Texas Water Development Board

City of La Feria

DWSRF GREEN PROJECT RESERVE BUSINESS CASE EVALUATION

STATE FISCAL YEAR 2011 INTENDED USE PLAN

PROJECT NUMBER 62502

COMMITMENT DATE: May 4, 2011 DATE OF LOAN

CLOSING: APRIL 19, 2012

Texas Water Development Board

P.O. Box 13231, 1700 N. Congress Ave.
Austin, TX 78711-3231, www.twdb.state.tx.us
Phone (512) 463-7847, Fax (512) 475-2053

March 24, 2011

Mr. Sunny K. Philip
City Manager
City of La Feria
115 East Commercial Avenue
La Feria, Texas 78559

Re: **SFY 2011 Drinking Water State Revolving Fund**
Green Project Eligibility

Dear Mr. Philip:

The Texas Water Development Board (TWDB) received Green Project Information Worksheets from the City of La Feria (City) for project #8660 in response to the Drinking Water State Revolving Fund (DWSRF) invitation dated September 27, 2010. After reviewing the worksheets, TWDB staff determined the City meets certain green costs based on the following:

- The City's Green Project Information Worksheets dated October 27, 2010 requested $600,000 of the $13,455,624 La Feria Water DBP Treatment and Distribution Improvements Project be considered eligible for the DWSRF Green Project Reserve (GPR). The project was generally described as treatment and distribution improvements to address disinfection byproducts (DBP) violations.

- Installation of an Automated Meter Reading (AMR) system and a system-wide leak detection system were requested to be considered eligible for the DWSRF GPR.

- The Environmental Protection Agency's (EPA's) *Green Project Reserve Guidance for Determining Project Eligibility* (TWDB-0161) lists retrofitting/adding AMR capabilities or leak equipment to existing meters as categorically eligible for the GPR (Part B, Section 2.2-4). Distribution system leak detection equipment, portable or permanent, is also listed as categorically eligible for the GPR (Part B, Section 2.2-10).

- Information presented on the Green Project Information Worksheets revised on March 15, 2011 confirmed that the AMR and leak detection system project elements are categorically eligible for the DWSRF GPR. Therefore, at this time the TWDB considers project costs associated with the addition of an AMR system,

- excluding any actual meter replacement costs, and leak detection system in the amount of $607,000 eligible for the DWSRF GPR.

- Please note that the District's application for financial assistance must be consistent with information provided on the Green Project Information Worksheets dated March 15, 2011. Inclusion of those green elements within the project will be verified prior to Board commitment.

For these reasons, the TWDB will continue processing the application for Disadvantaged funding submitted on December 28, 2010.

If you have any questions regarding green project eligibility, please feel free to contact John Muras, Project Engineer, by phone at 512-463-1706 or by email at john.muras@twdb.state.tx.us.

If you have any questions regarding the status of your application, please feel free to contact Luis Farias, DWSRF Project Lead, by phone at 512-475-4816 or by email at luis.farias@twdb.state.tx.us.

Sincerely,

Stacy L. Barna
Director of Program Development
Project Finance Division

SLB:bv

TEXAS WATER DEVELOPMENT BOARD

Green Project Reserve

Green Project Information Worksheets

Drinking Water State Revolving Fund

Intended Use Plan

The Federal Appropriation Law for the current fiscal year Clean Water and Drinking Water State Revolving Fund programs contains the Green Project Reserve (GPR) requirement. The following Green Project Information Worksheets have been developed to assist TWDB Staff in verifying eligibility of potential GPR projects.

TWDB-0163
Revised 12/2/2010

TEXAS WATER DEVELOPMENT BOARD
DRINKING WATER STATE REVOLVING FUND (DWSRF)
GREEN PROJECT INFORMATION WORKSHEETS

PART I – GREEN PROJECT INFORMATION SUMMARY

Check all that apply and complete applicable worksheets:

Categorically Eligible

- ☐ Green Infrastructure $ _____
- ☐ Water Efficiency $ 604,614
- ☐ Energy Efficiency $ _____
- ☐ Environmentally Innovative $ _____

Business Case Eligible

- ☐ Green Infrastructure $ _____
- ☐ Water Efficiency $ 1,607,386
- ☐ Energy Efficiency $ _____
- ☐ Environmentally Innovative $ _____

Total Requested Green Amount $ 2,212,000

Total Requested Funding Amount $ 7,167,700

Type of Funding Requested:

- ☒ PAD (Planning, Acquisition, Design)
- ☒ C (Construction)

Completed by:

Name: Juan M. Gamez Title: E.I.T.

