

Texas Water Development Board



UNION WATER SUPPLY CORPORATION

DWSRF GREEN PROJECT RESERVE BUSINESS CASE EVALUATION

STATE FISCAL YEAR 2012 INTENDED USE PLAN

PROJECT NUMBER 62539

COMMITMENT DATE: December 6, 2012

DATE OF LOAN CLOSING: December 20, 2013

GREEN ESTIMATE AT CLOSING: \$2,990,875.00

Subsidy awarded for Green components, \$433,577

Project is 100% Green

March 22, 2012

Mr. Mario A. Gonzalez
Union Water Supply Corporation
P.O. Box 31
Garciasville, TX 78547-0031

**Re: SFY 2012 Drinking Water State Revolving Fund
Green Project Eligibility**

Dear Mr. Gonzalez:

The Texas Water Development Board (TWDB) received Green Project Information Worksheets from Union Water Supply Corporation (Corporation) for project #9310 in response to an invitation letter dated January 18, 2012. The letter states that the Corporation is eligible for loan forgiveness in an amount up to 15% of the green component cost if it can demonstrate that the project has green costs greater than or equal to 30% of the total project cost. After reviewing the worksheets, TWDB staff determined the Corporation meets the 30% green cost threshold based on the following:

- The Corporation's Green Project Information Worksheets dated March 21, 2012 requested that \$912,499 of the Corporation's automated meter reading system project be considered eligible for the DWSRF Green Project Reserve (GPR). The green element described includes of replacement of water meters with an automated meter reading system with leak detection capabilities in order to reduce apparent water losses within its water system.
- The Environmental Protection Agency's (EPA's) *Green Project Reserve Guidance for Determining Project Eligibility* (TWDB-0161) lists water efficiency projects including replacing existing broken/malfunctioning water meters with automatic meter reading systems, such as smart meters with built in leak detection, as categorically eligible for the GPR (Part B, 2.2-3).
- Information presented on the Green Project Information Worksheets and its attachments provided sufficient information to confirm the eligibility of the proposed replacement of waterlines for the GPR in accordance with TWDB-0161, Part B, 2.2-3.
- Therefore, at this time the TWDB considers project costs in the amount of \$912,499 to be eligible for the DWSRF GPR. This includes estimated construction costs as well as financing costs associated with the project.
- Please note that the Corporation's application for financial assistance should be consistent with the project scope presented on the Green Project Information Worksheets. Inclusion

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To provide leadership, planning, financial assistance, information, and education for the conservation and responsible development of water for Texas

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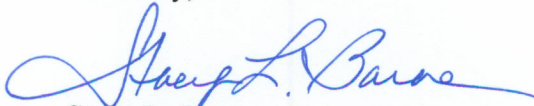
of the green elements within the project will be verified prior to Board commitment. If the project scope or budget related to the approved green components changes during application review, the Corporation should update and resubmit the Green Project Information Worksheets as necessary.

For SFY 2012, the TWDB is required by federal law to allocate no less than 20% of the capitalization grant toward green component costs (also referred to as the Green Project Reserve). Therefore, the TWDB gives first preference for invitations to entities that have a documented percentage of green component cost of at least 30% of the total project cost. The Corporation has demonstrated that it meets/exceeds the 30% green cost threshold. A letter dated January 18, 2012 was sent inviting the Corporation to apply for Disadvantaged Community Funding.

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.texas.gov.

The TWDB appreciates Union Water Supply Company's interest in the DWSRF.

