Texas Water Development Board

City of Grand Prairie

CWSRF GREEN PROJECT RESERVE BUSINESS CASE EVALUATION

STATE FISCAL YEAR 2017 INTENDED USE PLAN

PROJECT NUMBER 73753

COMMITMENT DATE: January 26, 2017

DATE OF LOAN CLOSING: May 23, 2017

GREEN ESTIMATE AT CLOSING: $4,305,881.50

Additional Subsidy: $631,175

TEXAS WATER DEVELOPMENT BOARD

Green Project Reserve

Green Project Information Worksheets

Clean Water State Revolving Plan

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-0162
Revised 7/29/2014

NOTE: These worksheets should only be completed after the Intended Use Plan has been developed and the entity has been notified by the Texas Water Development Board that funding is available for the project and that the entity has been invited to submit an application for financial assistance.

1) According to Section 3.5-4, I/I correction projects that save energy from pumping and reduced treatment costs and are demonstrated to be cost effective are eligible for the GPR. These projects cannot add new structural capacity.
2) According to Section 3.5-5, I/I correction projects where excessive groundwater infiltration is contaminating the influent requiring otherwise unnecessary treatment processes (i.e. arsenic laden groundwater) and are demonstrated to be cost effective are eligible for the GPR.

Environmentally Innovative

Environmentally innovative projects include those that demonstrate new and/or innovative approaches to delivering services or managing water resources in a more sustainable way. These types of projects are described in EPA GPR guidance (TWDB-0161) Part A, Section 4.0.

Construction of US Green Building Council LEED certified buildings is considered categorically eligible for the GPR. All building costs are eligible and any level of certification is acceptable.

Decentralized wastewater treatment solutions to existing deficient or failing onsite wastewater system may be eligible for the GPR. Refer to EPA guidance (TWDB-0161) Part A, Section 4.2-6 for requirements.

TEXAS WATER DEVELOPMENT BOARD
CLEAN WATER STATE REVOLVING FUND (CWSRF)
GREEN PROJECT INFORMATION WORKSHEETS

PART I – GREEN PROJECT INFORMATION

General Project Information

Applicant: City of Grand Prairie Project #:

Project Name: Wastewater Replacements - Various Locations

Contact Name: Ron McCuller, Director of Public Works Dept.

Contact Phone and e-mail: (972) 237-8400, Rmcculle@GPTX.org

Brief Overall Project Description:

The City of Grand Prairie's replacement segments within the City's collection system intends to replace approximately 23,477 linear feet of existing 8-inch to 12-inch wastewater mains with 12-inch to 18-inch pipe in various locations within the City. These segments were found to have high amounts of I/I and the majority of the lines have been in service for at least 30 years. The project names for the segments to be replaced are NW 23rd Street to Roman Road, North Carrier and Hill Street, High School Drive, NE 5th Street and Tarrant Road, NE 19th Street, Gifford Street, Hensley Drive, Idlewild Road, Lakeview Drive, and Springdale Lane and Beltline Road.

TEXAS WATER DEVELOPMENT BOARD
CLEAN WATER STATE REVOLVING FUND (CWSRF)
GREEN PROJECT INFORMATION WORKSHEETS

Check all that apply and complete applicable worksheets:

Categorically Eligible

- ☐ Green Infrastructure $ _____
- ☐ Water Efficiency $ _____
- ☐ Energy Efficiency $ _____
- ☐ Environmentally Innovative $ _____

Business Case Eligible

- ☐ Green Infrastructure $ _____
- ☐ Water Efficiency $ _____
- ☒ Energy Efficiency $ 5,644,252
- ☐ Environmentally Innovative $ _____

Total Requested Green Amount $ 5,644,252

Total Requested Funding Amount $ 5,644,252

Type of Funding Requested:

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

Completed by:

Name: Wayne K. Hunter, P.E. Title: DFW Branch Manager

Signature: Wayne Hunter Date: 3/3/16

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 A, Section 1.4 and 1.5
Water Efficiency	Part A, Section 2.4 and 2.5
Energy Efficiency	Part A, Section 3.4 and 3.5
Environmentally Innovative	Part A, 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.

1.0 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:

Business Case (attach additional pages if necessary):

2.0 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. 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:

Detailed Description (attach additional pages if necessary):

3.0 Energy Efficiency

Certain energy 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. A few common types of energy efficiency projects that may be considered business case eligible, such as projects for energy efficiency (less than 20% energy efficiency improvement) and projects that eliminate pump stations (lift stations) are listed below. Complete Sections 3.1 and 3.2 if applicable. For any other energy efficiency improvement being considered for business case eligibility, complete Section 3.3.

