Road, Suite D-230  
Austin, Texas 78746

I acknowledge receipt of the referenced document(s). I understand the document(s) describe quality assurance, quality control, data management and reporting, and other technical activities that must be implemented to ensure the results of work performed will satisfy stated performance criteria.

---

Signature \_\_\_\_\_ Date \_\_\_\_\_

---

Signature \_\_\_\_\_ Date \_\_\_\_\_

**Letter to document adherence to the Basin-wide QAPP Appendix G**

DATE: date

TO: David Weidman  
Franklin County Water District (FCWD)

FROM: David Thomas  
Paul Price Associates, Inc. (PPAI)

RE: Appendix G to the Cypress Creek Basin Planning Agency FY2004-05 CRP QAPP

Please sign and return this form by date to:

David Thomas  
Paul Price Associates, Inc.  
3006 Bee Caves Road, Suite D-230  
Austin, Texas 78746

I acknowledge receipt of the referenced document(s). I understand the document(s) describe quality assurance, quality control, data management and reporting, and other technical activities that must be implemented to ensure the results of work performed will satisfy stated performance criteria.

---

Signature

Date



**Letter to document adherence to the Basin-wide QAPP Appendix G**

DATE: date

TO: Bill Peery  
Ana-Lab Corporation

FROM: David Thomas  
Paul Price Associates, Inc. (PPAI)

RE: Appendix G to the Cypress Creek Basin Planning Agency FY2004-05 CRP QAPP

Please sign and return this form by date to:

David Thomas  
Paul Price Associates, Inc.  
3006 Bee Caves Road, Suite D-230  
Austin, Texas 78746

I acknowledge receipt of the referenced document(s). I understand the document(s) describe quality assurance, quality control, data management and reporting, and other technical activities that must be implemented to ensure the results of work performed will satisfy stated performance criteria.

---

Signature

Date

**Letter to document adherence to the Basin-wide QAPP Appendix G**

DATE: date

TO: Vernon Rowe  
Pilgrim's Pride Corporation / Rowenvironmental

FROM: David Thomas  
Paul Price Associates, Inc. (PPAI)

RE: Appendix G to the Cypress Creek Basin Planning Agency FY2004-05 CRP QAPP

Please sign and return this form by date to:

David Thomas  
Paul Price Associates, Inc.  
3006 Bee Caves Road, Suite D-230  
Austin, Texas 78746

I acknowledge receipt of the referenced document(s). I understand the document(s) describe quality assurance, quality control, data management and reporting, and other technical activities that must be implemented to ensure the results of work performed will satisfy stated performance criteria.

---

Signature

Date

ATTACHMENT 1

# **EXAMPLE**

## TARGETED FLOW MONITORING SUMMARY REPORT

Purpose of the targeted monitoring study: Total stream discharge (cfs) will be monitored monthly at six unclassified streams for 7 permit holders from March 2004 through August 2005 to help characterize flow conditions for the permitting process. A data summary report for each unclassified stream listed in Table 1 will be submitted in electronic format to the TCEQ on compact disk (CD) at the conclusion of the targeted monitoring project. All total flow (discharge) results for each monthly data event and the quarterly field parameter results will be submitted for inclusion into the TRACS database. Monitoring updates will also be included with the CRP quarterly progress reports.

Table 1  
Streams Monitored, Station Numbers, and Permit Numbers

<b>Permit Holder / Receiving Stream</b>	<b>Station Number</b>	<b>Permit Number</b>
Anthony Forest Products Co., Inc. / Haw Creek at FM 251 in Cass County, Texas	18202	03811-000
Ward Lumber Co, Inc. / Frazier Creek at FM 995 in Cass County, Texas	18201	04189-000
Ward Timber Co., Inc. / James Bayou at State Hwy 11 in Cass County, Texas	18200	04190-000
Gilmer Potteries, Inc. / Sugar Creek at State Hwy 300 in Upshur County, Texas	18203	01361-000
Robroy Industries - Texas, L.P. / Sugar Creek at State Hwy 300 in Upshur County, Texas	18203	01052-000
City of Pittsburg / Dry Creek at FM 557	10275	10250-001
City of Pittsburg / Sparks Branch 10m upstream of the City of Pittsburg WWTP	10277	10250-001

Summary and Submittal of Data Results: A summary of monthly stream flow data as shown in Table 2 will be documented by sample date for each of the six monitoring sites and submitted as final to the TCEQ in pdf format. Field measurements of water temperature, dissolved oxygen (DO), conductivity, and pH will be taken on a quarterly basis concurrent with the designated monthly stream flow measurement. Flow measurements will be taken from each location during each monthly survey to determine stream discharge in cubic feet per second (cfs). The average stream velocity (ft/s) will be determined with a Marsh-McBirney Model 2000 Flo-Mate portable velocity meter and top-setting wading rod and recorded on a Stream Flow (Discharge) Measurement Form (Table 3). Stream flow discharge (cfs) will then be calculated by multiplying the section width by the section depth (ft<sup>2</sup>) by the velocity (f/s). Photographs will be taken upstream and downstream of the location of stream cross-section selected for flow measurement to document the current conditions of each stream segment over an 18-month period.

