Texas Water Development Board

City of Paris

DWSRF GREEN PROJECT RESERVE BUSINESS CASE EVALUATION

STATE FISCAL YEAR 2012 INTENDED USE PLAN

PROJECT NUMBER 62525

COMMITMENT DATE: September 20, 2012

DATE OF LOAN CLOSING: February 28, 2013

GREEN ESTIMATE AT CLOSING: $ 3,402,115.00

Subsidy awarded for Green components, $500,778.00

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 9, 2012

Mr.Thomas L. Pruitt, P.E.
City of Paris
4445 SE Loop 286
Paris, TX 75460

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

Dear Mr. Pruitt:

The Texas Water Development Board (TWDB) received Green Project Information Worksheets from the City of Paris (City) for project #9424 in response to a request letter dated January 13, 2012. The letter states that the City 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 City meets the 30% green cost threshold based on the following:

- The City's Green Project Information Worksheets dated January 24, 2012 requested that $3,402,115 of the City's total project cost be considered eligible for the DWSRF Green Project Reserve (GPR). The green element described includes replacement of approximately 27,821 linear feet of old and deteriorated waterlines in order to increase water efficiency through reduction of water losses within the 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 the 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).
- 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, 2.5-2.
- Therefore, at this time the TWDB considers project costs in the amount of $3,402,115 to be eligible for the DWSRF GPR. This includes estimated planning, acquisition, design and construction costs as well as contingency and financing costs associated with the project.
- Please note that the City's application for financial assistance should 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 the project scope or budget related to the approved green components changes during application review, the City 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 City has demonstrated that it meets/exceeds the 30% green cost threshold. A letter inviting the City to apply for Mainstream City 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 Paris 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

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 $ none
- ☐ Water Efficiency $ none
- ☐ Energy Efficiency $ none
- ☐ Environmentally Innovative $ none

Business Case Eligible

- ☐ Green Infrastructure $
- ☒ Water Efficiency $ 3,402,115
- ☐ Energy Efficiency $ none
- ☐ Environmentally Innovative $ none

Total Requested Green Amount $ 3,402,115

Total Requested Funding Amount $ 3,402,115

Type of Funding Requested:

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

Completed by:

Name: Thomas L. Pruitt, P.E.

Title: Project Manager, TBPE FIRM # F000315

Signature:

Date: January 24, 2012

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

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 Paris PIF #: 9424

Project Name: 2014 Water Line Improvements

Contact Name: Shawn Napier, P.E.

Contact Phone and e-mail: (903) 784-9292, snapier@paristexas.gov

Total Project Cost: $3,402,115.00 Green Amount: $3,402,115.00
(Business Case Eligible)

Brief Overall Project Description:

The project as submitted proposed the replacement of 15 water distribution lines as identified on the "City of Paris - 2012 TWDB DWSRF Application" map. The new lines include approximately 14,481-feet of 6", 8,100-feet of 14", 4,180-feet of 20", related fittings, valves, hydrants, and other appurtenances.

Section 2 – Green Infrastructure

Certain green infrastructure 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. Provide reference to the applicable sections of the EPA GPR guidance (TWDB-0161) that demonstrate GPR eligibility. Provide a detailed description of the proposed green infrastructure improvements of sufficient detail that clearly demonstrates that the proposed improvements are consistent with EPA GPR guidance (TWDB-0161).

Guidance Reference:

Specific guidance refers to Part B, Section 2 as it applies to water efficiency. The proposed waterline replacements will fall under Section 2.4-3 (discussing energy savings and chemical savings) and 2.4-4 (discussing water loss and operational and maintenance savings). A worksheet is attached showing calculations and assumptions.

Detailed Description (attach additional pages if necessary):

PLEASE SEE ATTACHED WORKSHEET.

Green amount associated with green infrastructure (business case eligible): $3,402,115.00
(Attach a detailed cost estimate if necessary)

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:

- [x] Water Loss Audit - Attached
- [ ] _____
- [ ] _____

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
	PLEASE SEE ATTACHED				

Percent of distribution lines being replaced: 2.10

Number of breaks/leaks/repairs recorded in past 24 months for areas being replaced: 25

Estimated water loss from pipe being replaced (provide calculations on following page): 10,482,593

Estimated annual water savings (provide calculations on following page): 9,556,788

Estimated annual cost savings (provide calculations on following page): $182,796

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):

Green amount associated with water line replacement: $3,402,115.00
(Attach detailed cost estimate if necessary)