Sincerely,



Stacy L. Barna
Director of Program Development
Project Finance Division

SB:rf

- Attachments: 1. Green Project Information Worksheets, Approved
2. Green Project Cost Summary

April 10, 2012

Mr. Mario A. Gonzalez
Union Water Supply Corporation
P.O. Box 31
Garciasville, TX 78547-0031

**Re: SFY 2012 Drinking Water State Revolving Fund
Green Project Eligibility**

Dear Mr. Gonzalez:

The Texas Water Development Board (TWDB) received Green Project Information Worksheets from the Union Water Supply Corporation (Corporation) for project #9309 in response to a request letter dated January 13, 2012. The letter states that the Corporation is eligible for loan forgiveness in an amount up to 15% of the green component cost if it can demonstrate that the project has green costs greater than or equal to 30% of the total project cost. After reviewing the worksheets, TWDB staff determined the Corporation meets the 30% green cost threshold based on the following:

- The Corporation's Green Project Information Worksheets dated April 2, 2012 requested that \$1,098,880 of the Corporation's total project cost of \$1,233,135 be considered eligible for the Drinking Water State Revolving Fund (DWSRF) Green Project Reserve (GPR). The general element(s) described includes the replacement of approximately 13,700 linear feet of distribution lines to address water and pressure loss.
- The Environmental Protection Agency's (EPA's) *Green Project Reserve Guidance for Determining Project Eligibility* (TWDB-0161) lists distribution pipe replacement or rehabilitation to reduce water loss and prevent water main breaks as business case eligible for the GPR (Part B, 2.5-2), Water Efficiency.
- Information presented on the Green Project Information Worksheets and attachments previously submitted with the Project Information Form provided sufficient information to confirm the eligibility of the proposed improvements for the GPR in accordance with TWDB-0161 Part B, 2.5-2.
- Therefore, at this time the TWDB considers project costs associated with the Water Treatment Plant improvements in the amount of \$1,098,880 to be eligible for the DWSRF GPR. This includes estimated construction costs for the item.
- Please note that the Corporation's application for financial assistance must be consistent with the project scope presented on the Green Project Information Worksheets. Inclusion of the green elements within the project will be verified prior to Board commitment. If

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the project scope or budget related to the approved green components changes during application review, the Corporation should update and resubmit the Green Project Information Worksheets as necessary.

For SFY 2012, the TWDB is required by federal law to allocate no less than 20% of the capitalization grant toward green component costs (also referred to as the Green Project Reserve). Therefore, the TWDB gives first preference for invitations to entities that have a documented percentage of green component cost of at least 30% of the total project cost. The Corporation has demonstrated that it meets/exceeds the 30% green cost threshold. A letter inviting the Corporation to apply for Mainstream funding will be sent separately.

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.texas.gov.

The TWDB appreciates the Corporation's interest in the DWSRF.

Sincerely,



Stacy L. Barna
Director of Program Development
Program and Policy Development

SB:rf

- Attachments: 1. Green Project Information Worksheets, Approved
2. Green Project Cost Summary

February 1, 2012

Project Description

**Re: Union Water Supply Corporation
PIF # 9309 - Water Line Replacement Phase II
State Fiscal Year 2012 Drinking Water State Revolving Fund
Request for Green Project Information Worksheets**

Union Water Supply Corporation (Union WSC) proposes to replace and upgrade a portion of the existing water mains that have become problematic in the past years. The proposed water line replacement and upgrades in this project will address water and pressure losses. This project falls within the Green Project Reserve.

The proposed water line replacement and upgrades in this project will address water and pressure losses. This project will consist of approx. 13,700 L.F. of distribution pipe replacement and extension in order to reduce water loss and prevent frequent breaks. These lines are shown in the attached exhibit and are located along the north side of Old Casita Rd. and F.M. 1430 in Garciasville, Texas in Starr County.

According to Union WSC's Water Audit for year 2011, the distribution system experienced losses of approx. 136.430 MG in 2011, equal to about 43 % of total production. This large water loss is mainly due to leaky pipes and substantially malfunctioning water meters. Union WSC has estimated 19% due to meter accuracy loss and 24% due to breaks and leaks.

Based on Union WSC's staff comments, and observations it appears that most of these losses happen in the oldest sections in the distribution system. The lines to be replaced in these areas range from 28 to 35 years old and are made of either asbestos cement (AC) or PVC. These old pipes often remain out of sight and mind until they burst.

Both PVC and AC pipe sections show problems, but the majority of the problems are seen in the AC lines. Due to age, these lines seem to have become brittle. This coupled with the effects of extreme rain followed by extreme drought conditions has been the main cause of deterioration in the system.

There are an estimated 260 water main breaks each year in Union WSC's distribution system (avg. of 5 breaks per week). The breaks not only waste millions of gallons of clean, treated drinking water, but also can cause damage to roadways. Union WSC currently operates within its income and the repair and replacement of these pipes, and associated damage to roadways, sidewalks, etc. is costly.

We have estimated that based on a 24% avg. total loss due to breaks and leaks, the water losses in the proposed sections of pipe to be replaced add up to approx. 2.776 MG per year. At current

water rates and marginal production costs this equates to an annual cost savings of approx. \$16,900.00. See attached calculations.

Another major concern for Union WSC is water contamination due to water line breaks. In most cases lines need to be shut down for repair, making the chances for contamination due to exposure to the environment more likely. To date, this has been a problem, but the danger for it to happen remains.

This project proposes to upgrade these problem lines both for material and size. PVC pipe, to some degree, is flexible -- a benefit other pipe materials do not have. This property provides a distinct advantage because soil movement can cause damage and failure on more rigid materials. Vinyl pipes are inherently inert to aggressive soil conditions and do not need the costly secondary internal protection found inside metallic pipes. Moreover, studies have shown that PVC pipe breakage rates actually decline with age.

There are several areas that need attention within Union WSC's distribution system, but after a careful evaluation of the system, existing problems, and potential benefits, these areas and sections of pipeline were prioritized for replacement and upgrade. The proposed improvements will give Union WSC the confidence that they can safely deliver safe water to their customers.

This project will eliminate a large part of the cost of maintaining Union WSC's water distribution system, and increase efficiency. The intent is to ultimately convert all existing AC lines in the system to AWWA C-900 PVC pipe and replace all sections of pipe that are structurally deficient, and sub-standard within the distribution system.

While the primary purpose of this project is to enhance water efficiency, it will also result in a reduction of energy consumption, and close the "loop" on Union WSC's main distribution system. This project will enable Union WSC to provide better service to the community while reducing water losses, and protecting water resources for the future.

Calculations

Summary of Results

Avg. Losses	24%	*Out of 43% total system loss (19% due to meter accuracy loss plus 24% lost in leaks and breaks) *For areas being replaced	
	5.28		gpm
	7,606		gpd
	2,776,190		gpy

Avg. System Input Volume	0.864	MGD	*As per 2011 water audit
	863,808	gpd	
	315,290,000	gpy	

Avg. Losses as % of Plant Capacity	0.88%
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Estimated Variable Production Cost of Water	\$0.40	*Marginal production cost per 1000 gallons including cost of raw water, energy and chemicals divided by the total system input volume for year 2011
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Avg. Annual Cost of Water	\$1,110.48	*Based on volume of water lost only in areas being replaced
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Retail Price of Water	\$15.00	*At current water rates per 3,000 gallons
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Avg. Annual Lost Revenue	\$13,880.95	*Based on volume of water lost only in areas being replaced
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Avg. Number of Leaks/Breaks/Repairs	13	*per year in areas being replaced
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Avg. Repair Costs	\$145.00	*Per Repair = 5 people x (4 hrs/repair) x (\$7.25/hr)
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Avg. Annual Cost of Repairs	\$1,885.00	*Based on cost of repairs only
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Total Estimated Annual Cost Savings	\$16,876.43	*Based on annual cost of water lost and repairs
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Calculations

6" Water Line

d = in.
 A = sf
 L = ft
 C =

d=pipe diameter (in)
 A=cross sectional area (sf)
 L=length of pipe (ft)
 C=Hazen-Williams coefficient

Avg. Pressure psi
 ft
 q = gpm

q= minimum pumping rate (gpm) to maintain avg. pressure (assuming full flow)