Table 2

STREAM PHYSICAL CHARACTERISTICS CHECKLIST

Job Name: \_\_\_\_\_ Job No.: \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_ Observers: \_\_\_\_\_

Stream: \_\_\_\_\_ Station ID: \_\_\_\_\_ Time: \_\_\_\_\_ Nearest Stream Segment: \_\_\_\_\_

Location of Station: \_\_\_\_\_

Weather Conditions: clear partly cloudy cloudy rain Wind Intensity: calm slight moderate strong

Length of Stream Evaluated: \_\_\_\_\_ Days Since Last Rain: \_\_\_\_\_

<b>Stream Type:</b> perennial ___ intermittent with perennial pools ___ intermittent ___					
<b>Flow Severity:</b> 1) No Flow      2) Low Flow      3) Normal      4) Flood      5) High      6) Dry					
<b>Evidence of Flow Fluctuations:</b>			<b>Observed Stream Uses:</b>		
<b>Adjacent Land Use:</b> Left Bank - _____ Right Bank - _____			<b>Aesthetics:</b> 1 Wilderness      3 Common 2 Natural      4 Offensive		
<b>Water Conditions:</b> (foam, flood, etc.)			<b>Channel Obstructions/ Modifications:</b>		
<b>Stream Bends:</b> No. Well Defined _____		No. Moderately Defined _____	No. Poorly Defined: _____	No. of Riffles: _____	
<b>Turbidity:</b> _____	<b>Color:</b> _____	<b>Water Odor:</b> _____	<b>Flow:</b> _____	<b>Sediment Odor:</b> _____	
Air Temp: _____ °C Water Temp: _____ °C	<b>pH:</b> _____	<b>Conductivity:</b> _____	<b>DO:</b> _____ <b>DO%:</b> _____ <b>DOC:</b> _____	<b>Secchi Depth:</b> _____ meters	
<b>Riparian Vegetation:</b> Trees (%): _____		Shrubs (%): _____	Grasses, Forbs (%): _____	Cult. Fields (%): _____	Other (%): _____

**Parameters to be sampled at this station:**

Field \_\_\_\_\_

Flow \_\_\_\_\_

Photographs Taken \_\_\_\_\_

General Observations: \_\_\_\_\_

Table 3  
Summary of Monthly Data from Haw Creek at FM 251

Anthony Forest Products Co., Inc. Permit No. 03491-000, TCEQ Station ID Number 18202					
Date	Flow (cfs) 00061	Temp (°C) 00010	pH (SU) 00400	DO (mg/l) 00300	Specific Conductance (μS/cm) 00094
03-xx-04					
04-xx-04					
05-xx-04					
06-xx-04					
07-xx-04					
08-xx-04					
09-xx-04					
10-xx-04					
11-xx-04					
12-xx-04					
01-xx-05					
02-xx-05					
03-xx-05					
04-xx-05					
05-xx-05					
06-xx-05					
07-xx-05					
08-xx-05					

Table 3 (Cont'd)  
Summary of Monthly Data from Frazier Creek at FM 995

Ward Lumber Co., Inc. Permit No. 04189-000, TCEQ Station ID Number 18201					
Date	Flow (cfs) 00061	Temp (°C) 00010	pH (SU) 00400	DO (mg/l) 00300	Specific Conductance (µS/cm) 00094
03-xx-04					
04-xx-04					
05-xx-04					
06-xx-04					
07-xx-04					
08-xx-04					
09-xx-04					
10-xx-04					
11-xx-04					
12-xx-04					
01-xx-05					
02-xx-05					
03-xx-05					
04-xx-05					
05-xx-05					
06-xx-05					
07-xx-05					
08-xx-05					

