ATTACHMENT8–ECONOMIC ANALYSIS: WATER SUPPLY COSTS AND BENEFITS

This California Avenue Storm Drain Lift Station Project is the second phase of a larger project that aims address capacity issues with the California Avenue Storm Drain Basin (Basin). The grant monies, along with the local government match, will be used to construct a storm drain lift station and outfall relief line. This new lift station will specifically remedy overflows during heavy storms. In addition, the expanded capacity of the basin will allow San Joaquin (City)to retain water, which can then be pumped into the adjacent JID Ditch and discharged downstream for beneficial crop irrigation usage.

Currently, the City is working with the James Irrigation District (JID) to amend an existing memorandum of understanding that addresses the handling of storm water that may include additional storm water or a collaborative banking system. In exchange, the City is requesting financial assistance for the purchase of a back-up generator that will serve the new lift station site. This partnership will not only help the City meet the required 50% match of funds, but it will ensure that stored water is used in a beneficial way that supports local agriculture.

The initial cost of the project will consist of construction of the lift station and associated facilities. This initial cost includes administration, environmental compliance, engineering, construction administration, and contingencies. From Table 6 of Attachment 4, the initial cost of the project is $234,390. In addition to the initial cost, the project will have annual operation and maintenance costs over the project life of 20 years, and a replacement cost for the pumps at 10 years. Based on these costs, the total present value of discounted costs is $253,737. Table 14 provides a breakdown of the calculation of the total present value of discounted costs.

In the without-project conditions, there is no additional water supply available to JID on a regular basis. Water is only supplied to the JID canal in emergency situations through the use of a portable pump. With-project conditions will allow the City to pump excess stormwater into the JID canal on a regular basis. It is estimated that 23 acre-feet of stormwater will be supplied to JID on an annual basis. According to JID, the present day value of their water supply is $115 per acre-foot. Based on Table 15, the total present value of discounted benefits based on unit value is $37,661 for the water to be supplied to the JID canal.

Table 14- Annual Cost of Water Supply Project

	Initial	Operations and Maintenance						Discounting Calculations	
	(a)	(b)(b)	(c)(c)	(d)	(e)	(f)	(g)	(h)	(i)
Year	Grand Total Cost from Table 7 (row (i), column (d))	Admin	Operation[1]	Maint-enance[2]	Replace-ment[3]	Other	Total Costs	Discount Factor	Discounted Benefits (h) x (i)
2009							$ -	1.000	$ -
2010							$ -	0.943	$ -
2011	$ 234,390	$ -	$ 246	$ 2,400	$ -	$ -	$ 237,03	0.890	$ 210,962
2012		$ -	$ 253	$ 2,472	$ -	$ -	$ 2,725	0.840	$ 2,289
2013		$ -	$ 261	$ 2,546	$ -	$ -	$ 2,807	0.792	$ 2,223
2014		$ -	$ 269	$ 2,623	$ -	$ -	$ 2,891	0.747	$ 2,160
2015		$ -	$ 277	$ 2,701	$ -	$ -	$ 2,978	0.705	$ 2,100
2016		$ -	$ 285	$ 2,782	$ -	$ -	$ 3,067	0.665	$ 2,040
2017		$ -	$ 294	$ 2,866	$ -	$ -	$ 3,159	0.627	$ 1,981
2018		$ -	$ 303	$ 2,952	$ -	$ -	$ 3,254	0.592	$ 1,927
2019		$ -	$ 312	$ 3,040	$ -	$ -	$ 3,352	0.558	$ 1,870
2020		$ -	$ 321	$ 3,131	$ -	$ -	$ 3,452	0.527	$ 1,819
2021		$ -	$ 331	$ 3,225	$ 15,000	$ -	$ 18,556	0.497	$ 9,222
2022		$ -	$ 341	$ 3,322	$ -	$ -	$ 3,663	0.469	$ 1,718
2023		$ -	$ 351	$ 3,422	$ -	$ -	$ 3,773	0.442	$ 1,667
2024		$ -	$ 361	$ 3,524	$ -	$ -	$ 3,886	0.417	$ 1,620
2025		$ -	$ 372	$ 3,630	$ -	$ -	$ 4,002	0.394	$ 1,577
2026		$ -	$ 383	$ 3,739	$ -	$ -	$ 4,122	0.371	$ 1,529
2027		$ -	$ 395	$ 3,851	$ -	$ -	$ 4,246	0.350	$ 1,486
2028		$ -	$ 407	$ 3,967	$ -	$ -	$ 4,373	0.331	$ 1,448
2029		$ -	$ 419	$ 4,086	$ -	$ -	$ 4,505	0.312	$ 1,405
2030		$ -	$ 431	$ 4,208	$ -	$ -	$ 4,640	0.294	$ 1,364
2031		$ -	$ 444	$ 4,335	$ -	$ -	$ 4,779	0.278	$ 1,329
					Total Present value of Discounted Costs			$	**253,737**