Signature: Juan M. Gamez Date: 9/1/2011

PART II - CATEGORICALLY ELIGIBLE

Complete this worksheet for projects being considered for the Green Project Reserve (GPR) as categorically eligible. Categorically eligible projects or project components are described in the following sections of the EPA GPR guidance (TWDB-0161):

Green Infrastructure	Part B, Section 1.2
Water Efficiency	Part B, Section 2.2
Energy Efficiency	Part B, Section 3.2
Environmentally Innovative	Part B, Section 4.2

Information provided on this worksheet should be of sufficient detail and should clearly demonstrate that the proposed improvements are consistent with EPA and TWDB GPR guidance for categorically eligible projects. Refer to **Information on Completing Worksheets** for additional information.

Section 1 – General Project Information

Applicant: City of La Feria PIF #: 8660

Project Name: La Feria Water DBP Treatment and Distribution Improvements

Contact Name: Juan M. Gamez, E.I.T.

Contact Phone and e-mail: (956) 968-2194 ; juan@siglerwinstongreenwood.com

Total Project Cost: 7,167,700 Green Amount: 604,614
(Categorically Eligible)

Brief Overall Project Description:
The overall project includes treatment and distribution elements to address Disinfection By-Products (DBP) violations. The elements include disinfection improvements, replacement of aged clarification equipment, distribution improvements to improve circulation, and an automatic meter reading (AMR) system for water conservation.

Section 3 – Water Efficiency

Certain water efficiency improvements may be considered categorically eligible for the GPR. Refer to EPA and TWDB GPR guidance for a complete list and description of categorically eligible GPR Projects. A few common types of water efficiency projects that may be considered categorically eligible, such as certain water meter improvements and leak detection are listed below. Complete these sections of the worksheet as applicable. For any other water efficiency improvement being considered for categorical eligibility, complete Section 3.3.

Section 3.1 - Water Meters

Check all that apply:

- ☐ Installation of new water meters in area currently receiving unmetered water service (the following must be provided)
  - ☐ Attach copy of rate structure for area to be metered
- ☐ Replacement of existing broken/malfunctioning meters (the following must be provided)
  - ☐ Accuracy of meters being replaced _____
  - ☐ Attach supporting documentation (meter accuracy tests, etc)
  - ☐ Provide description below of proposed meters to be installed
- ☒ Retrofitting of existing meters (the following must be provided)
  - ☒ Provide description below of reason for meter retrofit
  - ☒ Provide description below of proposed meter system and benefits, including description of features that will result in water loss reduction or promote water conservation

Describe proposed water meter improvements, include reason for project, description of proposed meters and features, resulting benefits, anticipated savings, etc. (attach additional pages if necessary):

The proposed metering system improvements involve installation of AMR capabilities to approximately 2,113 meters of quantity and size as follows:

1,960 – ¾" meters
100 – 1" meters
50 – 2" meters
2 – 6" meters

The proposed specifications will allow for competitive procurement. Features include real-time reading capability and real-time leak detection on the demand side with immediate notification.

The replacement will additionally yield immediate benefits usually seen over ten years by a meter replacement program. The system will inherently yield a comprehensive automated system that will schedule future meter replacements on age. The City's current system is manual.

Meter replacement costs are considered separately as business case eligible.

Green amount associated with water meters: $ 429,983
(Attach detailed cost estimate if necessary)

Section 3.2 – Leak Detection

Provide detailed description of leak detection equipment:

The leak detection system accounts for the supply side losses. Ultrasonic logging devices will be installed in a coordinated grid throughout the distribution system. It is estimated that the placement will be about every quarter mile each way. This will allow for City crews to immediately detect a leak on a water main and respond accordingly. The system will allow for pinpointing of a leak within a known geographic location.

The largest benefit is that the system gives notice to the City via the AMR system when a leak occurs. This cuts the time it takes for leaks to permeate to the surface where it can be visually spotted or reported by citizens. In sandy areas, water can permeate for extended periods of times until soil saturation occurs.

For additional information refer to Green Project description in attached Preliminary Engineering Report.

Green amount associated with leak detection: $ 174,632

PART III - BUSINESS CASE ELIGIBLE

Complete this worksheet for projects being considered for the Green Project Reserve (GPR) as business case eligible. Business case eligible projects or project components are described in the following sections of the EPA GPR guidance (TWDB-0161):

Green Infrastructure	Part B, Section 1.4
Water Efficiency	Part B, Section 2.4 and 2.5
Energy Efficiency	Part B, Section 3.4 and 3.5
Environmentally Innovative	Part B, Section 4.4 and 4.5

Information provided on this worksheet should be of sufficient detail and should clearly demonstrate that the proposed improvements are consistent with EPA and TWDB GPR guidance for business case eligible projects. Refer to **Information on Completing Worksheets** for additional information.

Section 1 – General Project Information

Applicant: City of La Feria PIF #: 8660

Project Name: La Feria Water DBP Treatment and Distribution Improvements

Contact Name: Juan M. Gamez, E.I.T.

Contact Phone and e-mail: (956) 968-2194 ; juan@siglerwinstongreenwood.com

Total Project Cost: 7,167,700 Green Amount: 1,607,386
(Business Case Eligible)

Brief Overall Project Description:
The overall project includes treatment and distribution elements to address Disinfection By-Products (DBP) violations. The elements include disinfection improvements, replacement of aged clarification equipment, distribution improvements to improve circulation, and an automatic meter reading (AMR) system for water conservation.

Section 3 – Water Efficiency

Certain water efficiency improvements may be considered business case eligible for the GPR. Refer to EPA and TWDB GPR guidance for a complete list and description of business case eligible GPR Projects. For all water efficiency business case eligible projects Section 3.1 must be completed. A common water efficiency project that may be considered business case eligible is water line replacements to address water loss. For this type of project complete Section 3.2 of the worksheet. For any other water efficiency improvement being considered for business case eligibility, complete Section 3.3.

Section 3.1 - System and Water Loss Information

Section 3.1 is required for all water efficiency business case eligible projects. Attach a copy of most recent Water Audit, if available. Otherwise, complete and attach Water Audit Worksheet or provide water audit data in a similar format. Additional information on water loss and water audits as well as a copy of the Water Audit Worksheet is available at: http://www.twdb.state.tx.us/assistance/conservation/Municipal/Water_Audit/wald.asp

Reference and attach water loss audit and/or any other completed planning or engineering studies:

- ☒ Preliminary Engineering Report
- ☒ Water Audit (2005)
- ☒ Water Audit (2010)

Section 3.2 - Water Line Replacement

Proposed pipe to be replaced:

Length (LF)	Existing Pipe			Proposed Pipe	
	Material	Age (yr)	Dia. (in)	Dia. (in)	Material
7,920	Asbestos Cement	38	10	12	PVC

Percent of distribution lines being replaced: approximately 4%

Number of breaks/leaks/repairs recorded in past 24 months for areas being replaced : 11

Estimated water loss from pipe being replaced (provide calculations on following page): 40.9 MG

Estimated annual water savings (provide calculations on following page): 40.9 MG

Estimated annual cost savings (provide calculations on following page): $ 106,441.92

Section 3.2 Calculations: Water Loss Along Main AC Line

Leak	Line Type	Year	Intersection	Size (in.)	Average Pressure (psi)	Area of Leak (in.^{2})	Leak Rate (gpm)	Duration (days)	Volume Loss (gal)
1	AC	2009	Connection to Arroyo Sub.	10	56	3.93	900	4	5,184,000
2	AC	2009	Verbena and Canal	6	56	2.36	560	3	2,419,200
3	AC	2009	Canal and Winchester	10	56	3.93	900	3.5	4,536,000
4	AC	2009	West and Oleander	6	56	2.36	560	3.5	2,822,400
5	AC	2009	Corner of 1st and West	10	56	3.93	900	2	2,592,000
6	AC	2009	1st and West	6	56	2.36	560	3.5	2,822,400
7	AC	2010	1st and Parker Rd.	10	56	3.93	900	4	5,184,000
8	AC	2010	Primrose Alley	10	56	3.93	900	3	3,888,000
9	AC	2010	1st and Main	6	56	2.36	560	3	2,419,200
10	AC	2010	Park St. and Canal	10	56	3.93	900	4	5,184,000
11	AC	2010	Connection for new line to Rabb Rd.	10	56	3.93	900	3	3,888,000

