

# Texas Water Development Board



City of Fort Worth

**CWSRF GREEN PROJECT RESERVE BUSINESS CASE EVALUATION**

**STATE FISCAL YEAR 2017 INTENDED USE PLAN**

**PROJECT NUMBER 73750**

COMMITMENT DATE: January 12, 2017

DATE OF LOAN CLOSING: May 11, 2017

GREEN ESTIMATE AT CLOSING: \$6,512,889.24

Additional Subsidy: \$946,157

TEXAS WATER DEVELOPMENT BOARD

# Green Project Reserve

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## 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.

**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.**

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

**OVERVIEW**

**Background**

The Federal Appropriation Law for the current fiscal year Clean Water and Drinking Water State Revolving Fund programs contains additional requirements. The Green Project Reserve (GPR) is included as part of these additional requirements. The GPR requires that not less than 20% of the funds made available from the capitalization grant shall be used by the State for projects to address green infrastructure, water or energy efficiency improvements, or other environmentally innovative activities. In a memo dated April 21, 2010, EPA outlined procedures for implementing these additional requirements. Attachment 2 of this memo provided guidance for determining GPR project eligibility and is available from the Texas Water Development Board as guidance form TWDB-0161.

**TWDB GPR Procedures**

The selection process for GPR projects involves an initial step in which potential GPR projects are listed in ranked order in the Intended Use Plan (IUP). Project GPR status in the IUP is based on preliminary "Green" information provided by the potential applicant on the Project Information Form (PIF) during the IUP solicitation phase. This is followed by a verification process in which the potential applicant is required to provide adequate documentation to verify the project or project components as either categorically or business case eligible for the GPR. The applicant will be required to provide complete information for approval prior to presentation to the Board for a funding commitment. In accordance with EPA instructions, all approved business cases will be made available to the public and posted on the TWDB website after a funding commitment is made.

To accomplish the above, TWDB staff is providing the attached GPR guidance and Green Project Information Worksheets to communities being considered for funding through the GPR. Information provided on these worksheets will be used by TWDB staff to verify GPR eligibility. TWDB staff may issue comments or request additional information depending on the type of "green" improvements proposed and the adequacy of information provided by the potential applicant on these worksheets. These worksheets will not be considered complete until all TWDB staff comments are addressed and any requested information is provided.

Program requirements for business case eligible GPR projects will be considered met only after the business case submittal is approved. The business case submittal will consist of the completed Green Project Information Worksheets with the applicant's business case and supporting documents attached. Program requirements for categorically eligible GPR projects will be considered met upon submittal of the completed Green Project Information Worksheets.

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 Fort Worth Project #: \_\_\_\_\_

Project Name: Wastewater Replacements - Various Locations

Contact Name: John Carman, Utility Director, Water Dept.

Contact Phone and e-mail: 817-392-8246: carman@FortWorthTexas.gov

Brief Overall Project Description:

Based on their collection system condition assessment program, the City of Fort Worth intends to rehabilitate and replace 7,309 linear feet of existing 30-inch to 54-inch gravity wastewater pipelines with 36-inch to 60-inch pipe at three locations within the City's wastewater collection system. These three project locations are portions of the Village Creek Parallel Interceptor, which is located along the northwest side of Lake Arlington.

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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 \$ 6,307,715
- Environmentally Innovative \$ \_\_\_\_\_

Total Requested Green Amount \$ 6,307,715

Total Requested Funding Amount \$ 6,307,715

Type of Funding Requested:

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

Completed by:

Name: Wayne K. Hunter, P.E.

Title: DFW Branch Manager

Signature: 

Date: 3/2/16

TEXAS WATER DEVELOPMENT BOARD  
CLEAN WATER STATE REVOLVING FUND (CWSRF)  
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 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:

- 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 Fort Worth's projects are rehabilitation and replacement segments within the City's collection system. The projects are segments of pipe within the Village Creek Parallel Interceptor located along the northwest side of Lake Arlington. The City's collection system is maintained and serviced by the City and the cost incurred for the transport and treatment of the wastewater flows in its system is \$4.03 per 1,000 gallons.

As a result of recent flow monitoring data and modeling, an evaluation of the pipelines within the three proposed replacement segments within the Village Creek Parallel Interceptor was performed. This evaluation produced a predicted I/I amount totaling 96,829 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 \$7,122,834 over the service life of the improvements. The cost for implementing the intended replacement projects is \$6,307,715. 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.



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):



Details from Engineer 10/27/2016

<b>Projects</b>							
<b>Location: Fort Worth</b>							
Item Description	Quantity	Diameter (inch)		Unit Price		Segment Cost	
	(LF)	Existing	Upsized	Existing	Upsized	Existing	Upsized
<b>Village Creek Location No. 1</b>							
54" Pipe & Lake Crossing	2,946	54"	54"	\$845	\$845	\$2,488,708	\$2,488,708
I/I removed (gpd) - 63,504							
<b>Village Creek Location No. 2</b>							
30" Pipe (to be abandoned)	1,104	30"	-	\$515	-	\$568,818	-
30" Pipe (to be replaced)	1,868	30"	54"	\$515	\$766	\$962,456	\$1,430,831
I/I removed (gpd) - 11,674							
<b>Village Creek Location No. 3</b>							
36" Pipe (CIPP)	2,591	36"	36"	\$299	\$299	\$773,701	\$773,701
I/I removed (gpd) - 21,651							
<b>Totals</b>	<b>8,509</b>					<b>\$4,793,683</b>	<b>\$4,693,240</b>
<b>Total I/I Removed (gpd) - 96,829</b>							
						<b>Replacement</b>	<b>Upsized</b>
<b>Total Estimated Constr. Cost</b>						<b>\$5,752,420</b>	<b>\$5,631,888</b>
<b>Total Estimated Project Cost</b>						<b>\$6,442,711</b>	<b>\$6,307,715</b>

In regards to the I/I calculations, there were flow meters in place at the upstream and downstream end of the basin for these pipelines, and we were able to compare the dry and wet weather flows to calculate and I/I rate across the basin and attribute a percentage of that I/I to each pipe segment based on diameter and length. This basin in particular had an I/I rate of 0.355 MGD, and for Location 2, both segments were used to determine the I/I removal, as the abandoned portion will not contribute any I/I post-construction. The I/I to be removed with these proposed improvements has been identified and delineated by segment.