Avg. Losses
 gpm
 gpd
 gpy

Avg. System Input Volume MGD
 gpd
 gpy

*As per 2011 water audit

Avg. Losses as % of Plant Capacity

Estimated Variable Production *Marginal production cost per 1000 gallons including cost of raw water, energy and chemicals divided by the total system input volume for year 2011
 Cost of Water

Avg. Annual Cost of Water *Based on volume of water lost only

Retail Price of Water *At current water rates per 3,000 gallons

Avg. Annual Lost Revenue *Based on volume of water lost only in areas being replaced

Avg. Number of Leaks/Breaks/Repairs *per year in area

Avg. Repair Costs *Per Repair = 5 people x (4 hrs/repair) x (\$7.25/hr)

Avg. Annual Cost of Repairs *Based on cost of repairs only

Total Estimated Annual Cost Savings *Based on annual cost of water lost and repairs

TEXAS WATER DEVELOPMENT BOARD
P.O. BOX 13231, CAPITOL STATION
AUSTIN, TX 78711-3231

2011 Water Audit Report

D. Water Losses

23. Water Losses	<u>136,430.20</u>	
(Line 17 minus Line 22)		

E. Apparent Losses

24. Average Customer Meter Accuracy (Enter percentage)	<u>75.00 %</u>	<u>2</u>
25. Customer Meter Accuracy Loss	<u>58,011.67</u>	
26. Systematic Data Handling Discrepancy	<u>0.00</u>	<u>1</u>
27. Unauthorized Consumption	<u>797.80</u>	<u>2</u>
28. Total Apparent Losses	<u>58,809.47</u>	

F. Real Losses

29. Reported Breaks and Leaks	<u>300.00</u>	<u>2</u>
(Estimated volume of leaks & breaks repaired during the audit period)		
30. Unreported Loss	<u>77,320.73</u>	<u>1</u>
(Includes all unknown water loss)		
31. Total Real Losses	<u>77,620.73</u>	
(Line 29, plus Line 30)		
32. Water Losses (Apparent + Real)	<u>136,430.20</u>	
(Line 28 plus Line 31) = Line 23		
33. Non-revenue Water	<u>145,085.20</u>	
(Water Losses + Unbilled Authorized Consumption)		
(Line 32, plus Line 20, plus Line 21)		

G. Technical Performance Indicator for Apparent Loss

34. Apparent Losses Normalized	<u>0.08</u>	
(Apparent Loss Volume / # of Retail Service Connections/365)		

H. Technical Performance Indicators for Real Loss

35. Real Loss Volume (Line 31)	<u>77,620.73</u>	
36. Unavoidable Annual Real Losses, volume (calculated)	<u>14,753.43</u>	
37. Infrastructure Leakage Index (calculated)	<u>5.26120</u>	
(Equals real loss volume divided by unavoidable annual real losses)		
38. Real Losses Normalized	<u>0.11</u>	
(Real Loss Volume / # of Service Connections / 365)		
(This indicator applies if service connection density is greater than 32 / mile)		

TEXAS WATER DEVELOPMENT BOARD
P.O. BOX 13231, CAPITOL STATION
AUSTIN, TX 78711-3231

2011 Water Audit Report

39. Real Losses Normalized	<u>5.32</u>	
(Real Loss Volume/Miles of Main Lines/365)		
(This indicator applies if service connection density is less than 32/mile)		

I. Financial Performance Indicators

		Assessment Scale
40. Total Apparent Losses (Line 28)	<u>58,809.47</u>	
41. Retail Price of Water	<u>\$5,000.00000</u>	<u>2</u>
42. Cost of Apparent Losses (Apparent loss volume multiplied by retail cost of water, Line 40 x Line 41)	<u>\$294,047,350.00</u>	
43. Total Real Losses (Line 31)	<u>77,620.73</u>	
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.)	<u>\$400.00000</u>	<u>4</u>
45. Cost of Real Losses (Real Loss multiplied by variable production cost of water, Line 43 x Line 44)	<u>\$31,048,292.00</u>	
46. Total Assessment Scale		<u>35</u>
47. Total Cost Impact of Apparent and Real Losses	<u>\$325,095,642.00</u>	

Rio Delta Engineering

Union Water Supply Corp.