Part III, Section 2 – detailed description

The City of Paris proposes to replace various cast iron pipelines within its distribution system. The proposed pipeline replacements are part of the long-term Capital Improvement Plan. The pipelines selected for the TWDB project are heavily tuburculated and maintenance intensive. Further, elevated trihalomethane (THM) levels were recorded in various areas of town. The following reasons should provide improved health and business-case economic benefits:

1. Since AOB (Ammonia Oxidizing Bacteria) proliferate in the biofilm within the tuburcles, they reduce the chloramine residual within the system. According to the American Water Works Association Manual of Water Supply Practices M56, "tubercules on the iron pipe may provide a protective environment for the bacteria. AOB were found in numbers as high as 100,000/cm^2 in distribution system biofilms, suggesting that biofilms may act as reservoir of AOB in the distribution system." As the City would like to replace the old cast iron pipes with new PVC piping, we plan to reduce the chloramine dose at the water treatment plant to further reduce TTHM levels. Lowering chloramination dosing 0.50 mg/L should therefore reduce TTHM formation while saving the City $19,413 per year for chlorine and $14,560 for Liquid Ammonium Sulfate (L.A.S.).

2. Energy requirements due to high head lost due to the tuberculation should also be lower after the new piping is installed. An estimated C-factor of 80 was used for the old piping and a value of 140 used for the proposed piping. However, since 5 of the old lines were 2" and 3 of the old lines were originally 4". The expected increase in efficiency due to the improved C-value and increase in line diameter should yield an annual City savings of approximately $2,360.

3. The City currently expects 25 repairs will be necessary on any one of the old lines per year. Proceeding with the average assumption of equipment, labor, and repair materials for any of these repairs, the City could expect an average annual savings of $54,000 for labor, and $56,375 for materials, and $220 for water loss, for a total per year total savings of $110,595.

4. The expected water loss from the project pipelines is estimated at a total of 9,556,788 gallons per year. The water loss would cause a yearly net revenue loss of $38,227 per year at a production cost of water of $0.004 per gallon. The loss of revenue does not consider savings due to the loan incurred because of this project.

Summary:

The combined efficiency improvements, reduction in chemical disinfection requirements, and reduced operation and maintenance costs due to the proposed project should yield the City an annual savings of $182,795. Therefore the expected return on investment would be 14.21 years at an expected annual inflation of 4% per year. Assuming a 20-year payback for a loan at 3.3% interest, the total payback would be $4,712,197.60. Along those same lines, the $182,795 for 20-years at 4% per year would amount to $5,443,300.00. Therefore a total of $731,102.40 could be saved and 191,135,760-gallons of water conserved over the 20-years.

Phase III, Section 2 – water line replacement

Section 3.2 - Water Line Replacement; Proposed Pipe to be Replaced:

No	Description	Length	Existing Pipe			Proposed Pipe	
			Material	Age (yr)	Dia (in)	Dia (in)	Material
1	Cedar from SE 5th to SE 8th	1130	Cast Iron	> 85	2	6	PVC
2	11th NW from Shiloh to Cherry	656	Cast Iron	> 53	4	6	PVC
3	Sperry from 13th SW to 15th SW	735	Cast Iron	> 91	4	6	PVC
4	Garrett 7th NW to 9th NW	530	Cast Iron	> 97	6	6	PVC
5	Grand Ave. from 7th SW to4th SW	860	Cast Iron	> 91	4	6	PVC
6	8th NE. from Tudor to Grove	900	Cast Iron	< 53	2	8	PVC
7	8th NE. from Grove to MLK	910	Cast Iron	= 46	2	6	PVC
8	7th NW from Center to Cherry	4300	Cast Iron	> 85	20	8	PVC
9	E. Cherry from 5th NE to 6TH NE	450	Cast Iron	= 48	2	6	PVC
10	3rdNE from Henderson to Lamar	4180	Cast Iron	> 85	8	20	PVC
11	3rdSE from Lamar to SE Kaufman	4210	Cast Iron	> 97	8	6	PVC
12	South Church from Washington to Hearn	1400	Cast Iron	> 103	6	6	PVC
13	Neatherly from SE 13th to SE 15th	2700	Cast Iron	unknown	2	6	PVC
14	Walker Park 14" Tie in	1060	Cast Iron	unknown	6	14	PVC
15	Deshong, Lewis, & Stono Av.	3800	Cast Iron	44	6	8	PVC
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Percent of Distribution Lines Being Replaced Calculations:	
Total Amount of Pipe in the City	1356960 ft
Total Amount of CI Pipe in City	689188 ft
Approximate Total Leaks per year	480 ea
Percentage of Leaks are Cast Iron	75% <-- By City
Number of CI leaks per year	360 ea
CI Pipe this project	27821 feet
Percentage of CI pipe this project	4 04%
Estimated # of leaks these lines	14 5
Number of leaks last year these lines	25
Percentage total being replaced	2.05%

Energy Savings Cost Reduction:		
64.94	Headloss Total at C=80	
0.78	Headloss Total at C=140	
64.17	Headloss reduction due to new lines	
0 004	Horsepower savings	
2 73	Watts per minute savings	
1311.59	Watts per day savings	
39347.75	Watts per month savings	
1639.49	kilowats per hour savings	
0.12	$/kw/hr	
198 74	$/mo	
$ 2,380.87	$/year electricity savings	

Labor costs incurred in repairing water leaks:		
Average Repair time	6	hours
Dollars per hour repair crew	300	$/hr
Dollars per hour backhoe	36	$/hr
Dollars per hour truck	24	$/hr
Subtotal Hours per repair	360	$/hr
Labor Cost estimate per repair	2160	$/repair
Labor Cost estimate per year	$ 54,000.00	$/year

Chemical Injection Cost Reduction:		
Cl2	150	$/150-lb
	$ 1 00	$/lb cl2
Flow	8652	gpm total
Cl2 Dose	108 4	PPD /mg/L cl2
Cl2 Dose	53.2	PPD to get 1/2 mg/L
Cost	$ 53 19	per day
CL Cost savings	$ 19,413.20	$/year
LAS cost	$ 0.30	$/lb
LAS Feed Rate	34.13	ml/min
LAS Usage	132 97	lb/day
LAS Usage cost	$ 39 89	$/day
LAS Usage cost	$ 14,559.96	$/year

Parts incurred in repairing a water leak:		
Repair Clamp	215	$
Pipe	240	$
Asphalt	1800	$
Subtotal Parts cost per repair	2255	$/Repair
Parts Cost estimate per year	$ 58,375.00	$/year

Water Lost due to a leak:		
Expected flow lost during a leak	1500	gallons
Base cost water to customers	8 81	$ per 1500 gallons
Lost revenue per leak	8 81	$/leak
Lost revenue per year	$ 220.25	per year

Lost Revenue of Old piping system, 2010 Data	
Diverted Water	4978637000 gallons per year
Sold Water	4542577324 gallons per year
Real Water Lost	346226135 gallons per year
Water Loss	11.47%
Estimated Water Loss in old Cast Iron Lines	259669601 gallons per year
Water Loss in Cast Iron Lines proposed in this project	10482593 gallons per year
Unavoidable Annual Real Losses - This Project	
UARL=	925805
Water Loss	9556788
Retail Cost	0 004 $/gal
Cost of losses	$ 38,227 $/year City wide

*Not including the cost of this project payback

Lost Annual Revenue Summary		
Labor costs due to leaks	$ 54,000.00	
Material costs due to leaks	$ 58,375 00	
Water loss during leaks	$ 220 25	
Chlorine Savings costs	$ 19,413 20	
Liquid Ammonium Sulfate savings costs	$ 14,559 95	
Water loss of replaced pipelines	$ 38,227.15	
Total estimate per year	$ 182,795.55	$/year
Estimated Inflation rate per year	0 04 %	
Return on Investment	14 21	years
Project Cost	$3,410,000.00	
Estimated Annual payback on loan (3 3%)	$ 235,609 88	$/year/20-years
Total Annual payout after 20-years	$4,712 197.60	
Total Saved after 20-years	$5,443,300.00	

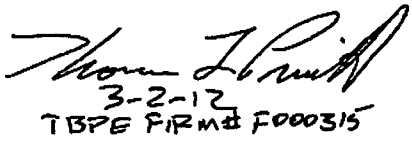
Since the amount saved after 20-years of paying back is greater than the amount actually paid back, the project saves the City money.

STATE OF TEXAS
THOMAS LEE PRUITT
92767
LICENSED
PROFESSIONAL ENGINEER

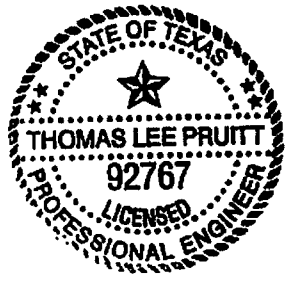
3-2-12
TBPE FIRM #F000315

Part III, Section 2 – detailed cost estimate

	Construction	2012 Project Cost	Services	Length [ft]
1	Cedar from SE 5th to SE 8th	$86,131.66	12	1130
2	11th NW from Shiloh to Cherry	$78,737.87	20	656
3	Sperry from 13th SW to 15th SW	$81,106.88	18	735
4	Garrett 7th NW to 9th NW	$49,007.73	5	530
5	Grand Ave. from 7th SW to 4th SW	$86,054.16	16	860
6	8th NE from Tudor to Grove	$76,185.44	9	900
7	8th NE from Grove to MLK	$80,654.78	11	910
8	7th NW from Center to Cherry	$333,702.06	31	4300
9	E. Cherry from 5th NE to 6th NE	$42,859.16	7	450
10	3rd NE from Henderson to Lamar	$543,347.65	30	4180
11	3rd SE from Lamar to SE Kaufman	$319,751.52	1	4210
12	South Church from Washington to Hearn	$128,990.82	24	1400
13	Neatherly from SE 13th to SE 15th	$176,784.33	1	2700
14	Walker Park 14" Tie in	$146,546.91	8	1060
15	Deshong, Lewis, & Stone Avenue	$269,666.24	16	3800
	Subtotal Construction Cost	**$2,499,527.21**		



3-2-12
TBPE FIRM# F000315



Texas Water Development Board

SFY 2012 DWSRF IUP Solicitation Packet

Source Water Assessment and Protection Program Worksheet

Name of Entity: City of Paris PWS ID No.: 1390002

Section 10. ESTIMATED COSTS

	Cost Category	(a) Planning	(b) Acquisition	(c) Design	(d) Subtotal (a)+(b)+(c)	(e) Construction	(f) Total (d)+(e)
A.	Treatment						
B.	Transmission and Distribution					2499530	2499530
C.	Source						
D.	Storage						
E.	Purchase of System						
F.	Restructuring						
G.	Land Acquisition						
H.	Source Water Protection						
I.	Engineering	23000		149972	172972	49991	222963
J.	General, Legal, Financial	140000			140000		140000
K.	Contingency					302477	302477
L.	Other (Describe cost.) Environmental, Inspection, Surveying, Testing, Bid & Award, Other	15000		47339	62339	99943	162282
M.	Subtotal (Add Lines A-L.)	178000		197311	375311	2951941	3327252
N.	Financing from Local Funds						
O.	Financing from Other Sources						
P.	Subtotal, SRF-Funded Amount (Subtract Lines N and O from Line M.)	178000		197311	375311	2951941	3327252
Q.	TWDB Loan Origination Fee (Calculate 2.25% of Line P.)	4005		4440	8445	66418	74863
R.	Grand Total (Add Lines P and Q.)	182005		201751	383756	3018359	3402115
S.	Financial Assistance Amount (Round up Line R to the nearest $5,000.)	190000		200000	390000	3020000	3410000
T.	Green Portion [Identify the estimated cost of the green portion (from Question 7.B.) as a percentage of Line S.]						73.3

Section 11. AUTHORIZATION AND SIGNATURE

Printed Name and Title of Entity's Authorized Representative	Telephone Number
Shawn Napier, P.E.	903-784-9292
Signature of Entity's Authorized Representative	**Date (mm/dd/yyyy)**
	02/28/11
If the requested financial assistance amount (Section 10, Line S) is less than or equal to $100,000, include: • Statement establishing the basis for the project cost. • Signature of system operator.	If the requested financial assistance amount (Section 10, Line S) is greater than $100,000, include: • Seal of registered professional engineer. • Signature of registered Professional Engineer.
	2-28-11 TBPE FIRM # F00105