3.1 – Energy Efficiency Improvements (< 20% improvement)

Provide a detailed description of the proposed project that result in a substantial reduction in energy consumption. Describe operation of the existing system and provide sufficient information establishing the base energy demand. Describe the proposed improvements providing sufficient detail to demonstrate that the proposed efficiencies will be achievable. Quantify all energy and financial savings. Attach supporting calculations.

Energy efficiency improvements to be considered for business case eligibility should provide reference to completed planning material such as energy assessments, energy audits, optimization studies and design level project information.

Reference Completed Planning/Design Material:

- [x] TWDB 0161, Part A CWSRF Section 3.5-4
- [ ] _____
- [ ] _____

(Provide Business Case on following page)

Business Case (attach additional pages if necessary):

The City of Grand Prairie's Projects are replacement segments within the City's collection system. The City's collection system discharges to the Trinity River Authority's (TRA) Central collection system for transporting and treating wastewater flows generated within the City's system. The City pays TRA for all flows received. The cost for the transport and treatment of wastewater flows for which the City pays TRA is as follows:

2016 Treatment Cost ($/1,000 gal): $2.54
2017 Treatment Cost ($/1,000 gal): $2.92
2018 Treatment Cost ($/1,000 gal): $3.14
2019 Treatment Cost ($/1,000 gal): $3.33
2020 - 2066 Treatment Cost ($/1,000 gal): $3.59

As a result of recent flow monitoring data, an evaluation of the nine proposed replacement segments was performed. This evaluation produced a predicted I/I amount totaling 114,054 gallons per day. The design criteria to be used for the replacement projects will have a design life of 50 years. It is appropriate to then apply the amount of I/I to be removed with the projects and period of service life of the proposed pipelines to account for the benefit. This I/I equates to a cost to the City for transportation and treatment of $7,362,910 over the service life of the improvements. The cost for implementing the Project is $5,644,252. This construction cost is less than the cost of the the I/I resulting from no action.

TWDB guidance TWDB-0161, Part A - CWSRF, section 3.5-4 establishes that the criteria for the required business case is cost effective, which can be demonstrated with a benefit that exceeds the cost. Attached is a detailed breakdown of each project segment, including the opinion of probable construction costs and the predicted I/I to be removed as a result.

3.2 – Lift Station Elimination

List all lift stations within the collection system contributing to the wastewater treatment facility and indicate which are to be eliminated by the project. Include annual energy usage for all lift stations in the table below and describe methodology for obtaining annual energy usage in detailed description. Provide annual operating costs (include energy, operation and maintenance costs) for each lift station to be eliminated and describe methodology for estimating these costs in the detailed description. For large systems the information can be summarized in the table below with supporting information attached.

Lift Station Identification	To be Eliminated?	Annual Energy Usage	Annual Operating Cost (for LS to be eliminated)
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	☐		
Total =			

Total annual energy savings from eliminated lift stations:

Energy reduction (percentage):

Design life (useful life) of proposed facility:

Total project cost of proposed facilities: $

Payback period (total project cost ÷ annual cost savings): _____

(Provide Business Case on following page)

Business Case (attach additional pages if necessary):

3.3 – Other Energy Efficiency Improvements

Complete this section for energy 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 energy efficiency improvements of sufficient detail that clearly demonstrates that the proposed improvements are consistent with EPA GPR guidance (TWDB-0161).

Guidance Reference:

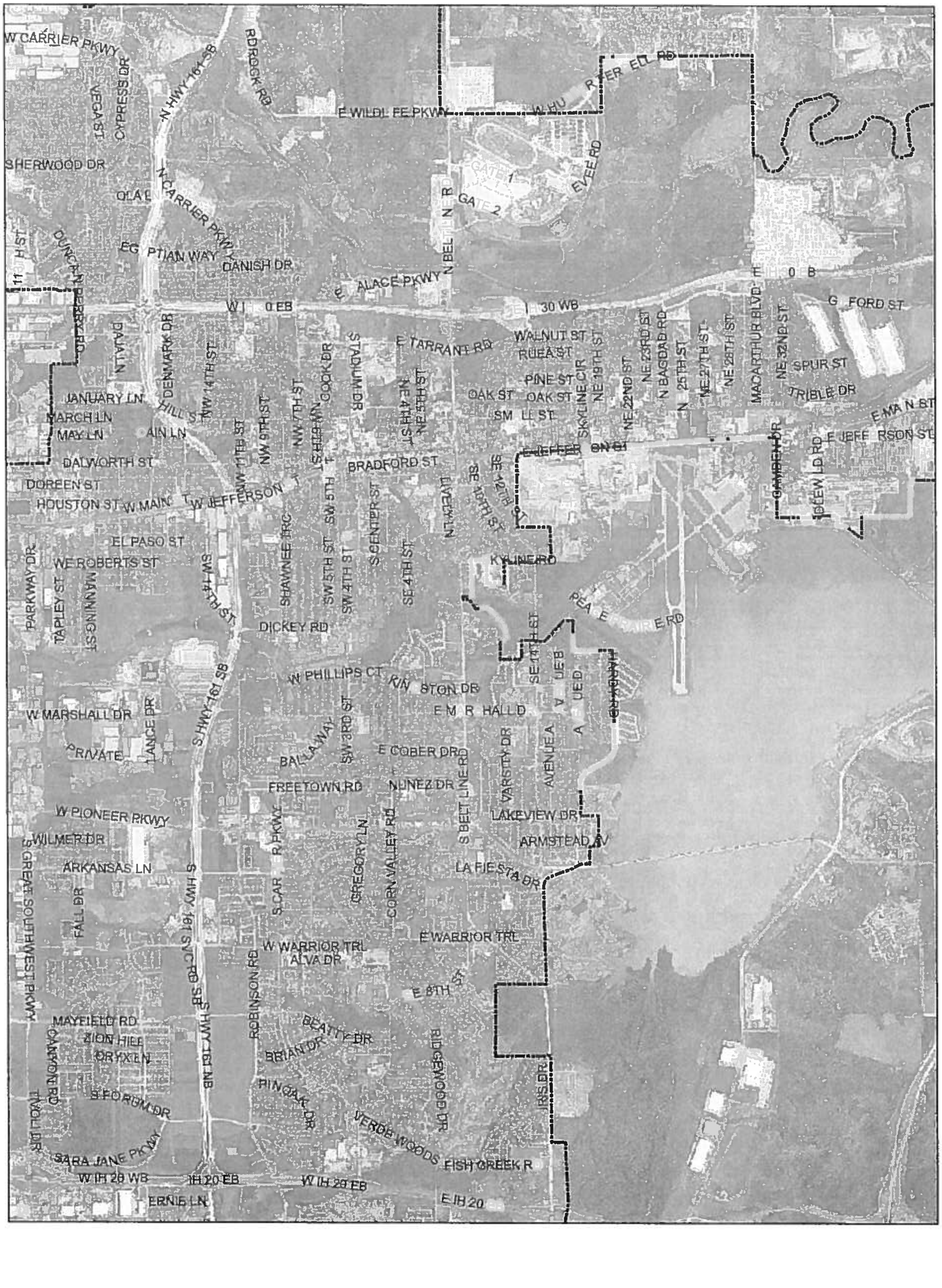
Business Case (attach additional pages if necessary):

4.0 Environmentally Innovative

Certain environmentally innovative 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 environmentally innovative improvements of sufficient detail that clearly demonstrates that the proposed improvements are consistent with EPA GPR guidance (TWDB-0161).

Guidance Reference:

Business Case (attach additional pages if necessary):


W CARRIER PKWY
VEGA ST
CYPRESS DR
N HWY 161 SB
E WILDLIFE PKWY
SHERWOOD DR
N CARRIER PKWY
GATE 1
GATE 2
DUNCAN PERRY RD
DANISH DR
W I 30 EB
I 30 WB
E TARRANT RD
WALNUT ST
RUE A ST
PINE ST
OAK ST
SKYLINE CIR
NE 19TH ST
NE 22ND ST
NE 23RD ST
N BAGDAD RD
NE 25TH ST
NE 27TH ST
NE 28TH ST
MACARTHUR BLVD
NE 32ND ST
SPUR ST
TRIBLE DR
DENMARK DR
NW 14TH ST
NW 11TH ST
NW 9TH ST
NW 7TH ST
COOK DR
STADIUM DR
NE 4TH ST
NE 5TH ST
JANUARY LN
MARCH LN
MAY LN
HILL ST
DALWORTH ST
DOREEN ST
HOUSTON ST
W MAIN ST
W JEFFERSON
BRADFORD ST
E JEFFERSON ST
E MAIN ST
GARDEN DR
SE 12TH ST
SE 10TH ST
EL PASO ST
W E ROBERTS ST
PARKWAY DR
TAPLEY ST
MANNING ST
SW 14TH ST
SHAWNEE TRC
SW 5TH ST
SW 4TH ST
S CENTER ST
SE 4TH ST
DICKEY RD
SE 14TH ST
W PHILLIPS CT
W MARSHALL DR
LANCE DR
S HWY 161 SB
SW 3RD ST
BALLA WAY
E COBER DR
PRIVATE
FREETOWN RD
NUNEZ DR
S BELT LINE RD
VARSITY DR
AVENUE A
LAKEVIEW DR
W PIONEER PKWY
WILMER DR
ARKANSAS LN
ARMSTEAD AV
GREGORY LN
CORN VALLEY RD
LA FIESTA DR
GREAT SOUTHWEST PKWY
FALL DR
S HWY 161 SVC RD SB
W WARRIOR TRL
E WARRIOR TRL
ALVA DR
ROBINSON RD
E 8TH ST
MAYFIELD RD
CANYON RD
BEATTY DR
BRIAN DR
RIDGEWOOD DR
S HWY 161 NB
S FORUM DR
PIN OAK DR
VERDE WOODS
IRIS DR
TIVOLI DR
SARA JANE PKWY
FISH CREEK R
W IH 20 WB
IH 20 EB
W IH 20 EB
E IH 20
ERNIE LN