Water Line Replacement - Phase II - PIF# 9309

Proposed pipe to be replaced by this project

Length (LF)	Dia. (in)	Material
10,500	6"	PVC and Asbestos Cement
Total:	10,500	

Proposed new lines to be installed by this project - total

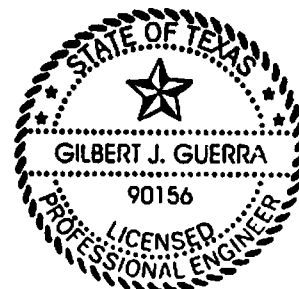
Length (LF)	Dia (in)	Material
7,415	8"	DR 18 - C900 PVC
6,273	16"	DR 18 - C905 PVC
Total:	13,688	

Proposed new lines replacing exist. lines - green portion

Length (LF)	Dia (in)	Material
4,260	8"	DR 18 - C900 PVC
6,273	16"	DR 18 - C905 PVC
Total:	10,533	

Proposed new lines not replacing exist. lines - not green

Length (LF)	Dia (in)	Material
3,155	8"	DR 18 - C900 PVC
0	16"	DR 18 - C905 PVC
Total:	3,155	



RIO DELTA ENGINEERING

Gilbert J. Guerra
F-7628
3/27/12

Rio Delta Engineering

Union Water Supply Corp.

Water Line Replacement - Phase II - PIF# 9309

Cost Estimate

PHASE II - TOTAL PROJECT (GREEN AND NOT GREEN INCLUDED)

3/27/2012

ITEM #	DESCRIPTION	QTY	Unit	Unit Cost	Total Cost
1	16" DR 18 C900 Water line	6,273	LF	\$30.00	\$188,190.00
2	16" Gate Valve	13	EA	\$2,500.00	\$32,500.00
3	24" Bore & Encasement	100	LF	\$180.00	\$18,000.00
4	8" DR 18 C900 Water line	7,415	LF	\$15.00	\$111,225.00
5	8" Gate Valve	19	EA	\$1,200.00	\$22,800.00
6	16" Bore & Encasement	65	LF	\$120.00	\$7,800.00
7	2" Air Release Valve	5	EA	\$1,500.00	\$7,500.00
8	Altitude Valve	2	EA	\$15,000.00	\$30,000.00
9	Fire Hydrants w/Gate Valve Assy.	25	EA	\$2,500.00	\$62,500.00
10	Domestic Water Services reconnections	100	EA	\$1,200.00	\$120,000.00
11	6" Gate Valve	6	EA	\$1,000.00	\$6,000.00
12	4" Gate Valve	3	EA	\$800.00	\$2,400.00
13	3" Gate Valve	1	EA	\$700.00	\$700.00
14	2" Gate Valve	2	EA	\$600.00	\$1,200.00
15	Misc. Fittings	2	TON	\$6,500.00	\$13,000.00
16	Pavement Patch and Repair	9,116	SY	\$30.00	\$273,480.00
				Sub- Total	\$897,295.00
				Estimated Construction Cost	\$897,295.00
				15% contingency	\$134,594.25
				Engineering (12%)	\$123,826.71
				Total Estimated Project Cost	\$1,155,715.96

Rio Delta Engineering

Union Water Supply Corp.