[1]Assumed 822 kW-hrs@ $0.30/kW-hr PG&E cost escalated at 3%/year over project life.
[2]Assumed 40 hours per year @ $60/hr. Salary escalated at 3%/year over project life.
[3]Assumed replacement of pumps at 10 years (1/2 of project life); $7,500 per pump

Table 15 - Annual Water Supply Benefits

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
Year	Type of Benefit	Measure of Benefit (Units)	Without Project	With Project	Change Resulting from Project (e) - (d)	Unit $ Value[1]	Annual $ value (f) x (g)	Discount Factor	Discounted Benefits (h) x (i)
2009	-	-	-	-	-	$ -	$ -	1.000	$ -
2010	-	-	-	-	-	$ -	$ -	0.943	$ -
2011	Water reuse	Water available for reuse (Ac-ft/year)	0	23	23	$ 115	$ 2,645	0.890	$ 2,354
2012	"	"	0	23	23	$ 118	$ 2,724	0.840	$ 2,288
2013	"	"	0	23	23	$ 122	$ 2,806	0.792	$ 2,222
2014	"	"	0	23	23	$ 126	$ 2,890	0.747	$ 2,159
2015	"	"	0	23	23	$ 129	$ 2,977	0.705	$ 2,099
2016	"	"	0	23	23	$ 133	$ 3,066	0.665	$ 2,039
2017	"	"	0	23	23	$ 137	$ 3,158	0.627	$ 1,980
2018	"	"	0	23	23	$ 141	$ 3,253	0.592	$ 1,926
2019	"	"	0	23	23	$ 146	$ 3,351	0.558	$ 1,870
2020	"	"	0	23	23	$ 150	$ 3,451	0.527	$ 1,819
2021	"	"	0	23	23	$ 155	$ 3,555	0.497	$ 1,767
2022	"	"	0	23	23	$ 159	$ 3,661	0.469	$ 1,717
2023	"	"	0	23	23	$ 164	$ 3,771	0.442	$ 1,667
2024	"	"	0	23	23	$ 169	$ 3,884	0.417	$ 1,620
2025	"	"	0	23	23	$ 174	$ 4,001	0.394	$ 1,576
2026	"	"	0	23	23	$ 179	$ 4,121	0.371	$ 1,529
2027	"	"	0	23	23	$ 185	$ 4,244	0.350	$ 1,486
2028	"	"	0	23	23	$ 190	$ 4,372	0.331	$ 1,447
2029	"	"	0	23	23	$ 196	$ 4,503	0.312	$ 1,405
2030	"	"	0	23	23	$ 202	$ 4,638	0.294	$ 1,364
2031	"	"	0	23	23	$ 208	$ 4,777	0.278	$ 1,328
Total Present value of Discounted Benefits Based on Unit Value									**$ 37,661**

[1]Value of water per James Irrigation District; $115 per acre-foot

Value escalated at 3%/year over project life

Table 18 - Total Water Supply Benefits

(All benefits should be in 2009 dollars)
City of San Joaquin Lift Station

Total Discounted Water Supply Benefits (a)	Total Discounted Avoided Project Costs (b)	Other Discounted Water Supply Benefits (c)	Total Present Value of Discounted Benefits (d) (a) + (c) or (b) + (c)
$37,661	$0	$0	**$37,661**

Comments: