

MEMO

To: Project File, Jeffersonville Tenth Street Pump Station Expansion, SRF No. WW06 12 10 05

Date: March 29, 2011

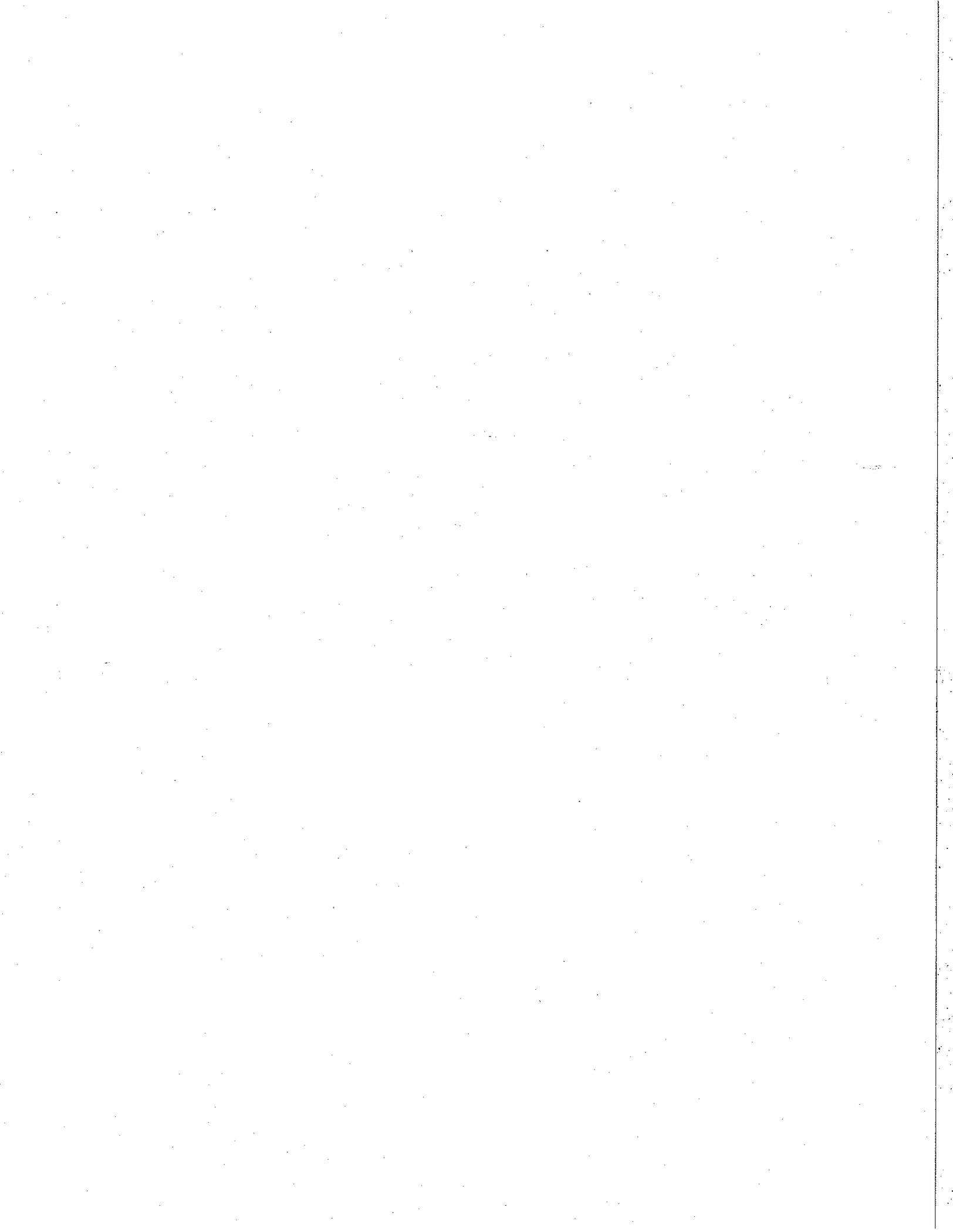
Re: Green Project Reserve, Business Case

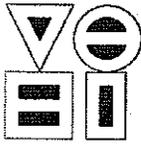
A Business Case was prepared by VS Engineering, Inc. for the City of Jeffersonville's Tenth Street Pump Station Expansion Project. The Business Case addressed the use of Variable Frequency Drives (VFD) with submersible wastewater pumps. **Based on review of the Business Case, it is determined that the VFDs and Submersible Wastewater Pumps categorically qualify as Energy Efficiency Green Project Reserve designation.**

The assessment that the project qualifies for the Categorical designation is based on the following:

- Using VFDs with the submersible wastewater pumps rather than constant speed pumps will result in an energy savings of 56.4% as calculated in the Business Case.