Water Line Replacement - Phase II - PIF# 9309

Cost Estimate

PHASE II - GREEN PORTION

3/27/2012

ITEM #	DESCRIPTION	QTY	Unit	Unit Cost	Total Cost
1	16" DR 18 C900 Water line	6,273	LF	\$30.00	\$188,190.00
2	16" Gate Valve	9	EA	\$2,500.00	\$22,500.00
3	24" Bore & Encasement	100	LF	\$180.00	\$18,000.00
4	8" DR 18 C900 Water line	4,260	LF	\$15.00	\$63,900.00
5	8" Gate Valve	11	EA	\$1,200.00	\$13,200.00
6	16" Bore & Encasement	0	LF	\$120.00	\$0.00
7	2" Air Release Valve	5	EA	\$1,500.00	\$7,500.00
8	Altitude Valve	2	EA	\$15,000.00	\$30,000.00
9	Fire Hydrants w/Gate Valve Assy.	20	EA	\$2,500.00	\$50,000.00
10	Domestic Water Services reconnections	90	EA	\$1,200.00	\$108,000.00
11	6" Gate Valve	6	EA	\$1,000.00	\$6,000.00
12	4" Gate Valve	3	EA	\$800.00	\$2,400.00
13	3" Gate Valve	1	EA	\$700.00	\$700.00
14	2" Gate Valve	2	EA	\$600.00	\$1,200.00
15	Misc. Fittings	1.5	TON	\$6,500.00	\$9,750.00
16	Pavement Patch and Repair	9,116	SY	\$30.00	\$273,480.00
				Sub- Total	\$794,820.00
				Estimated Construction Cost	\$794,820.00
				15% contingency	\$119,223.00
				Engineering (12%)	\$109,685.16
				Total Estimated Project Cost	\$1,023,728.16

Rio Delta Engineering

Union Water Supply Corp.

Water Line Replacement - Phase II - PIF# 9309

Cost Estimate

PHASE II - NOT GREEN PORTION

3/27/2012

ITEM #	DESCRIPTION	QTY	Unit	Unit Cost	Total Cost
1	16" DR 18 C900 Water line	0	LF	\$30.00	\$0.00
2	16" Gate Valve	4	EA	\$2,500.00	\$10,000.00
3	24" Bore & Encasement	0	LF	\$180.00	\$0.00
4	8" DR 18 C900 Water line	3,155	LF	\$15.00	\$47,325.00
5	8" Gate Valve	8	EA	\$1,200.00	\$9,600.00
6	16" Bore & Encasement	65	LF	\$120.00	\$7,800.00
7	2" Air Release Valve	0	EA	\$1,500.00	\$0.00
8	Altitude Valve	0	EA	\$15,000.00	\$0.00
9	Fire Hydrants w/Gate Valve Assy.	5	EA	\$2,500.00	\$12,500.00
10	Domestic Water Services reconnections	10	EA	\$1,200.00	\$12,000.00
11	6" Gate Valve	0	EA	\$1,000.00	\$0.00
12	4" Gate Valve	0	EA	\$800.00	\$0.00
13	3" Gate Valve	0	EA	\$700.00	\$0.00
14	2" Gate Valve	0	EA	\$600.00	\$0.00
15	Misc. Fittings	0.5	TON	\$6,500.00	\$3,250.00
16	Pavement Patch and Repair	0	SY	\$30.00	\$0.00