Estimated Water Loss =	**40,939,200**
Water Cost Per Gallon =	**$0.0026**
Estimated Cost Savings =	**$106,441.92**
Estimated Annual Water Savings =	**20,469,600**
Estimated Annual Cost Savings =	**$53,220.96**

Note: Duration estimate based on TWDB Report 367 "Water Loss Audit Manual for Texas Utilities", Appendix 1.3, Real Losses

Provide detailed description of the propose improvements and provide supporting calculations. Description should include a description of the methodology used to select pipes for replacement (attach additional pages if necessary):

The proposed line replacement is the source of most of the water leaks in La Feria. The line is also the main trunk line leaving the plant to the Elevated Tower 1 originally built in 1973. This item is of the utmost importance as it is the lifeline of the distribution system. The line is approximately 1.5 miles long and is shown on the attached map.

As evidenced by the attached 2005 and 2010 Water Audits, La Feria experiences a total system water loss of approximately 25 – 29%. A significant portion of the total loss is attributed to what's categorized as real losses. Replacement of the identified water line segment is expected to reduce real system losses by minimizing losses due to line leaks and breaks as well as water losses that have been categorized on the water audits as unreported/unknown losses.

For additional information refer to Green Project description in attached Preliminary Engineering Report.

Green amount associated with water line replacement: $ 1,513,474
(Attach detailed cost estimate if necessary)

Section 3.3- Other Water Efficiency Improvements

Complete this section for water efficiency improvements other than those listed above. Provide reference to the applicable sections of the EPA GPR guidance (TWDB-0161) that demonstrate GPR eligibility. Provide a detailed description of the proposed water efficiency improvements of sufficient detail that clearly demonstrates that the proposed improvements are consistent with EPA GPR guidance (TWDB-0161).

Guidance Reference:

Part B, 2.5-1 – Water Meter Replacement

Part B, 2.4-4 – Proper Water Infrastructure Management

Detailed description of proposed water efficiency improvements (attach additional pages if necessary):

The City of La Feria has found it necessary to replace the existing water meters with new water meters that also include the technology referred to as automatic meter reading (AMR) equipment. This will accomplish three goals: 1) All the water meters in the water distribution system will be up to date and provided the greatest accuracy. 2) Water flow through each meter can be evaluated on a 24 hour basis if necessary. 3) Leak detection will be an added important feature that is currently no available in the existing meters.

The meter replacement project will promote conservation of potable water. The water in the Rio Grande is over-prescribed and the area receives only approximately 26 inches of rain a year. In 2008-2009 La Feria lost 22% of the drinking water distributed from its plant. Based on La Feria's current rate structure ($2.60/1000 gallons) the lost water has a market value of $166,500. Replacement of existing meters is necessary to incorporate the AMR system and to better account for apparent losses in the system.

The need for meter replacement and the benefits of the AMR system are further described in the attached Preliminary Engineering Report.

Green amount associated with water efficiency improvements: $ 93,912

(Attach detailed cost estimate if necessary)

Preliminary Engineering Report

City of La Feria

2011 DWSRF Project

Prepared for:
Texas Water Development Board

Prepared by:
SWG Engineering, LLC
December 2010

STATE OF TEXAS
JOE B. WINSTON, JR.
31109
LICENSED PROFESSIONAL ENGINEER
12/22/2010

Table of Contents

Definitions

AMR – Automatic Meter Reading

DBP- Disinfection By Products

EA – Environmental Assessment

EPA – Environmental Protection Agency

MCC – Motor Control Center

MGD – Million Gallons per Day

MSL – Mean Sea Level

SCADA – Supervisory Control And Data Acquisition

TCEQ – Texas Commission on Environmental Quality

THM – Trihalomethanes

UV – Ultra-violet

Green Project

Water Meter Replacement and Leak Detection System

The City of La Feria Administration has made the decision that it is necessary to replace the existing water meters with the new water meters that also include the technology referred to as automatic meter reading (AMR) equipment. This will accomplish three goals: 1. All the water meters in the water distribution system will be up to date and provide the greatest accuracy. 2. Water flow through each meter can be evaluated on a 24 hour basis if necessary. 3. Leak detection will be an added important feature that is currently not available in the existing water meters.