STATE OF TEXAS
THOMAS LEE PRUITT
92767
LICENSED
PROFESSIONAL ENGINEER

TEXAS WATER DEVELOPMENT BOARD

P.O. BOX 13231, CAPITOL STATION

AUSTIN, TX 78711-3231

WATER AUDIT REPORTING FORM 2010

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 PARIS

2. Contact:

   2a. Name: DOUG HARRIS

   2b. Telephone #: (903)-784-2464

   2c. Email Address: dharris@paristexas.gov

3. Reporting Period: From 1/1/2010 To 12/31/2010

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

		Assessment Scale
5. Population Served:		
5a. Retail Population Served	25,371	
5b. Wholesale Population Served	25,008	
6. Utility's Length of Main Lines, miles	257.00	4
7. Number of Wholesale Connections Served	5	
8. Number of Retail Service Connections Served	10,649	
9. Service Connection Density (Number of retail service connections/Miles of main lines)	41.44	
10. Average Yearly System Operating Pressure (psi)	45.00	2
11. Volume Units of Measure:	G	

B. System Input Volume

12. Water Volume from own Sources	4,978,637,000.00	5
13. Production Meter Accuracy (enter percentage)	100.00 %	5
14. Corrected Input Volume	4,978,637,000.00	
15. Wholesale Water Imported	0.00	0

16. Wholesale Water Exported	1,118,328,047.00	5
17. System Input Volume (Corrected input volume, plus imported water, minus exported water)	3,860,308,953.00	

C. Authorized Consumption		Assessment Scale
18. Billed Metered	3,459,411,250.00	4
19. Billed Unmetered	0.00	0
20. Unbilled Metered	7,759,933.00	4
21. Unbilled Unmetered	2,317,314.00	1
22. Total Authorized Consumption	3,469,488,497.00	

D. Water Losses		
23. Water Losses (Line 17 minus Line 22)	390,820,456.00	

E. Apparent Losses		
24. Average Customer Meter Accuracy (Enter percentage)	99.00 %	2
25. Customer Meter Accuracy Loss	34,943,547.98	
26. Systematic Data Handling Discrepancy	0.00	2
27. Unauthorized Consumption	9,650,772.38	2
28. Total Apparent Losses	44,594,320.36	

F. Real Losses		
29. Reported Breaks and Leaks (Estimated volume of leaks & breaks repaired during the audit period)	644,900.00	3
30. Unreported Loss (Includes all unknown water loss)	345,581,235.64	1
31. Total Real Losses (Line 29, plus Line 30)	346,226,135.64	
32. Water Losses (Apparent + Real) (Line 28 plus Line 31) = Line 23	390,820,456.00	
33. Non-revenue Water (Water Losses + Unbilled Authorized Consumption)	400,897,703.00	

(Line 32, plus Line 20, plus Line 21)

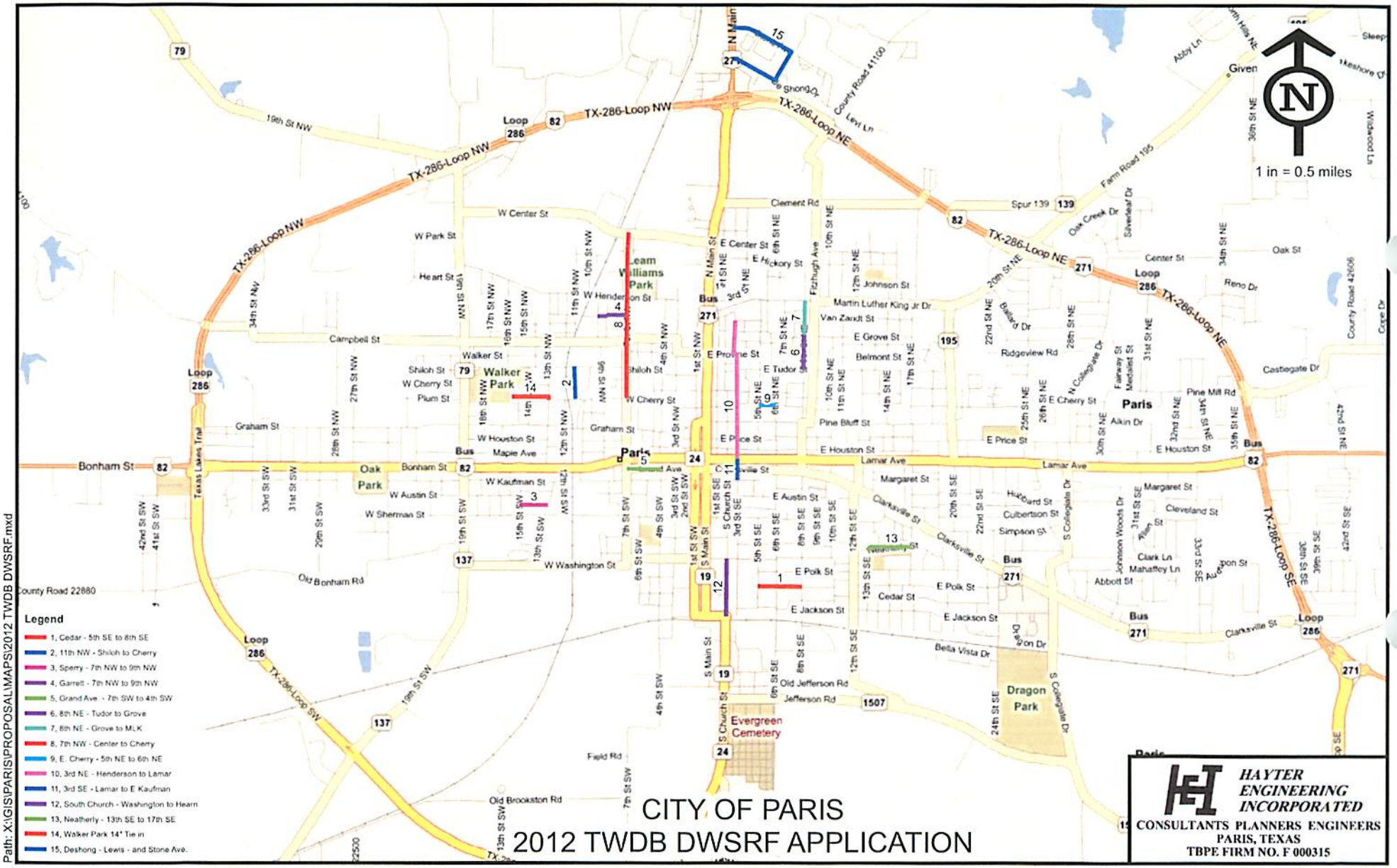
G. Technical Performance Indicator for Apparent Loss