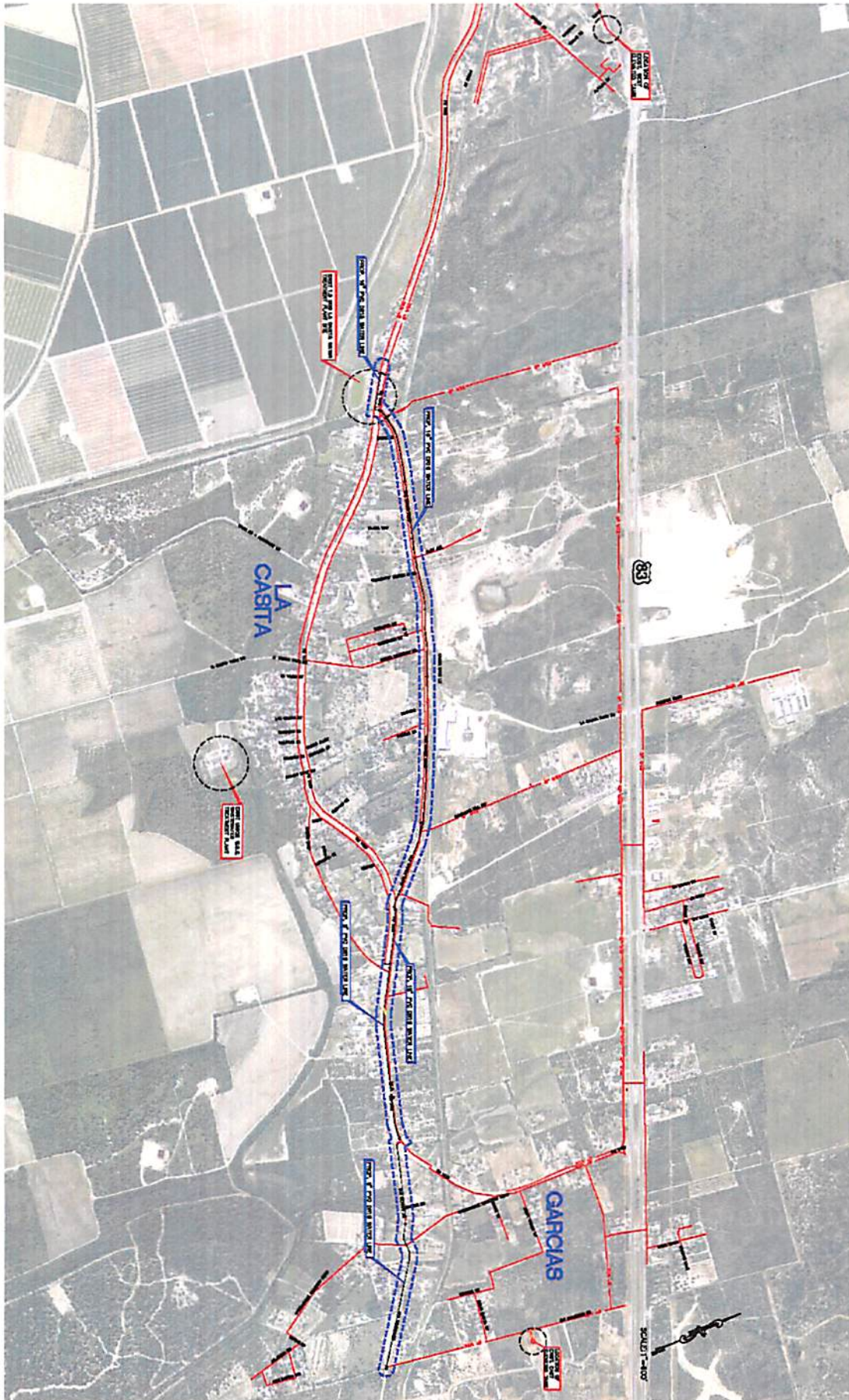
Sub- Total \$102,475.00

Estimated Construction Cost \$102,475.00

15% contingency \$15,371.25

Engineering (12%) \$14,141.55

Total Estimated Project Cost \$131,987.80



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ENC II 000
UNION WATER SUPPLY CORP.
MAIN WATER DISTRIBUTION SYSTEM
IMPROVEMENTS - PHASE II
STARR COUNTY, TEXAS

EXHIBIT
THE COMPANY IS
NOT PROVIDING ANY
WARRANTY FOR THE
USE OF THIS DRAWING
FOR ANY OTHER
PROJECT OR FOR
ANY OTHER PURPOSE.
IT IS THE USER'S
SOLE RESPONSIBILITY
TO VERIFY THE
ACCURACY OF THE
INFORMATION
CONTAINED HEREIN.
DATE: 01/15/2012



RIO DELTA ENGINEERING
FIRM REGISTRATION No. P-7828
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EDINBURG, TEXAS 78539
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