City staff has evaluated the AMR system and has chosen the Badger fixed network Advanced Meter Infrastructure (AMI) Galaxy system. The fixed network system consists of these major components:

1. On each water meter will be mounted a battery operated transmitter unit (MTU).
2. The receiver - data collection unit (DCU) will collect meter data from up to 8,000 meter transmitters which will be automatically and immediately sent to the utility computer.
3. A utility computer for both real-time and historical data storage.
4. Data management software.

Some of the advantages that can be derived from this type of AMR systems are:

Water meter readings can be collected daily from the utility computer without needing to send staff and vehicles out to gather the data. If applicable, this data can also include information on problems such as water meter damage or water leakage. Customer service personnel will have better access to daily consumption records so that they will be better prepared to answer customer questions, billing can be done more frequently improving cash flow and lessening problems.

The following discussion provides additional information about the components that make up the AMR System. The transmitter is battery powered and operates in the 450 to 470 megahertz frequency range. These frequencies are protected by FCC license so there is no interference from other radio sources. Transmitters can be installed indoors or outdoors and are sealed against the most severe environment even if they are completely submerged in water meter pits. The transmitters can be programmed to have meter reading transmitted at regular time intervals. Signals from the transmitters are received and stored by data collectors. Depending on the type of installation, data collectors receive readings up to a half a mile or more away and each collector can receive and store data for up to 8,000 meters. The collector assembly consists of a collector computer, receiver, and an antenna. The antenna is mounted as high as possible for best reception. The receiver is located near the antenna while the collector can be mounted on a convenient location. The collector uses a simple robust PC type processor to build a database of meter readings in its on-board flash memory. In the event of a temporary power

outage the processor restarts itself and no accumulated data is lost. An optional un-interruptional power supply provides up to 6 hours of powerless operation. The collector also uses transmitters and a communications modem capable of connecting to the central management system via land line, cellular, radio or other means of communication. The central system calls in to the collector usually on a daily basis to download the meter data. This remote length can also be used to reprogram the collector's operating parameter, the range of collectors coverage can be increased by the use of repeaters. The repeater is a simple economical radio relay that receives signals from transmitters and forwards them on to the collector. Repeaters use software algorithms to validate incoming messages, correct errors, and transmit them along with signal strength information to facilitate system performance analysis. The final link in the system is the proprietary software where meter reading data are turned into a powerful tool for consumption management and customer service. The software is an open architect program which is easily adjusted to produce output information acceptable to the billing system. This means that existing software systems stay in place and data from the software is matched to the billing system requirements.

By data being available on a daily basis, billing can be done more frequently and billings dates can be staggered so that not all customers get there bills on the same day. This evens out the work load on customer service representatives, thus making the process more efficient. Data collected by the software is maintained in an open architect database and is available to the utility customers' support and CRM system. Current consumption information and status alerts can be passed on to customer support. Therefore, in many cases, customer inquiries or disputes can be resolved in a single call. The software flags consumption unaccounted for by comparing bulk meter readings to the totals of the subordinate meters. Detailed analysis of consumption unaccounted for would enable the City of La Feria to identify and locate system leakage and locate un-metered or unauthorized connections to the system. Working in conjunction with the software and the transmitter modules, the software quickly identifies and warns of possible leak conditions, anything from a burst pipe to a slowly leaking appliance can be detected and flagged for servicing. The software can identify non-advancing meters, as well as meters improperly sized for their application. With the software, water conservation is made easy. First, transmitters are installed for each utility meter. A site survey will identify potential sight meter collectors. Expected range will depend on the type of installation and sight topography. Where extra coverage is needed, repeaters are installed to boost collector range. Repeaters may be solar powered or lined powered. Transmitters are set to send their readings at regular intervals, typically every four hours. Transmissions are kept very brief to prevent data collision. Each transmission is heard by at least one data collector or repeater. The collector receiving the signal performs verification and error correction and fixes the time stamp before storing the message in its database. The central control system calls the collector on a regular basis or typically daily to download the meter account data. Data is loaded onto the database for report and analysis generation and an output file compatible with the utilities billing system is created.

The meter replacement and leak detection component will conserve potable water and save taxpayer money. The water in the Rio Grande is over-prescribed and our area receives approximately just 26 inches of rain a year. Water conservation is increasingly important as the regional population grows. In 2008-2009, La Feria lost 22% of the drinking water distributed from its plant. That is, the amount of water that the City can charge customers for, as indicated by individual customer water meters, is 22% lower than the amount of water released from the water plant. Based on La Feria's current rate structure --$2.60/1000 gallons--that lost water has a market value of $166,500.

Water meters should be replaced, on average, every seven years or one million gallons. As a water meter ages, it slows down and under-counts the water flowing through it. La Feria seeks to replace its water meters with more technologically advanced water meters that are increasingly in use in progressive municipalities. The new meters will enable the city to evaluate water flow through individual meters on a 24-hour/day basis. The system automatically sends an alert when a meter detects unusual usage, such as continuous flow throughout a 24-hour period, indicating a leak that can be repaired, saving the individual water customer money and reducing waste of valuable potable water.

The new meters described above will also facilitate more efficient municipal operations. The installation of a fixed network of meters and automatic transmitters and receivers releases city employees and city vehicles for other important work and also saves gasoline. The modern water meters cost approximately $90 per meter, compared to $45 for the old technology. Currently, reading La Feria's water meters requires two employees two or three full work days, or 32 to 48 person-hours, each month, at a cost of approximately $14,000 annually to the City. With the new meters, that staffing can be devoted to identifying the leaks and fixing them.

In addition to detecting leaks in the consumption components of the water system, La Feria seeks to utilize technology to identify leaks in the distribution components of its system. As the regional population grows and demands for potable water increase, it is becoming increasingly important that scarce water resources are managed properly. This is especially important as surface water diverted from the Rio Grande is already subject to substantial loss prior to delivery to the City of La Feria. With this component, La Feria will move beyond the typical reactionary mode of leak detection relied upon by most municipalities (public works or public facilities employees look for a leak when water pools on the surface) to a proactive, efficient method of detecting and repairing leaks that might otherwise not be evident on the surface (by, for example, causing the cave-in of a street) for quite a long time.

In this instance, the City of La Feria again demonstrates leadership in advancing water conservation and the use of modern technology to solve a common municipal problem. La Feria intends to install ultrasound devices on the water lines that detect leaks by registering changes in acoustic frequency, which indicate a change in the flow of water. The ultrasound "loggers" can be installed permanently, moved around the city for temporary

installation on different water lines on a rotating, tactical basis, or a combination of permanent detectors on major water lines and a tactical network that is moved around to different areas of the city on a rotating basis can be utilized. The combination of leak detection at the individual consumer level and on the total distribution system exemplifies superior stewardship of a critical natural resource. Other Lower Rio Grande Valley communities will learn from La Feria's experience.

Replacement and Rehabilitation

The following items have reached or exceed their working design life.

Asbestos water line replacement

The proposed line replacement is the source of most of the water leaks in La Feria. The line is also the main trunk line leaving the plant to the Elevated Tower 1 originally built in 1973. This item is of the utmost importance as it is the lifeline of the distribution system. As such this is the item of most priority in the Replacement and Rehabilitation category. The line is approximately 1.5 miles long.

ADDITIONAL PROJECTS

These project will be prepared take to construction in the case of additional disadvantaged funds available to The City of La Feria.

1. Water Treatment Plant Concrete Clarifier Rehabilitation and Retrofit

The City is in the process of expanding the capacity of its water treatment plant. The water plant is currently served by two one-half million gallons per day (MGD) steel clarifiers that are forty years old and one (1) MGD concrete clarifier. The two steel clarifiers have exceeded their life-expectancy and must be replaced. The existing concrete clarifier will employ the accelerator process and will have this equipment installed thus replacing the existing mechanism. The new clarifier mechanism plus other equipment will upgrade both performance and output to 2 MGD. The life of the new clarifier mechanism will be over 20 years, depending on the type of material chosen and the life of the concrete tank will be over 50 years.

2. 1 MG Elevated Water Tower

The City has kept with adequate maintenance of Tower # 1 originally built in 1973, but has reached it's design working life.

