

San Salvador

San Salvador	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day	489.5	510.0	530.3	550.1	570.1	590.0	609.5	628.9	648.3	668.0	
collection amount 312-base	ton/day	572.7	596.6	620.2	643.5	666.9	690.2	713.1	735.7	758.5	781.5	
amount for 18yd3	ton/day	486.8	507.0	527.2	547.0	566.9	586.7	606.1	625.4	644.8	664.4	
amount for 11yd3	ton/day	86.0	89.6	93.0	96.6	100.0	103.6	107.1	110.3	113.7	117.2	
required number of vehicle (1)												
net working rate	90 %											
18yd3 (2001-2003)	ton/day	59.8	62.4	64.8	67.3	69.6	72.2	74.5	76.9	79.4	81.6	
11yd3 (2001-2003)	unit	13.8	14.6	15.0	15.6	16.1	16.9	17.3	17.8	18.4	18.8	
18yd3 (2004-2010)	ton/day											
11yd3 (2004-2010)	unit											
required number of vehicle (2)												
18yd3	unit	60	62	65	68	69	72	75	78	80	81	
11yd3	unit	14	16	16	16	17	17	18	19	19	19	
operatable vehicle												
18yd3	unit	36	66	31	67	68	69	72	45	77	44	
11yd3	unit	5	16	11	16	16	17	17	7	19	14	
purchase of vehicle												
18yd3	unit	30	1	36	1	1	3	3	33	3	37	
11yd3	unit	11	0	5	0	1	0	1	12	0	5	
Cost												
Investment												
Vehicle												
18yd3	75,000 US\$/vehicle	2,250,000	75,000	2,700,000	75,000	75,000	225,000	225,000	2,475,000	225,000	2,775,000	
11yd3	60,000 US\$/vehicle	660,000	0	300,000	0	60,000	0	60,000	720,000	0	300,000	
sub-total		2,910,000	75,000	3,000,000	75,000	135,000	225,000	285,000	3,195,000	225,000	3,075,000	
physical contingency	10 %	291,000	7,500	300,000	7,500	13,500	22,500	28,500	319,500	22,500	307,500	
sub-total		3,201,000	82,500	3,300,000	82,500	148,500	247,500	313,500	3,514,500	247,500	3,382,500	
VAT	13 %	416,130	10,725	429,000	10,725	19,305	32,175	40,755	456,885	32,175	439,725	
total		3,617,130	93,225	3,729,000	93,225	167,805	279,675	354,255	3,971,385	279,675	3,822,225	
design & supervise	5 %	145,500	3,750	150,000	3,750	6,750	11,250	14,250	159,750	11,250	153,750	
physical contingency	10 %	14,550	375	15,000	375	675	1,125	1,425	15,975	1,125	15,375	
sub-total		160,050	4,125	165,000	4,125	7,425	12,375	15,675	175,725	12,375	169,125	
VAT	13 %	20,807	536	21,451	536	965	1,608	2,037	22,844	1,609	21,987	
total		180,857	4,661	186,451	4,661	8,390	13,983	17,712	198,569	13,984	191,112	
total investment	US\$	3,797,987	97,886	3,915,451	97,886	176,195	293,658	371,967	4,169,954	293,659	4,013,337	
	1000US\$	3,798	98	3,915	98	176	294	372	4,170	294	4,013	17,228
O&M cost												
personnel cost												
18yd3	US\$	1,114,014	1,162,450	1,207,159	1,253,731	1,296,579	1,345,014	1,387,861	1,432,571	1,479,143	1,520,127	
11yd3	US\$	206,600	218,578	224,566	233,548	241,034	253,010	258,999	266,485	275,467	281,455	
sub-total	US\$	1,320,614	1,381,028	1,431,725	1,487,279	1,537,613	1,598,024	1,646,860	1,699,056	1,754,610	1,801,582	

San Salvador	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
physical contingency	US\$	132,063	138,101	143,173	148,728	153,761	159,803	164,687	169,906	175,461	180,159	
personnel cost total	US\$	1,452,677	1,519,129	1,574,898	1,636,007	1,691,374	1,757,827	1,811,547	1,868,962	1,930,071	1,981,741	
operation cost	US\$	181,906	189,836	197,104	204,737	211,724	219,643	226,626	233,940	241,531	248,220	
fuel 18yd3 (2001-2003)	US\$	34,973	36,990	37,988	40,366	41,682	43,749	44,772	46,087	47,622	48,669	
fuel 11yd3 (2001-2003)	US\$											
fuel 18yd3 (2004-2010)	US\$											
fuel 11yd3 (2004-2010)	US\$											
fuel total	US\$	216,879	226,826	235,092	245,103	253,406	263,392	271,398	280,027	289,153	296,889	
oil	US\$	21,689	22,683	23,510	24,509	25,341	26,339	27,140	28,003	28,916	29,689	
sub-total	US\$	238,568	249,509	258,602	269,612	278,747	289,731	298,538	308,030	318,069	326,578	
physical contingency	US\$	23,857	24,952	25,861	26,962	27,876	28,973	29,853	30,803	31,807	32,658	
sub-total	US\$	262,425	274,461	284,463	296,574	306,623	318,704	328,391	338,833	349,876	359,236	
VAT	US\$	34,115	35,680	36,981	38,555	39,861	41,431	42,690	44,049	45,484	46,700	
operation cost total	US\$	296,540	310,141	321,444	335,129	346,484	360,135	371,081	382,882	395,360	405,936	
maintenance cost	US\$	672,750	702,000	729,000	757,125	783,000	812,250	838,125	865,125	893,250	918,000	
18yd3	US\$	124,200	131,400	135,000	140,400	144,900	152,100	155,700	160,200	165,600	169,200	
11yd3	US\$	796,950	833,400	864,000	897,525	927,900	964,350	993,825	1,025,325	1,058,850	1,087,200	
sub-total	US\$	79,696	83,342	86,401	89,753	92,792	96,436	99,383	102,535	105,887	108,721	
physical contingency	US\$	876,646	916,742	950,401	987,278	1,020,692	1,060,786	1,093,208	1,127,860	1,164,737	1,195,921	
sub-total	US\$	113,964	119,177	123,551	128,347	132,689	137,902	142,117	146,621	151,416	155,469	
VAT	US\$	990,610	1,035,919	1,073,952	1,115,625	1,153,381	1,198,688	1,235,325	1,274,481	1,316,153	1,351,390	
maintenance cost total	US\$	2,739,827	2,865,189	2,970,294	3,086,761	3,191,239	3,316,650	3,417,953	3,526,325	3,641,584	3,739,067	
O&M cost total	1000US\$	2,741	2,865	2,969	3,087	3,192	3,318	3,418	3,526	3,642	3,739	32,497
Cost summary												Total
collection amount 365-base	ton/day	489.5	510.0	530.3	550.1	570.1	590.0	609.5	628.9	648.3	668.0	
collection amount	1000ton/year	179	186	194	201	208	215	222	230	237	244	2,116
Investment	1000US\$/year	3,798	98	3,915	98	176	294	372	4,170	294	4,013	17,228
O&M	1000US\$/year	2,741	2,865	2,969	3,087	3,192	3,318	3,418	3,526	3,642	3,739	32,497
total	1000US\$/year	6,539	2,963	6,884	3,185	3,368	3,612	3,790	7,696	3,936	7,752	49,725
Investment per ton	US\$/ton	21.22	0.53	20.18	0.49	0.85	1.37	1.68	18.13	1.24	16.45	8.14
O&M per ton	US\$/ton	15.31	15.40	15.30	15.36	15.35	15.43	15.40	15.33	15.37	15.32	15.36
total	US\$/ton	36.53	15.93	35.48	15.85	16.20	16.80	17.08	33.46	16.61	31.77	23.50

01SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day	131.6	137.1	142.6	147.9	153.3	158.6	163.9	169.1	174.3	179.6	
collection amount 312-base	ton/day	154.0	160.4	166.8	173.0	179.3	185.5	191.7	197.8	203.9	210.1	
amount for 18yd3	ton/day	130.9	136.3	141.8	147.1	152.4	157.7	162.9	168.1	173.3	178.6	
amount for 11yd3	ton/day	23.1	24.1	25.0	26.0	26.9	27.8	28.8	29.7	30.6	31.5	
required number of vehicle (1)												
net working rate	90 %											
18yd3 (2001-2004)	9.3 ton/day	15.6	16.3	16.9	17.6	18.2	18.8	19.5	20.1	20.7	21.3	
11yd3 (2001-2004)	7.1 ton/day	3.6	3.8	3.9	4.1	4.2	4.4	4.5	4.6	4.8	4.9	
18yd3 (2005-2010)	9.3 ton/day											
11yd3 (2005-2010)	7.1 ton/day											
required number of vehicle (2)												
18yd3	unit	16	16	17	18	18	19	20	20	21	21	
11yd3	unit	4	4	4	4	4	4	5	5	5	5	
operatable vehicle												
18yd3	unit	10	18	8	18	18	18	19	12	20	11	
11yd3	unit	1	4	3	4	4	4	4	2	5	4	
purchase of vehicle												
18yd3	unit	8	0	10	0	0	1	1	8	1	10	
11yd3	unit	3	0	1	0	0	0	1	3	0	1	
Cost												
Investment												
Vehicle												
18yd3	US\$	600,000	0	750,000	0	0	75,000	75,000	600,000	75,000	750,000	
11yd3	US\$	180,000	0	60,000	0	0	0	60,000	180,000	0	60,000	
sub-total	US\$	780,000	0	810,000	0	0	75,000	135,000	780,000	75,000	810,000	
physical contingency	10 %	78,000	0	81,000	0	0	7,500	13,500	78,000	7,500	81,000	
sub-total	US\$	858,000	0	891,000	0	0	82,500	148,500	858,000	82,500	891,000	
VAT	13 %	111,540	0	115,830	0	0	10,725	19,305	111,540	10,725	115,830	
total	US\$	969,540	0	1,006,830	0	0	93,225	167,805	969,540	93,225	1,006,830	
design & supervise	5 %	39,000	0	40,500	0	0	3,750	6,750	39,000	3,750	40,500	
physical contingency	10 %	3,900	0	4,050	0	0	375	675	3,900	375	4,050	
sub-total	US\$	42,900	0	44,550	0	0	4,125	7,425	42,900	4,125	44,550	
VAT	13 %	5,577	0	5,792	0	0	536	965	5,577	536	5,792	
total	US\$	48,477	0	50,342	0	0	4,661	8,390	48,477	4,661	50,342	
total investment	US\$	1,018,017	0	1,057,172	0	0	97,886	176,195	1,018,017	97,886	1,057,172	
	1000US\$	1018	0	1057	0	0	98	176	1018	98	1057	4,522
O&M cost												
personnel cost												
18yd3	US\$	290,612	303,653	314,830	327,870	339,048	350,225	363,266	374,443	385,620	396,798	
11yd3	US\$	53,896	56,890	58,387	61,381	62,878	65,872	67,370	68,867	71,861	73,358	
sub-total	US\$	344,508	360,543	373,217	389,251	401,926	416,097	430,636	443,310	457,481	470,156	
physical contingency	10 %	34,451	36,054	37,322	38,925	40,193	41,610	43,064	44,331	45,748	47,016	
personnel cost total	US\$	378,959	396,597	410,539	428,176	442,119	457,707	473,700	487,641	503,229	517,172	

01SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
operation cost												
fuel 18yd3 (2001-2004)	2,936 US\$/vehicle	45,802	47,857	49,618	51,674	53,435	55,197	57,252	59,014	60,775	62,537	
fuel 11yd3 (2001-2004)	2,443 US\$/vehicle	8,795	9,283	9,528	10,016	10,261	10,749	10,994	11,238	11,726	11,971	
fuel 18yd3 (2005-2010)	2,936 US\$/vehicle											
fuel 11yd3 (2005-2010)	2,443 US\$/vehicle											
fuel total		54,597	57,140	59,146	61,690	63,696	65,946	68,246	70,252	72,501	74,508	
oil	10 % of fuel	5,460	5,714	5,915	6,169	6,370	6,595	6,825	7,025	7,250	7,451	
sub-total		60,057	62,854	65,061	67,859	70,066	72,541	75,071	77,277	79,751	81,959	
physical contingency	10 %	6,006	6,285	6,506	6,786	7,007	7,254	7,507	7,728	7,975	8,196	
sub-total		66,063	69,139	71,567	74,645	77,073	79,795	82,578	85,005	87,726	90,155	
VAT	13 %	8,588	8,988	9,304	9,704	10,019	10,373	10,735	11,051	11,404	11,720	
operation cost total		74,651	78,127	80,871	84,349	87,092	90,168	93,313	96,056	99,130	101,875	
maintenance cost												
18yd3	15 % of vehicle	175,500	183,375	190,125	198,000	204,750	211,500	219,375	226,125	232,875	239,625	
11yd3	15 % of vehicle	32,400	34,200	35,100	36,900	37,800	39,600	40,500	41,400	43,200	44,100	
sub-total		207,900	217,575	225,225	234,900	242,550	251,100	259,875	267,525	276,075	283,725	
physical contingency	10 %	20,790	21,758	22,523	23,490	24,255	25,110	25,988	26,753	27,608	28,373	
sub-total		228,690	239,333	247,748	258,390	266,805	276,210	285,863	294,278	303,683	312,098	
VAT	13 %	29,730	31,113	32,207	33,591	34,685	35,907	37,162	38,256	39,479	40,573	
maintenance cost total		258,420	270,446	279,955	291,981	301,490	312,117	323,025	332,534	343,162	352,671	
O&M cost total		712,030	745,170	771,365	804,506	830,701	859,992	890,038	916,231	945,521	971,718	8,448
	1000US\$	712	745	771	805	831	860	890	916	946	972	
Cost summary												Total
collection amount	ton/day	131.6	137.1	142.6	147.9	153.3	158.6	163.9	169.1	174.3	179.6	
collection amount	1000ton/year	48	50	52	54	56	58	60	62	64	66	570
Investment	1000US\$/year	1,018	0	1,057	0	0	98	176	1,018	98	1,057	4,522
O&M	1000US\$/year	712	745	771	805	831	860	890	916	946	972	8,448
total	1000US\$/year	1,730	745	1,828	805	831	958	1,066	1,934	1,044	2,029	12,970
Investment per ton	US\$/ton	21.21	0.00	20.33	0.00	0.00	1.69	2.93	16.42	1.53	16.02	7.93
O&M per ton	US\$/ton	14.83	14.90	14.83	14.91	14.84	14.83	14.83	14.77	14.78	14.73	14.82
total	US\$/ton	36.04	14.90	35.16	14.91	14.84	16.52	17.76	31.19	16.31	30.75	22.75

02SS

02SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
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02SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day	113.2	118.0	122.6	127.3	131.9	136.5	141.0	145.5	150.0	154.6	
collection amount 312-base	ton/day	132.4	138.0	143.4	148.9	154.3	159.7	165.0	170.2	175.5	180.9	
amount for 18yd3	ton/day	112.5	117.3	121.9	126.6	131.2	135.7	140.3	144.7	149.2	153.8	
amount for 11yd3	ton/day	19.9	20.7	21.5	22.3	23.1	24.0	24.8	25.5	26.3	27.1	
required number of vehicle (1)												
net working rate	90 %											
18yd3 (2001-1010)	unit	13.2	13.7	14.3	14.8	15.3	15.9	16.4	16.9	17.5	18.0	
11yd3(2001-2010)	unit	3.0	3.2	3.3	3.4	3.5	3.7	3.8	3.9	4.0	4.1	
required number of vehicle (2)												
18yd3	unit	13	14	14	15	15	16	16	17	18	18	
11yd3	unit	3	3	3	3	4	4	4	4	4	4	
operatable vehicle												
18yd3	unit	9	13	5	14	15	15	16	12	16	9	
11yd3	unit	1	3	2	3	3	4	4	2	4	3	
purchase of vehicle												
18yd3	unit	4	1	9	1	0	1	0	5	2	9	
11yd3	unit	2	0	1	0	1	0	0	2	0	1	
Cost												
Investment												
Vehicle												
18yd3	US\$	300,000	75,000	675,000	75,000	0	75,000	0	375,000	150,000	675,000	
11yd3	US\$	120,000	0	60,000	0	60,000	0	0	120,000	0	60,000	
sub-total	US\$	420,000	75,000	735,000	75,000	60,000	75,000	0	495,000	150,000	735,000	
physical contingency	10 %											
sub-total	US\$	462,000	82,500	808,500	82,500	66,000	82,500	0	544,500	165,000	808,500	
VAT	13 %											
total	US\$	60,060	10,725	105,105	10,725	8,580	10,725	0	70,785	21,450	105,105	
	US\$	522,060	93,225	913,605	93,225	74,580	93,225	0	615,285	186,450	913,605	
design & supervise	5 %											
physical contingency	10 %											
sub-total	US\$	21,000	3,750	36,750	3,750	3,000	3,750	0	24,750	7,500	36,750	
VAT	13 %											
total	US\$	2,100	375	3,675	375	300	375	0	2,475	750	3,675	
	US\$	23,100	4,125	40,425	4,125	3,300	4,125	0	27,225	8,250	40,425	
total investment	US\$	548,163	97,886	959,285	97,886	78,309	97,886	0	646,049	195,773	959,285	
	1000US\$	548	98	959	98	78	98	0	646	196	959	3,680
O&M cost												
personnel cost												
18yd3	US\$	245,903	255,217	266,395	275,709	285,024	296,201	305,516	314,830	326,008	335,322	
11yd3	US\$	44,913	47,907	49,404	50,901	52,399	55,393	56,890	58,387	59,884	61,381	
sub-total	US\$	290,816	303,124	315,799	326,610	337,423	351,594	362,406	373,217	385,892	396,703	
physical contingency	10 %											
personnel cost total	US\$	29,082	30,312	31,580	32,661	33,742	35,159	36,241	37,322	38,589	39,670	
	US\$	319,898	333,436	347,379	359,271	371,165	386,753	398,647	410,539	424,481	436,373	
operation cost												
fuel 18yd3 (2001-2010)	US\$	37,224	38,634	40,326	41,736	43,146	44,838	46,248	47,658	49,350	50,760	
fuel 11yd3 (2001-2010)	US\$	7,047	7,517	7,752	7,987	8,222	8,691	8,926	9,161	9,396	9,631	

02SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
	fuel total	44,271	46,151	48,078	49,723	51,368	53,529	55,174	56,819	58,746	60,391	
	oil	4,427	4,615	4,808	4,972	5,137	5,353	5,517	5,682	5,875	6,039	
	sub-total	48,698	50,766	52,886	54,695	56,505	58,882	60,691	62,501	64,621	66,430	
	physical contingency	4,870	5,077	5,289	5,470	5,651	5,888	6,069	6,250	6,462	6,643	
	sub-total	53,568	55,843	58,175	60,165	62,156	64,770	66,760	68,751	71,083	73,073	
	VAT	6,964	7,260	7,563	7,821	8,080	8,420	8,679	8,938	9,241	9,499	
	operation cost total	60,532	63,103	65,738	67,986	70,236	73,190	75,439	77,689	80,324	82,572	
	maintenance cost											
	18yd3	148,500	154,125	160,875	166,500	172,125	178,875	184,500	190,125	196,875	202,500	
	11yd3	27,000	28,800	29,700	30,600	31,500	33,300	34,200	35,100	36,000	36,900	
	sub-total	175,500	182,925	190,575	197,100	203,625	212,175	218,700	225,225	232,875	239,400	
	physical contingency	17,550	18,293	19,058	19,710	20,363	21,218	21,870	22,523	23,288	23,940	
	sub-total	193,050	201,218	209,633	216,810	223,988	233,393	240,570	247,748	256,163	263,340	
	VAT	25,097	26,158	27,252	28,185	29,118	30,341	31,274	32,207	33,301	34,234	
	maintenance cost total	218,147	227,376	236,885	244,995	253,106	263,734	271,844	279,955	289,464	297,574	
	O&M cost total	598,577	623,915	650,002	672,252	694,507	723,677	745,930	768,183	794,269	816,519	7,089
	1000US\$	599	624	650	672	695	724	746	768	794	817	
Cost summary	collection amount	113.2	118.0	122.6	127.3	131.9	136.5	141.0	145.5	150.0	154.6	Total
	collection amount	41	43	45	46	48	50	51	53	55	56	488
Investment	1000US\$/year	548	98	959	98	78	98	0	646	196	959	3,680
O&M	1000US\$/year	599	624	650	672	695	724	746	768	794	817	7,089
total	1000US\$/year	1,147	722	1,609	770	773	822	746	1,414	990	1,776	10,769
Investment per ton	US\$/ton	13.37	2.28	21.31	2.13	1.63	1.96	0.00	12.19	3.56	17.13	7.54
O&M per ton	US\$/ton	14.61	14.51	14.44	14.61	14.48	14.48	14.63	14.49	14.44	14.59	14.53
total	US\$/ton	27.98	16.79	35.75	16.74	16.11	16.44	14.63	26.68	18.00	31.72	22.07

03SS

03SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010 Total
collection amount 365-base	ton/day	55.1	57.4	59.7	61.9	64.2	66.4	68.6	70.8	73.0	75.2
collection amount 312-base	ton/day	64.5	67.2	69.8	72.4	75.1	77.7	80.3	82.8	85.4	88.0
amount for 18yd3	ton/day	54.8	57.1	59.3	61.5	63.8	66.0	68.3	70.4	72.6	74.8
amount for 11yd3	ton/day	9.7	10.1	10.5	10.9	11.3	11.7	12.0	12.4	12.8	13.2
required number of vehicle (1)											
net working rate	90 %										
18yd3 (2001-2003)	9.2 ton/day	6.6	6.9	7.2	7.4	7.7	8.0	8.2	8.5	8.8	9.0
11yd3 (2001-2003)	7.0 ton/day	1.5	1.6	1.7	1.7	1.8	1.9	1.9	2.0	2.0	2.1
18yd3 (2004-2010)	9.2 ton/day										
11yd3 (2004-2010)	7.0 ton/day										
required number of vehicle (2)											
18yd3	unit	7	7	7	7	8	8	8	9	9	9
11yd3	unit	2	2	2	2	2	2	2	2	2	2
operatable vehicle											
18yd3	unit	4	7	3	7	7	8	8	5	9	5
11yd3	unit	1	2	1	2	2	2	2	1	2	1
purchase of vehicle											
18yd3	unit	3	0	4	0	1	0	0	4	0	4
11yd3	unit	1	0	1	0	0	0	0	1	0	1
Cost											
Investment											
Vehicle											
18yd3	US\$	225,000	0	300,000	0	75,000	0	0	300,000	0	300,000
11yd3	US\$	60,000	0	60,000	0	0	0	0	60,000	0	60,000
sub-total	US\$	285,000	0	360,000	0	75,000	0	0	360,000	0	360,000
physical contingency	10 %	28,500	0	36,000	0	7,500	0	0	36,000	0	36,000
sub-total	US\$	313,500	0	396,000	0	82,500	0	0	396,000	0	396,000
VAT	13 %	40,755	0	51,480	0	10,725	0	0	51,480	0	51,480
total	US\$	354,255	0	447,480	0	93,225	0	0	447,480	0	447,480
design & supervise	5 %	14,250	0	18,000	0	3,750	0	0	18,000	0	18,000
physical contingency	10 %	1,425	0	1,800	0	375	0	0	1,800	0	1,800
sub-total	US\$	15,675	0	19,800	0	4,125	0	0	19,800	0	19,800
VAT	13 %	2,038	0	2,574	0	536	0	0	2,574	0	2,574
total	US\$	17,713	0	22,374	0	4,661	0	0	22,374	0	22,374
total investment	US\$	371,968	0	469,854	0	97,886	0	0	469,854	0	469,854
	1000US\$	372	0	470	0	98	0	0	470	0	470
O&M cost											
personnel cost											
18yd3	US\$	122,951	128,540	134,129	137,855	143,443	149,032	152,758	158,347	163,935	167,661
11yd3	US\$	22,457	23,954	25,451	25,451	26,948	28,445	28,445	29,942	29,942	31,439
sub-total	US\$	145,408	152,494	159,580	163,306	170,391	177,477	181,203	188,289	193,877	199,100

03SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
physical contingency	10 %	14,541	15,249	15,958	16,331	17,039	17,748	18,120	18,829	19,388	19,910	
personnel cost total		159,949	167,743	175,538	179,637	187,430	195,225	199,323	207,118	213,265	219,010	
operation cost												
fuel 18yd3 (2001-2003)	2,973 US\$/vehicle	19,622	20,514	21,406	22,000	22,892	23,784	24,379	25,271	26,162	26,757	
fuel 11yd3 (2001-2003)	2,477 US\$/vehicle	3,716	3,963	4,211	5,054	5,351	5,649	5,649	5,946	5,946	6,243	
fuel 18yd3 (2004-2010)	2,973 US\$/vehicle											
fuel 11yd3 (2004-2010)	2,973 US\$/vehicle											
fuel total		23,338	24,477	25,617	27,054	28,243	29,433	30,028	31,217	32,108	33,000	
oil		2,334	2,448	2,562	2,705	2,824	2,943	3,003	3,122	3,211	3,300	
sub-total	10 % of fuel	25,672	26,925	28,179	29,759	31,067	32,376	33,031	34,339	35,319	36,300	
physical contingency	10 %	2,567	2,693	2,818	2,976	3,107	3,238	3,303	3,434	3,532	3,630	
sub-total		28,239	29,618	30,997	32,735	34,174	35,614	36,334	37,773	38,851	39,930	
VAT	13 %	3,671	3,850	4,030	4,256	4,443	4,630	4,723	4,910	5,051	5,191	
operation cost total		31,910	33,468	35,027	36,991	38,617	40,244	41,057	42,683	43,902	45,121	
maintenance cost												
18yd3	15 % of vehicle	74,250	77,625	81,000	83,250	86,625	90,000	92,250	95,625	99,000	101,250	
11yd3	15 % of vehicle	13,500	14,400	15,300	15,300	16,200	17,100	17,100	18,000	18,000	18,900	
sub-total		87,750	92,025	96,300	98,550	102,825	107,100	109,350	113,625	117,000	120,150	
physical contingency	10 %	8,775	9,203	9,630	9,855	10,283	10,710	10,935	11,363	11,700	12,015	
sub-total		96,525	101,228	105,930	108,405	113,108	117,810	120,285	124,988	128,700	132,165	
VAT	13 %	12,548	13,160	13,771	14,093	14,704	15,315	15,637	16,248	16,731	17,181	
maintenance cost total		109,073	114,388	119,701	122,498	127,812	133,125	135,922	141,236	145,431	149,346	
O&M cost total		300,932	315,599	330,266	339,126	353,859	368,594	376,302	391,037	402,598	413,477	3,592
		301	316	330	339	354	369	376	391	403	413	
Cost summary												Total
collection amount 365-base		55.1	57.4	59.7	61.9	64.2	66.4	68.6	70.8	73.0	75.2	
collection amount	ton/day	20	21	22	23	23	24	25	26	27	27	238
Investment												
O&M	1000US\$/year	372	0	470	0	98	0	0	470	0	470	1,880
total	1000US\$/year	301	316	330	339	354	369	376	391	403	413	3,592
	1000US\$/year	673	316	800	339	452	369	376	861	403	883	5,472
Investment per ton	US\$/ton	18.60	0.00	21.36	0.00	4.26	0.00	0.00	18.08	0.00	17.41	7.90
O&M per ton	US\$/ton	15.05	15.05	15.00	14.74	15.39	15.38	15.04	15.04	14.93	15.30	15.09
total	US\$/ton	33.65	15.05	36.36	14.74	19.65	15.38	15.04	33.12	14.93	32.71	22.99

04SS

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010 Total
04SS											
collection amount 365-base	ton/day	47.0	49.0	50.9	52.8	54.7	56.7	58.5	60.4	62.2	64.1
collection amount 312-base	ton/day	55.0	57.3	59.5	61.8	64.0	66.3	68.4	70.7	72.8	75.0
amount for 18yd3	ton/day	46.8	48.7	50.6	52.5	54.4	56.4	58.1	60.1	61.9	63.8
amount for 11yd3	ton/day	8.3	8.6	8.9	9.3	9.6	9.9	10.3	10.6	10.9	11.3
required number of vehicle (1)											
net working rate	90 %										
18yd3 (2001-2003)	8.5 ton/day	6.1	6.4	6.6	6.9	7.1	7.4	7.6	7.9	8.1	8.3
11yd3 (2001-2003)	6.5 ton/day	1.4	1.5	1.5	1.6	1.6	1.7	1.8	1.8	1.9	1.9
18yd3 (2004-2010)	8.5 ton/day										
11yd3 (2004-2010)	6.5 ton/day										
required number of vehicle (2)											
18yd3	unit	6	6	7	7	7	7	8	8	8	8
11yd3	unit	1	2	2	2	2	2	2	2	2	2
operatable vehicle											
18yd3	unit	3	7	4	7	7	7	7	4	8	5
11yd3	unit	1	2	1	2	2	2	2	1	2	1
purchase of vehicle											
18yd3	unit	4	0	3	0	0	0	1	4	0	3
11yd3	unit	1	0	1	0	0	0	0	1	0	1
Cost											
Investment											
Vehicle	US\$	300,000	0	225,000	0	0	0	75,000	300,000	0	225,000
18yd3	US\$	60,000	0	60,000	0	0	0	0	60,000	0	60,000
11yd3	US\$	360,000	0	285,000	0	0	0	75,000	360,000	0	285,000
sub-total	US\$	36,000	0	28,500	0	0	0	7,500	36,000	0	28,500
physical contingency	US\$	396,000	0	313,500	0	0	0	82,500	396,000	0	313,500
sub-total	US\$	51,480	0	40,755	0	0	0	10,725	51,480	0	40,755
VAT	US\$	447,480	0	354,255	0	0	0	93,225	447,480	0	354,255
total	US\$	18,000	0	14,250	0	0	0	3,750	18,000	0	14,250
design & supervise	US\$	1,800	0	1,425	0	0	0	375	1,800	0	1,425
physical contingency	US\$	19,800	0	15,675	0	0	0	4,125	19,800	0	15,675
sub-total	US\$	2,574	0	2,038	0	0	0	536	2,574	0	2,038
VAT	US\$	22,374	0	17,713	0	0	0	4,661	22,374	0	17,713
total	US\$	469,854	0	371,968	0	0	0	97,886	469,854	0	371,968
total investment	1000US\$	470	0	372	0	0	0	98	470	0	372
O&M cost											
personnel cost	US\$	113,637	119,226	122,951	128,540	132,266	137,855	141,580	147,169	150,895	154,621
18yd3	US\$	20,959	22,457	22,457	23,954	23,954	25,451	26,948	26,948	28,445	28,445
11yd3	US\$	134,596	141,683	145,408	152,494	156,220	163,306	168,528	174,117	179,340	183,066
sub-total	US\$										

04SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010 Total
physical contingency	US\$	13,460	14,168	14,541	15,249	15,622	16,331	16,853	17,412	17,934	18,307
personnel cost total	US\$	148,056	155,851	159,949	167,743	171,842	179,637	185,381	191,529	197,274	201,373
operation cost	US\$	19,984	20,966	21,622	22,604	23,260	24,242	24,898	25,880	26,536	27,191
fuel 18yd3 (2001-2003)	US\$	3,822	4,095	4,095	4,368	4,368	4,641	4,914	4,914	5,187	5,187
fuel 11yd3 (2001-2003)	US\$										
fuel 18yd3 (2004-2010)	US\$										
fuel 11yd3 (2004-2010)	US\$										
fuel total	US\$	23,806	25,061	25,717	26,972	27,628	28,883	29,812	30,794	31,723	32,378
oil	US\$	2,381	2,506	2,572	2,697	2,763	2,888	2,981	3,079	3,172	3,238
sub-total	US\$	26,187	27,567	28,289	29,669	30,391	31,771	32,793	33,873	34,895	35,616
physical contingency	US\$	2,619	2,757	2,829	2,967	3,039	3,177	3,279	3,387	3,490	3,562
sub-total	US\$	28,806	30,324	31,118	32,636	33,430	34,948	36,072	37,260	38,385	39,178
VAT	US\$	3,745	3,942	4,045	4,243	4,346	4,543	4,689	4,844	4,990	5,093
operation cost total	US\$	32,551	34,266	35,163	36,879	37,776	39,491	40,761	42,104	43,375	44,271
maintenance cost	US\$	68,625	72,000	74,250	77,625	79,875	83,250	85,500	88,875	91,125	93,375
18yd3	US\$	12,600	13,500	13,500	14,400	14,400	15,300	16,200	16,200	17,100	17,100
11yd3	US\$	81,225	85,500	87,750	92,025	94,275	98,550	101,700	105,075	108,225	110,475
sub-total	US\$	8,123	8,550	8,775	9,203	9,428	9,855	10,170	10,508	10,823	11,048
physical contingency	US\$	89,348	94,050	96,525	101,228	103,703	108,405	111,870	115,583	119,048	121,523
sub-total	US\$	11,615	12,227	12,548	13,160	13,481	14,093	14,543	15,026	15,476	15,798
VAT	US\$	100,963	106,277	109,073	114,388	117,184	122,498	126,413	130,609	134,524	137,321
maintenance cost total	US\$	281,570	296,394	304,185	319,010	326,802	341,626	352,555	364,242	375,173	382,965
O&M cost total	1000US\$	282	296	304	319	327	342	353	364	375	383
Cost summary	ton/day	47.0	49.0	50.9	52.8	54.7	56.7	58.5	60.4	62.2	64.1
collection amount 365-base	1000ton/year	17	18	19	19	20	21	21	22	23	23
collection amount	1000US\$/year	470	0	372	0	0	0	98	470	0	372
Investment	1000US\$/year	282	296	304	319	327	342	353	364	375	383
O&M	1000US\$/year	752	296	676	319	327	342	451	834	375	755
total	1000US\$/year	27.65	0.00	19.58	0.00	0.00	0.00	4.67	21.36	0.00	16.17
Investment per ton	US\$/ton	16.59	16.44	16.00	16.79	16.35	16.29	16.81	16.55	16.30	16.65
O&M per ton	US\$/ton	44.24	16.44	35.58	16.79	16.35	16.29	21.48	37.91	16.30	32.82
total	US\$/ton										25.26
											3,345
											Total
											64.1
											23
											203
											372
											1,782
											3,345
											5,127

05SS

05SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day	142.6	148.5	154.5	160.2	166.0	171.8	177.5	183.1	188.8	194.5	
collection amount 312-base	ton/day	166.8	173.7	180.7	187.4	194.2	201.0	207.7	214.2	220.9	227.5	
amount for 18yd3	ton/day	141.8	147.6	153.6	159.3	165.1	170.9	176.5	182.1	187.8	193.4	
amount for 11yd3	ton/day	25.0	26.1	27.1	28.1	29.1	30.2	31.2	32.1	33.1	34.1	
required number of vehicle (1)												
net working rate	90 %											
18yd3 (2001-2004)	8.6 ton/day	18.3	19.1	19.8	20.6	21.3	22.1	22.8	23.5	24.3	25.0	
11yd3 (2001-2004)	6.5 ton/day	4.3	4.5	4.6	4.8	5.0	5.2	5.3	5.5	5.7	5.8	
18yd3 (2005-2010)	8.6 ton/day											
11yd3 (2005-2010)	6.5 ton/day											
required number of vehicle (2)												
18yd3	unit	18	19	20	21	21	22	23	24	24	25	
11yd3	unit	4	5	5	5	5	5	5	6	6	6	
operatable vehicle												
18yd3	unit	10	21	11	21	21	21	22	12	24	14	
11yd3	unit	1	5	4	5	5	5	5	1	6	5	
purchase of vehicle												
18yd3	unit	11	0	10	0	0	1	1	12	0	11	
11yd3	unit	4	0	1	0	0	0	0	5	0	1	
Cost												
Investment												
Vehicle												
18yd3	75,000 US\$/vehicle	825,000	0	750,000	0	0	75,000	75,000	900,000	0	825,000	
11yd3	60,000 US\$/vehicle	240,000	0	60,000	0	0	0	0	300,000	0	60,000	
sub-total		1,065,000	0	810,000	0	0	75,000	75,000	1,200,000	0	885,000	
physical contingency	10 %	106,500	0	81,000	0	0	7,500	7,500	120,000	0	88,500	
sub-total		1,171,500	0	891,000	0	0	82,500	82,500	1,320,000	0	973,500	
VAT	13 %	152,295	0	115,830	0	0	10,725	10,725	171,600	0	126,555	
total		1,323,795	0	1,006,830	0	0	93,225	93,225	1,491,600	0	1,100,055	
design & supervise	5 %	53,250	0	40,500	0	0	3,750	3,750	60,000	0	44,250	
physical contingency	10 %	5,325	0	4,050	0	0	375	375	6,000	0	4,425	
sub-total		58,575	0	44,550	0	0	4,125	4,125	66,000	0	48,675	
VAT	13 %	7,615	0	5,792	0	0	536	536	8,580	0	6,328	
total		66,190	0	50,342	0	0	4,661	4,661	74,580	0	55,003	
total investment		1,389,985	0	1,057,172	0	0	97,886	97,886	1,566,180	0	1,155,058	
	1000US\$	1390	0	1057	0	0	98	98	1566	0	1155	5,364
O&M cost												
personnel cost												
18yd3	US\$	340,911	355,814	368,854	363,757	396,798	411,701	424,741	437,782	452,685	465,725	
11yd3	US\$	64,375	67,370	68,867	71,861	74,855	77,849	79,346	82,341	85,335	86,832	
sub-total	US\$	405,286	423,184	437,721	455,618	471,653	489,550	504,087	520,123	538,020	552,557	

05SS	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
physical contingency	US\$	40,529	42,318	43,772	45,562	47,165	48,955	50,409	52,012	53,802	55,256	
personnel cost total	US\$	445,815	465,502	481,493	501,180	518,818	538,505	554,496	572,135	591,822	607,813	
operation cost												
fuel 18yd3 (2001-2004)	US\$	59,274	61,865	64,132	66,723	68,991	71,582	73,849	76,117	78,708	80,975	
fuel 11yd3 (2001-2004)	US\$	11,593	12,132	12,402	12,941	13,480	14,019	14,289	14,828	15,367	15,637	
fuel 18yd3 (2005-2010)	US\$											
fuel 11yd3 (2005-2010)	US\$											
fuel total	US\$	70,867	73,997	76,534	79,664	82,471	85,601	88,138	90,945	94,075	96,612	
oil	US\$	7,087	7,400	7,653	7,966	8,247	8,560	8,814	9,095	9,408	9,661	
sub-total	US\$	77,954	81,397	84,187	87,630	90,718	94,161	96,952	100,040	103,483	106,273	
physical contingency	US\$	7,795	8,140	8,419	8,763	9,072	9,416	9,695	10,004	10,348	10,627	
sub-total	US\$	85,749	89,537	92,606	96,393	99,790	103,577	106,647	110,044	113,831	116,900	
VAT	US\$	11,147	11,640	12,039	12,531	12,973	13,465	13,864	14,306	14,798	15,197	
operation cost total	US\$	96,896	101,177	104,645	108,924	112,763	117,042	120,511	124,350	128,629	132,097	
maintenance cost												
18yd3	US\$	205,875	214,875	222,750	231,750	239,625	248,625	256,500	264,375	273,375	281,250	
11yd3	US\$	38,700	40,500	41,400	43,200	45,000	46,800	47,700	49,500	51,300	52,200	
sub-total	US\$	244,575	255,375	264,150	274,950	284,625	295,425	304,200	313,875	324,675	333,450	
physical contingency	US\$	24,458	25,538	26,415	27,495	28,463	29,543	30,420	31,388	32,468	33,345	
sub-total	US\$	269,033	280,913	290,565	302,445	313,088	324,968	334,620	345,263	357,143	366,795	
VAT	US\$	34,974	36,519	37,773	39,318	40,701	42,246	43,501	44,884	46,429	47,683	
maintenance cost total	US\$	304,007	317,432	328,338	341,763	353,789	367,214	378,121	390,147	403,572	414,478	
O&M cost total	US\$	846,718	884,111	914,476	951,867	985,370	1,022,761	1,053,128	1,086,632	1,124,023	1,154,388	
	1000US\$	847	884	914	952	985	1,023	1,053	1,087	1,124	1,154	10,023
Cost summary												
collection amount 365-base	ton/day	142.6	148.5	154.5	160.2	166.0	171.8	177.5	183.1	188.8	194.5	Total
collection amount	1000ton/year	52	54	56	58	61	63	65	67	69	71	616
Investment	1000US\$/year	1,390	0	1,057	0	0	98	98	1,566	0	1,155	5,364
O&M	1000US\$/year	847	884	914	952	985	1,023	1,053	1,087	1,124	1,154	10,023
total	1000US\$/year	2,237	884	1,971	952	985	1,121	1,151	2,653	1,124	2,309	15,387
Investment per ton	US\$/ton	26.73	0.00	18.88	0.00	0.00	1.56	1.51	23.37	0.00	16.27	8.71
O&M per ton	US\$/ton	16.29	16.37	16.32	16.41	16.15	16.24	16.20	16.22	16.29	16.25	16.27
total	US\$/ton	43.02	16.37	35.20	16.41	16.15	17.80	17.71	39.59	16.29	32.52	24.98

Mejicanos

Mejicanos	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010 Total
collection amount 365-base	ton/day	72.0	74.2	76.5	78.7	80.8	83.0	84.9	87.0	89.0	91.0
collection amount 312-base	ton/day	84.2	86.8	89.5	92.1	94.5	97.1	99.3	101.8	104.1	106.5
amount for 18yd3	ton/day	71.6	73.8	76.1	78.3	80.3	82.5	84.4	86.5	88.5	90.5
amount for 11yd3	ton/day	12.6	13.0	13.4	13.8	14.2	14.6	14.9	15.3	15.6	16.0
required number of vehicle (1)											
net working rate	90 %										
18yd3 (2001-2004)	10.0 ton/day	8.0	8.2	8.5	8.7	8.9	9.2	9.4	9.6	9.8	10.1
11yd3 (2001-2004)	7.7 ton/day	1.8	1.9	1.9	2.0	2.0	2.1	2.2	2.2	2.3	2.3
18yd3 (2005-2010)	10.0 ton/day										
11yd3 (2005-2010)	7.7 ton/day										
required number of vehicle (2)											
18yd3	unit	8	8	9	9	9	9	9	10	10	10
11yd3	unit	2	2	2	2	2	2	2	2	2	2
operatable vehicle											
18yd3	unit	5	9	4	9	9	9	9	5	10	5
11yd3	unit	2	2	0	2	2	2	2	2	2	0
purchase of vehicle											
18yd3	unit	4	0	5	0	0	0	0	5	0	5
11yd3	unit	0	0	2	0	0	0	0	0	0	2
Cost Investment											
Vehicle											
18yd3	US\$	300,000	0	375,000	0	0	0	0	375,000	0	375,000
11yd3	US\$	0	0	120,000	0	0	0	0	0	0	120,000
sub-total	US\$	300,000	0	495,000	0	0	0	0	375,000	0	495,000
physical contingency	10 %	30,000	0	49,500	0	0	0	0	37,500	0	49,500
sub-total	US\$	330,000	0	544,500	0	0	0	0	412,500	0	544,500
VAT	13 %	42,900	0	70,785	0	0	0	0	53,625	0	70,785
total	US\$	372,900	0	615,285	0	0	0	0	466,125	0	615,285
design & supervise	5 %	15,000	0	24,750	0	0	0	0	18,750	0	24,750
physical contingency	10 %	1,500	0	2,475	0	0	0	0	1,875	0	2,475
sub-total	US\$	16,500	0	27,225	0	0	0	0	20,625	0	27,225
VAT	13 %	2,145	0	3,539	0	0	0	0	2,681	0	3,539
total	US\$	18,645	0	30,764	0	0	0	0	23,306	0	30,764
total investment	US\$	391,545	0	646,049	0	0	0	0	489,431	0	646,049
	1000US\$	392	0	646	0	0	0	0	489	0	646
O&M cost											
personnel cost											
18yd3	US\$	149,032	152,758	158,347	162,072	165,798	171,387	175,113	178,838	182,564	188,153
11yd3	US\$	26,948	28,445	28,445	29,942	29,942	31,439	32,936	32,936	34,433	34,433
sub-total	US\$	175,980	181,203	186,792	192,014	195,740	202,826	208,049	211,774	216,997	222,586
physical contingency	10 %	17,598	18,120	18,679	19,201	19,574	20,283	20,805	21,177	21,700	22,259
personnel cost total	US\$	193,578	199,323	205,471	211,215	215,314	223,109	228,854	232,951	238,697	244,845
											2,173