The capital cost for the green project components is \$1,088,452 based on \$1,000,000 for construction and \$88,452 for planning and design.





VS ENGINEERING, INC.

Civil • Structural • Transportation • Environmental

March 30, 2011

Mr. Jack Fisher
Wastewater Project Engineer
State Revolving Fund Loan Programs
100 N. Senate Ave., RM. 1275
Indianapolis, IN 46204

RE: City of Jeffersonville, Tenth Street Pump Station Expansion
Post-Bid Update

Dear Mr. Fisher:

We are updating the Business Case information for the Green Project Reserve (GPR) portions of the above-referenced project, as requested, to reflect the actual bid amounts proposed for the project. Please see the attached Business Case Financial Evaluation, Post-Bid. Note that the proposed use of VFDs with the new pumps provides a projected reduction in energy consumption of 56.4% and based upon annual energy costs provides a payback period of 8.4 years for the VFDs.

The GPR portions of the project, as reflected in Attachment H already submitted, including construction, planning and design are therefore:

Pumps	\$ 763,520.
VFDs	<u>\$ 236,480</u>
Sub-Total	\$1,000,000
Non-Construction	\$ 88,452

Total Energy Efficiency portion of the project \$1,088,452

As a percentage of construction costs, the energy efficiency portion is \$1,000,000.00 divided by \$10,180,000.00 which amounts to 9.823%. Based upon the provided information, we request that the City of Jeffersonville be considered for an interest rate reduction due to energy efficiency improvements the project will provide.

Sincerely,
VS ENGINEERING

Amy R. Moore, P.E.
amoore@vsengineering.com

CITY OF JEFFERSONVILLE, INDIANA
TENTH STREET PUMP STATION

**PROPOSED PUMPS AND VARIABLE FREQUENCY DRIVE (VFD)
BUSINESS CASE FINANCIAL EVALUATION**

Post-Bid Update

VS Engineering, Inc.
March, 2011

Item	Alternative 1	Alternative 2
	Existing Pumps	New Pumps w/ VFD
Incremental Capital Costs:		
VFD Cost, \$	\$0	\$189,184
Subtotal, Equipment Costs, \$	\$0	\$189,184
Labor, Installation @ 25%, \$	\$0	\$47,296
Planning & Design @ 7%, \$	\$0	\$13,243
Capital Cost Subtotal, \$	\$0	\$249,723
Capital Cost Difference, \$		\$249,723
O&M Costs:		
Average Annual Volume, Gal. ⁽¹⁾	702,717,234	883,071,564
Average Daily Volume, Gal. ⁽¹⁾	1,925,253	2,419,374
Pump Flow Rate, gpm	-	6,458
Daily Run Time, hrs.	-	6.24
Power Consumption Rate, kw/h	-	116.6
Power Consumption per Day, kwh	-	728.0
Energy Cost per Day, \$ ⁽²⁾	-	\$63.05
Annual Energy Costs, \$ ⁽³⁾	\$42,008	\$23,012
Annual Energy Cost per MG, \$/MG	\$59.78	\$26.06
Annual Energy Cost for 883,071,564 Gal., \$	\$52,789	\$23,012
Present Worth of Annual Energy Costs, \$ ⁽⁴⁾	\$717,420	\$312,747
Present Worth Cost Difference, \$		\$404,674
Simple Payback Based upon Annual Energy Cost		
Annual Energy Cost, \$	\$42,008	\$23,012
Average Annual Flow, Gal. ⁽¹⁾	702,717,234	883,071,564
Annual Energy Cost per MG, \$/MG	\$59.78	\$26.06
Annual Energy Cost for 883,071,564 Gal., \$	\$52,789	\$23,012
Annual Energy Cost Difference, \$		\$29,777
Payback Period Based on Annual Energy Cost, Years		8.39
Reduction in Energy Consumption, %		56.4%

- Greater volume for new pump includes 90% of CSO events now captured.
- Energy Cost Based on \$0.0866 /kwh
- Existing power consumption data per City of Jeffersonville for year 2010
- Interest Rate = i = 4%

For Annual Amounts

Return Period = n = 20 Years

Annual Amount = A

$$\text{Present Value} = A \left[\frac{(1+i)^n - 1}{(1+i)^n i} \right]$$

$$= A [13.5903]$$