07-162

TEXAS WATER DEVELOPMENT BOARD

P.O. BOX 13231, CAPITOL STATION

AUSTIN, TX 78711-3231

WATER AUDIT REPORTING FORM

If further assistance is needed, contact Mark Mathis at Mark.Mathis@twdb.state.tx.us or 512.463.0987.

A. Water Utility General Information

1 Water Utility Name. CITY OF LA FERIA

2 Contact:

2a. Name Joe B Winston

2b. Telephone # 956.968.2184

2c. Email Address

3. Reporting Period: From 1/1/2005 To 12/31/2005

4. Source Water Utilization, percentage. Surface Water 100.00 % Ground Water 0.00 %

5 Population Served:

		Assessment Scale
5a Retail Population Served	7,437	
5b. Wholesale Population Served	0	
6. Utility's Length of Main Lines, miles	40.00	0
7 Number of Wholesale Connections Served	0	
8 Number of Retail Service Connections Served	2,180	
9 Service Connection Density (Number of retail service connections/Miles of main lines)	54.50	
10 Average Yearly System Operating Pressure (psi)	0.00	0
11 Volume Units of Measure:	G	

B. System Input Volume

12 Water Volume from own Sources	284,680,000.00	0
13. Production Meter Accuracy (enter percentage)	98.00 %	0
14. Corrected Input Volume	290,489,795.92	
15. Wholesale Water Imported	0.00	0
16. Wholesale Water Exported	0.00	0

07-162

17. System Input Volume (Corrected input volume, plus imported water, minus exported water)	290,489,795.92	
C. Authorized Consumption		Assessment Scale
18 Billed Metered	216,092,000.00	0
19 Billed Unmetered	0.00	0
20. Unbilled Metered	0.00	0
21. Unbilled Unmetered	906,000.00	0
22. Total Authorized Consumption	216,998,000.00	
D. Water Losses		
23. Water Losses (Line 17 minus Line 22)	73,491,795 92	
E. Apparent Losses		
24 Average Customer Meter Accuracy (Enter percentage)	95.00 %	0
25. Customer Meter Accuracy Loss	11,373,263.16	
26. Systematic Data Handling Discrepancy	0.00	0
27 Unauthorized Consumption	0.00	0
28. Total Apparent Losses	11,373,263.16	
F. Real Losses		
29 Reported Breaks and Leaks (Estimated volume of leaks & breaks repaired during the audit period)	172,000.00	0
30 Unreported Loss (Includes all unknown water loss)	61,946,532.76	0
31. Total Real Losses (Line 29, plus Line 30)	62,118,532.76	
32 Water Losses (Apparent + Real) (Line 28 plus Line 31) = Line 23	73,491,795 92	
33 Non-revenue Water (Water Losses + Unbilled Authorized Consumption) (ine 32 plus Line 20, plus Line 21)	74,397,795.92	

07-102

G. Technical Performance Indicator for Apparent Loss

34. Apparent Losses Normalized (Apparent Loss Volume/# of Retail Service Connections/365)	14 29

H. Technical Performance Indicators for Real Loss

35. Real Loss Volume (Line 31)	62,118,532 76
36. Unavoidable Annual Real Losses, volume (calcu'ated)	0.00
37. Infrastructure Leakage Index (calculated) (Ecuals real loss volume divided by unavoidable annual real losses)	0.00
38. Real Losses Normalized (Real Loss Volume/# of Service Connections/365) (This ir dicator applies if service connection density is greater than 32/mile)	78.07
39. Real Losses Normalized (Real Loss Volume/Miles of Main Lines/365) (This indicator applies if service connection density is less than 32/mile)	4,254.69

I. Financial Performance Indicators

		Assessment Scale
40. Total Apparent Losses (Line 28)	11,373,263.16	
41. Retail Price of Water	$0.00260	0
42. Cost of Apparent Losses (Apparent loss volume multiplied by retail cost of water, Line 40 x Line 41)	$29,570 48	
43. Total Real Losses (Line 31)	62,118,532 76	
44. Variable Production Cost of Water* (*Note: in case of water shortage, real losses might be valued at the retail price of water instead of the variable production cost)	$0.00230	0
45. Cost of Real Losses (Real Loss multip ied by variable production cost of water, Line 43 x Line 44)	$142,872.63	
46. Total Assessment Scale		0
47. Total Cost Impact of Apparent and Real Losses	$172,443.11	