Projects															
Location: Grand Prairie															
Item Description	Quantity	Diameter (inch)		Unit Price		Segment Cost		Surface Replacement Cost				Total Estimated Constr. Cost		Total Estimated Project Cost	
	(LF)	Existing	Upsized	Existing	Upsized	Existing	Upsized	Surface	Width (ft)	$/SY	Total Cost	Replacement	Upsized	Replacement	Upsized
NW 23rd to Roman Road															
12" Pipe 0-8', Deep (ft)	922	10	12	$110	$120	$101,420	$110,640	Asphalt	24	$40	$98,347				
12" Pipe 8-16', Deep (ft)	2,756	12	15	$130	$145	$358,280	$399,620	Asphalt	24	$40	$293,973				
15" Pipe 0-8', Deep (ft)	556	8	15	$100	$145	$55,600	$80,620	Asphalt	24	$40	$59,307				
15" Pipe 8-16', Deep (ft)	941	10	15	$110	$145	$103,510	$136,445	Asphalt	24	$40	$100,373				
18" Pipe 8-16', Deep (ft)	2,073	8	18	$100	$160	$207,300	$331,680	Asphalt	24	$40	$221,120				
18" Pipe 8-16', Deep (ft)	182	12	18	$135	$160	$24,570	$29,120	Asphalt	24	$40	$19,413				
N Carrier & Hill															
15" Pipe 0-8', Deep (ft)	286	8	15	$100	$145	$28,600	$41,470	Concrete	12	$50	$19,067				
High School Drive															
15" Pipe 0-8', Deep (ft)	612	12	15	$130	$145	$79,560	$88,740								
NE 5th & Tarrant Rd															
15" Pipe 0-8', Deep (ft)	104	12	15	$130	$145	$13,520	$15,080								
18" Pipe 8-16', Deep (ft)	502	15	18	$150	$160	$75,300	$80,320								
NE 19th Street															
12" Pipe 8-16', Deep (ft)	2,234	10	12	$110	$120	$245,740	$268,080	Asphalt	24	$40	$238,293				
Gifford Street															
18" Pipe 0-8', Deep (ft)	1,193	12	18	$130	$160	$155,090	$190,880	Concrete	12	$50	$79,533				
Hensley Drive															
12" Pipe 8-16', Deep (ft)	3,251	10	12	$110	$120	$357,610	$390,120	Asphalt	24	$40	$346,773				
15" Pipe 8-16', Deep (ft)	702	12	15	$130	$145	$91,260	$101,790	Asphalt	24	$40	$74,880				
Idlewild Road															
10" Pipe 8-16', Deep (ft)	2,085	10	12	$110	$120	$229,350	$250,200								
Lakeview Drive															
15" Pipe 0-8', Deep (ft)	1,862	10	15	$110	$145	$204,820	$269,990	Concrete	12	$50	$124,133				
Springdale & Beltline															
15" Pipe 0-8', Deep (ft)	3,216	10	15	$110	$145	$353,760	$466,320	Asphalt	24	$40	$343,040				
Totals	**23,477**					**$2,685,290**	**$3,251,115**				**$2,018,253**	**$5,644,252**	**$6,323,242**	**$6,321,562**	**$7,082,031**

Item Description	Quantity					Segment Cost		Surface Replacement Cost				Total Estimated Constr. Cost		Total Estimated Project Cost	
	(ft)					Existing	Upsized				Total Cost	Replacement	Upsized	Replacement	Upsized
TOTALS	**23,477**					**$2,685,290**	**$3,251,115**				**$2,018,253**	**$5,644,252**	**$6,323,242**	**$6,321,562**	**$7,082,031**

Total I/I removed (gpd)	114,054
2016 Treatment Cost ($/1000 gal)	$2.54
2017 Treatment Cost	$2.92
2018 Treatment Cost	$3.14
2019 Treatment Cost	$3.33
2020 - 2066 Treatment Cost	$3.59
Total Treatment Cost (50 year service life)	$7,362,910