Table 3 (Cont'd)  
Summary of Monthly Data from James Bayou at State Hwy 11

Ward Timber Co., Inc. Permit No. 04190-000, TCEQ Station ID Number 18200					
Date	Flow (cfs) 00061	Temp (°C) 00010	pH (SU) 00400	DO (mg/l) 00300	Specific Conductance (µS/cm) 00094
03-xx-04					
04-xx-04					
05-xx-04					
06-xx-04					
07-xx-04					
08-xx-04					
09-xx-04					
10-xx-04					
11-xx-04					
12-xx-04					
01-xx-05					
02-xx-05					
03-xx-05					
04-xx-05					
05-xx-05					
06-xx-05					
07-xx-05					
08-xx-05					



Table 3 (Cont'd)  
Summary of Monthly Data from Sugar Creek at State Hwy 300

Gilmer Potteries, Inc. Permit No. 01361-000, TCEQ Station ID Number 18203					
Date	Flow (cfs) 00061	Temp (°C) 00010	pH (SU) 00400	DO (mg/l) 00300	Specific Conductance (µS/cm) 00094
03-xx-04					
04-xx-04					
05-xx-04					
06-xx-04					
07-xx-04					
08-xx-04					
09-xx-04					
10-xx-04					
11-xx-04					
12-xx-04					
01-xx-05					
02-xx-05					
03-xx-05					
04-xx-05					
05-xx-05					
06-xx-05					
07-xx-05					
08-xx-05					

Table 3 (Cont'd)  
Summary of Monthly Data from Sugar Creek at State Hwy 300

Robroy Industries – Texas, L.P. Permit No. 01052-000, TCEQ Station ID Number 18203					
Date	Flow (cfs) 00061	Temp (°C) 00010	pH (SU) 00400	DO (mg/l) 00300	Specific Conductance (μS/cm) 00094
03-xx-04					
04-xx-04					
05-xx-04					
06-xx-04					
07-xx-04					
08-xx-04					
09-xx-04					
10-xx-04					
11-xx-04					
12-xx-04					
01-xx-05					
02-xx-05					
03-xx-05					
04-xx-05					
05-xx-05					
06-xx-05					
07-xx-05					
08-xx-05					

Table 3 (Cont'd)  
Summary of Monthly Data from Dry Creek at FM 557

City of Pittsburg Permit No. 10250-001, TCEQ Station ID Number 10275					
Date	Flow (cfs) 00061	Temp (°C) 00010	pH (SU) 00400	DO (mg/l) 00300	Specific Conductance (µS/cm) 00094
03-xx-04					
04-xx-04					
05-xx-04					
06-xx-04					
07-xx-04					
08-xx-04					
09-xx-04					
10-xx-04					
11-xx-04					
12-xx-04					
01-xx-05					
02-xx-05					
03-xx-05					
04-xx-05					
05-xx-05					
06-xx-05					
07-xx-05					
08-xx-05					

Table 3 (Concluded)

Summary of Monthly Data from Sparks Branch 10m upstream of the City of Pittsburg WWTP

City of Pittsburg Permit No. 10250-001, TCEQ Station ID Number 10277					
Date	Flow (cfs) 00061	Temp (°C) 00010	pH (SU) 00400	DO (mg/l) 00300	Specific Conductance (µS/cm) 00094
03-xx-04					
04-xx-04					
05-xx-04					
06-xx-04					
07-xx-04					
08-xx-04					
09-xx-04					
10-xx-04					
11-xx-04					
12-xx-04					
01-xx-05					
02-xx-05					
03-xx-05					
04-xx-05					
05-xx-05					
06-xx-05					
07-xx-05					
08-xx-05					

Table 4  
Stream Flow (Discharge) Measurement Form

Stream: \_\_\_\_\_ Date: \_\_\_\_\_ 2004  
 Station Description: \_\_\_\_\_  
 Time Begin: \_\_\_\_\_ Time End: \_\_\_\_\_ Meter Type: \_\_\_\_\_ Marsh-McBirney  
 Observers: \_\_\_\_\_ Stream Width\*: \_\_\_\_\_ Section Width: \_\_\_\_\_  
 Observations: \_\_\_\_\_

Section Midpoint (ft) (m)	Section Depth (ft) (m) (cm)	Observational Depth** ft-m-cm	Velocity		Area W x D (ft <sup>2</sup> ) (m <sup>2</sup> )	Flow (Q) V x A (m <sup>3</sup> /s) (ft <sup>3</sup> /s)
			At Point (ft/s) (m/s)	Average (ft/s)(m/s)		
$m^3/s \times 35.3 = ft^3/s$			<b>Total Flow (Discharge) (3Q) (ft<sup>3</sup>/s)</b>			

\* Make a minimum of 10 measurements when the total width is > 5.0 ft, 20 measurements preferred.  
 Appendix G – Page 29