Appendix 1.1

Texas Water Development Board
Water Audit Worksheet

A. Water Utility General Information

1. Water Utility Name: City of La Feria
2. Contact: Name Joe B. Winston
   Telephone# 956-968-2194 Email Address joe@siglerwinstongreenwood.com
3. Reporting Period: From 10 / 1 / 2009 to 9 / 30 / 2010
4. Source Water Utilization, percentage: Surface Water 100 % Groundwater 0 %
5. Population Served:
   a. Retail Population Served 6,921
   b. Wholesale Population Served 0

		Assessment Scale
6. Utility's Length of Main Lines, miles	40	4
7. Number of Wholesale Connections Served	0	
8. Number of Retail Service Connections Served	2,307	
9. Service Connection Density *(Number of retail service connections/Miles of main lines)*	57.7	
10. Average Yearly System Operating Pressure (psi)	56	3

11. Volume Units of Measure (check one):
    ____ acre-ft __X__ million gallons ____ thousand gallons ____ gallons

B. System Input Volume

12. Water Volume from own Sources	276.36 MG	3
13. Production Meter Accuracy (enter percentage)	98 %	3
14. Corrected Input Volume	282 MG	
15. Wholesale Water Imported	0	0
16. Wholesale Water Exported	0	0
17. **System Input Volume** *(Corrected input volume, plus imported water, minus exported water)*	282 MG	

		Assessment Scale
C. Authorized Consumption		
18. Billed Metered	198.715 MG	4
19. Billed Unmetered	unknown	2
20. Unbilled Metered	unknown	2
21. Unbilled Unmetered	0.906 MG	2
22. Total Authorized Consumption	199.621 MG	
D. Water Losses		
23. Water Losses *(Line 17 minus Line 22)*	82.379 MG	
E. Apparent Losses		
24. Average Customer Meter Accuracy *(Enter percentage)*	95 %	2
25. Customer Meter Accuracy Loss	10.458 MG	
26. Systematic Data Handling Discrepancy	unknown	4
27. Unauthorized Consumption	unknown	4
28. Total Apparent Losses	10.458 MG	
F. Real Losses		
29. Reported Breaks and Leaks *(Estimated volume of leaks and breaks repaired during the audit period)*	0.18	4
30. Unreported Loss *(Includes all unknown water loss)*	71.741 MG	2
31. Total Real Losses *(Line 29, plus Line 30)*	71.921 MG	
32. Water Losses (Apparent + Real) *(Line 28 plus Line 31) = Line 23*	82.379 MG	
33. Non-revenue Water (Water Losses + Unbilled Authorized Consumption) *(Line 32, plus Line 20, plus Line 21)*	83.285 MG	

		Assessment Scale
G. Technical Performance Indicator for Apparent Loss		
34. Apparent Losses Normalized (Apparent Loss Volume/# of Retail Service Connections/365)	12.42	
H. Technical Performance Indicators for Real Loss		
35. Real Loss Volume *(Line 31)*	71.921 MG	
36. Unavoidable Annual Real Losses, volume (calculated)	0	Note: not valid for systems with less than 3,000 service connections.
37. Infrastructure Leakage Index (calculated) *(Equals real loss volume divided by unavoidable annual real losses)*	0	
38. Real Losses Normalized (Real Loss Volume/# of Service Connections/365) *(This indicator applies if service connection density is greater than 32/mile)*	85.41	
39. Real Losses Normalized (Real Loss Volume/Miles of Main Lines/365) *(This indicator applies if service connection density is less than 32/mile)*	4,926.09	
I. Financial Performance Indicators		
40. Total Apparent Losses *(Line 28)*	10.458 MG	
41. Retail Price of Water	$0.00290	2
42. Cost of Apparent Losses *(Apparent loss volume multiplied by retail cost of water, Line 40 x Line 41)*	$30,338.50	
43. Total Real Losses *(Line 31)*	71.921 MG	
44. Variable Production Cost of Water* *(*Note: In case of water shortage, real losses might be valued at the retail price of water instead of the variable production cost.)*	$0.00260	1
45. Cost of Real Losses *(Real loss multiplied by variable production cost of water, Line 43 x Line 44)*	$186,994.60	
46. Total Assessment Score		42
47. Total Cost Impact of Apparent and Real Losses	$217,333.10	