## City of Fort Worth # 73750 Application

Application includes inspection Report & Environmental Assessment rather than Preliminary Engineering Feasibility Report

PEFR part	App specific Section	73750 App page	Section page
Assessment	Inspection report for M-280 and M-338	421	Cover
Issues	Issues	426	1-1
	Inspection Results Summary	438	3-1
Alternatives	Interceptor Rehab Alternatives Assessment	472	4-1
Recommendations	Recommendations	492	5-1
Budget/Cost Estimates	Recommendations	493	5-2
Environmental	Environmental	495	Cover
Location Map	Project Location Map	497 and 505	
Population Projections		510	

PROJECT BUDGET - Entity Name City of Fort Worth						
Uses	TWDB Funds Series 1	TWDB Funds Series 2	TWDB Funds Series 3	Total TWDB Cost	Other Funds	Total Cost
<b>Construction</b>						
Construction	\$16,356,933	\$0	\$0	\$16,356,933	\$0	\$16,356,933
<b>Subtotal Construction</b>	<b>\$16,356,933</b>	<b>\$0</b>	<b>\$0</b>	<b>\$16,356,933</b>	<b>\$0</b>	<b>\$16,356,933</b>
<b>Basic Engineering Fees</b>						
Planning +	\$0	\$0	\$0	\$0	\$0	\$0
Design	\$0	\$0	\$0	\$0	\$0	\$0
Construction Engineering	\$0	\$0	\$0	\$0	\$0	\$0
Basic Engineering Other **	\$0	\$0	\$0	\$0	\$0	\$0
<b>Subtotal Basic Engineering Fees</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Special Services</b>						
Application	\$0	\$0	\$0	\$0	\$0	\$0
Environmental	\$0	\$0	\$0	\$0	\$0	\$0
Water Conservation Plan	\$0	\$0	\$0	\$0	\$0	\$0
I/I Studies/Sewer Evaluation	\$0	\$0	\$0	\$0	\$0	\$0
Surveying	\$0	\$0	\$0	\$0	\$0	\$0
Geotechnical	\$0	\$0	\$0	\$0	\$0	\$0
Testing	\$0	\$0	\$0	\$0	\$0	\$0
Permits	\$0	\$0	\$0	\$0	\$0	\$0
Inspection	\$0	\$0	\$0	\$0	\$785,425	\$785,425
O&M Manual	\$0	\$0	\$0	\$0	\$0	\$0
Project Management (by engineer)	\$0	\$0	\$0	\$0	\$0	\$0
Pilot Testing	\$0	\$0	\$0	\$0	\$0	\$0
Water Distribution Modeling	\$0	\$0	\$0	\$0	\$0	\$0
Special Services Other **	\$0	\$0	\$0	\$0	\$0	\$0
<b>Subtotal Special Services</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$785,425</b>	<b>\$785,425</b>
<b>Other</b>						
Administration	\$0	\$0	\$0	\$0	\$0	\$0
Land/Easements Acquisition	\$0	\$0	\$0	\$0	\$0	\$0
Water Rights Purchase (If Applicable)	\$0	\$0	\$0	\$0	\$0	\$0
Capacity Buy-In (If Applicable)	\$0	\$0	\$0	\$0	\$0	\$0
Project Legal Expenses	\$0	\$0	\$0	\$0	\$0	\$0
Other **	\$0	\$0	\$0	\$0	\$0	\$0
<b>Subtotal Other Services</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Fiscal Services</b>						
Financial Advisor	\$0	\$0	\$0	\$0	\$47,675	\$47,675
Bond Counsel	\$0	\$0	\$0	\$0	\$16,900	\$16,900
Issuance Cost	\$16,017	\$0	\$0	\$16,017	\$0	\$16,017
Bond Insurance/Surety	\$0	\$0	\$0	\$0	\$0	\$0
Fiscal/Legal	\$0	\$0	\$0	\$0	\$0	\$0
Capitalized Interest	\$0	\$0	\$0	\$0	\$0	\$0
Bond Reserve Fund	\$325,000	\$0	\$0	\$325,000	\$0	\$325,000
Loan Origination Fee	\$302,050	\$0	\$0	\$302,050	\$0	\$302,050
Other **	\$0	\$0	\$0	\$0	\$0	\$0
<b>Subtotal Fiscal Services</b>	<b>\$643,067</b>	<b>\$0</b>	<b>\$0</b>	<b>\$643,067</b>	<b>\$64,575</b>	<b>\$707,642</b>
<b>Contingency</b>						
Contingency	\$0	\$0	\$0	\$0	\$510,000	\$510,000
<b>Subtotal Contingency</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$510,000</b>	<b>\$510,000</b>
<b>TOTAL COSTS</b>	<b>\$17,000,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$17,000,000</b>	<b>\$1,360,000</b>	<b>\$18,360,000</b>

Other \*\* description must be entered

+ For Planning applications under the EDAP Program, please break down Planning costs as follows:

Category A			0
Category B			0
Category C			0
Category D			0
<b>Total Planning Costs</b>		0	0