34. Apparent Losses Normalized (Apparent Loss Volume/# of Retail Service Connections/365)	11.47	

H. Technical Performance Indicators for Real Loss

35. Real Loss Volume (Line 31)	346,226,135.64	
36. Unavoidable Annual Real Losses, volume (calculated)	49,031,088.75	
37. Infrastructure Leakage Index (calculated) (Equals real loss volume divided by unavoidable annual real losses)	7.06140	
38. Real Losses Normalized (Real Loss Volume/# of Service Connections/365) (This indicator applies if service connection density is greater than 32/mile)	89.08	
39. Real Losses Normalized (Real Loss Volume/Miles of Main Lines/365) (This indicator applies if service connection density is less than 32/mile)	3,690.91	

I. Financial Performance Indicators		Assessment Scale
40. Total Apparent Losses (Line 28)	44,594,320.36	
41. Retail Price of Water	$0.00400	2
42. Cost of Apparent Losses (Apparent loss volume multiplied by retail cost of water, Line 40 x Line 41)	$178,377.28	
43. Total Real Losses (Line 31)	346,226,135.64	
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.)	$0.00160	5
45. Cost of Real Losses (Real Loss multiplied by variable production cost of water, Line 43 x Line 44)	$553,961.82	
46. Total Assessment Scale		47
47. Total Cost Impact of Apparent and Real Losses	$732,339.10	


1 in = 0.5 miles
Legend
1, Cedar - 5th SE to 8th SE
2, 11th NW - Shiloh to Cherry
3, Sperry - 7th NW to 9th NW
4, Garrett - 7th NW to 9th NW
5, Grand Ave. - 7th SW to 4th SW
6, 8th NE - Tudor to Grove
7, 8th NE - Grove to MLK
8, 7th NW - Center to Cherry
9, E. Cherry - 5th NE to 6th NE
10, 3rd NE - Henderson to Lamar
11, 3rd SE - Lamar to E Kaufman
12, South Church - Washington to Hearn
13, Neatherly - 13th SE to 17th SE
14, Walker Park 14" Tie in
15, Deshong - Lewis - and Stone Ave.
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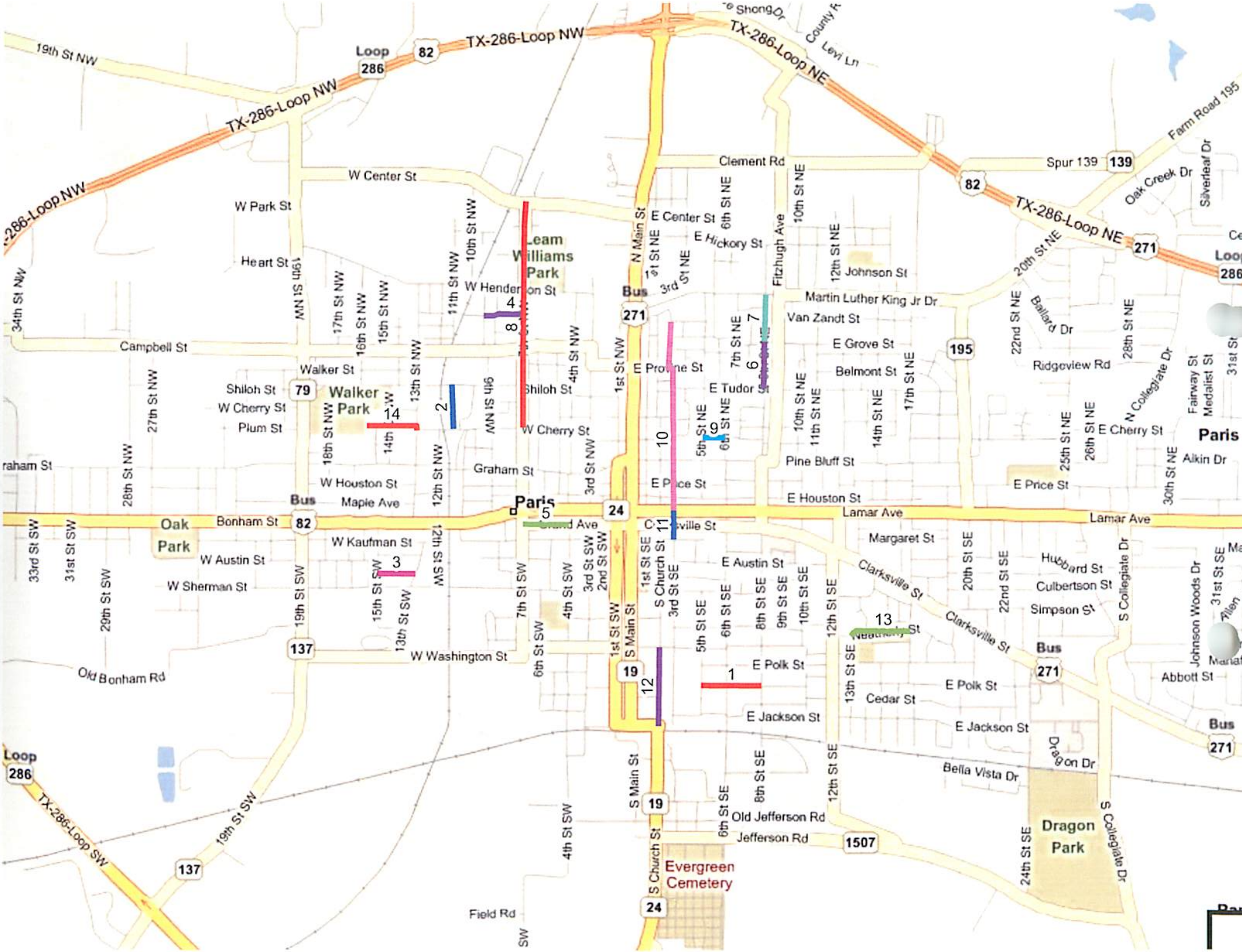
CITY OF PARIS
2012 TWDB DWSRF APPLICATION
HAYTER ENGINEERING INCORPORATED
CONSULTANTS PLANNERS ENGINEERS
PARIS, TEXAS
TBPE FIRM NO. F 000315


Paris
TX-286-Loop NW
TX-286-Loop NE
TX-286-Loop SW
Loop 286
82
271
139
195
1507
19
24
79
137
Bus 271
Bus 82
Farm Road 195
Spur 139
Clement Rd
W Center St
Lamar Ave
Bonham St
N Main St
S Main St
S Church St
Clarksville St
Fitzhugh Ave
Martin Luther King Jr Dr
S Collegiate Dr
N Collegiate Dr
Jefferson Rd
Old Jefferson Rd
Bella Vista Dr
Old Bonham Rd
W Washington St
Campbell St
Leam Williams Park
Walker Park
Oak Park
Dragon Park
Evergreen Cemetery
1
2
3
4
5
6
7
8
9
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11
12
13
14