Mejicanos	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
operation cost												
fuel 18yd3 (2001-2004)	2,593 US\$/vehicle	20,744	21,263	22,041	22,559	23,078	23,856	24,374	24,893	25,411	26,189	
fuel 11yd3 (2001-2004)	2,159 US\$/vehicle	3,886	4,102	4,102	4,318	4,318	4,534	4,750	4,750	4,966	4,966	
fuel 18yd3 (2005-2010)	2,593 US\$/vehicle											
fuel 11yd3 (2005-2010)	2,159 US\$/vehicle											
fuel total		24,630	25,365	26,143	26,877	27,396	28,390	29,124	29,643	30,377	31,155	
oil	10 % of fuel	2,463	2,537	2,614	2,688	2,740	2,839	2,912	2,964	3,038	3,116	
sub-total		27,093	27,902	28,757	29,565	30,136	31,229	32,036	32,607	33,415	34,271	
physical contingency	10 %	2,709	2,790	2,876	2,957	3,014	3,123	3,204	3,261	3,342	3,427	
sub-total		29,802	30,692	31,633	32,522	33,150	34,352	35,240	35,868	36,757	37,698	
VAT	13 %	3,874	3,990	4,112	4,228	4,310	4,466	4,581	4,663	4,778	4,901	
operation cost total		33,676	34,682	35,745	36,750	37,460	38,818	39,821	40,531	41,535	42,599	
maintenance cost												
18yd3	15 % of vehicle	90,000	92,250	95,625	97,875	100,125	103,500	105,750	108,000	110,250	113,625	
11yd3	15 % of vehicle	16,200	17,100	17,100	18,000	18,000	18,900	19,800	19,800	20,700	20,700	
sub-total		106,200	109,350	112,725	115,875	118,125	122,400	125,550	127,800	130,950	134,325	
physical contingency	10 %	10,620	10,935	11,273	11,588	11,813	12,240	12,555	12,780	13,095	13,433	
sub-total		116,820	120,285	123,998	127,463	129,938	134,640	138,105	140,580	144,045	147,758	
VAT	13 %	15,187	15,637	16,120	16,570	16,892	17,503	17,954	18,275	18,726	19,209	
maintenance cost total		132,007	135,922	140,118	144,033	146,830	152,143	156,059	158,855	162,771	166,967	
O&M cost total		359,261	369,927	381,334	391,998	399,604	414,070	424,734	432,337	443,003	454,411	
	1000US\$	359	370	381	392	400	414	425	432	443	454	
Cost summary												Total
collection amount	ton/day	72.0	74.2	76.5	78.7	80.8	83.0	84.9	87.0	89.0	91.0	
collection amount	1000ton/year	26	27	28	29	29	30	31	32	32	33	
Investment	1000US\$/year	392	0	646	0	0	0	0	489	0	646	
O&M	1000US\$/year	359	370	381	392	400	414	425	432	443	454	
total	1000US\$/year	751	370	1,027	392	400	414	425	921	443	1,100	
Investment per ton	US\$/ton	15.08	0.00	23.07	0.00	0.00	0.00	0.00	15.28	0.00	19.58	
O&M per ton	US\$/ton	13.81	13.70	13.61	13.52	13.79	13.80	13.71	13.50	13.84	13.76	
total	US\$/ton	28.89	13.70	36.68	13.52	13.79	13.80	13.71	28.78	13.84	33.34	

Ciudad Delgado

Delgado	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
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Delgado	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
		31.4	32.4	33.4	34.3	35.2	36.1	37.0	37.8	38.7	39.5	
collection amount 365-base	ton/day	36.7	37.9	39.1	40.1	41.2	42.2	43.3	44.2	45.3	46.2	
collection amount 312-base	ton/day	31.2	32.2	33.2	34.1	35.0	35.9	36.8	37.6	38.5	39.3	
amount for 18yd3	ton/day	5.5	5.7	5.9	6.0	6.2	6.3	6.5	6.6	6.8	6.9	
amount for 11yd3	ton/day											
required number of vehicle (1)												
net working rate	90 %											
18yd3 (2001-2010)	10.2 ton/day	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	
11yd3 (2001-2010)	7.8 ton/day	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	1.0	1.0	
required number of vehicle (2)												
18yd3	unit	3	4	4	4	4	4	4	4	4	4	
11yd3	unit	1	1	1	1	1	1	1	1	1	1	
operatable vehicle												
18yd3	unit	5	5	0	4	4	4	4	4	4	0	
11yd3	unit	2	2	0	1	1	1	1	1	1	0	
purchase of vehicle												
18yd3	unit	0	0	4	0	0	0	0	0	0	4	
11yd3	unit	0	0	1	0	0	0	0	0	0	1	
Cost												
Investment												
Vehicle												
18yd3	US\$	0	0	300,000	0	0	0	0	0	0	300,000	
11yd3	US\$	0	0	60,000	0	0	0	0	0	0	60,000	
sub-total	US\$	0	0	360,000	0	0	0	0	0	0	360,000	
physical contingency	10 %	0	0	36,000	0	0	0	0	0	0	36,000	
sub-total	US\$	0	0	396,000	0	0	0	0	0	0	396,000	
VAT	13 %	0	0	51,480	0	0	0	0	0	0	51,480	
total	US\$	0	0	447,480	0	0	0	0	0	0	447,480	
design & supervise	5 %	0	0	18,000	0	0	0	0	0	0	18,000	
physical contingency	10 %	0	0	1,800	0	0	0	0	0	0	1,800	
sub-total	US\$	0	0	19,800	0	0	0	0	0	0	19,800	
VAT	13 %	0	0	2,574	0	0	0	0	0	0	2,574	
total	US\$	0	0	22,374	0	0	0	0	0	0	22,374	
total investment	US\$	0	0	469,854	0	0	0	0	0	0	469,854	
	1000US\$	0	0	470	0	0	0	0	0	0	470	
O&M cost												
personnel cost												
18yd3	US\$	63,339	65,202	67,064	68,927	70,790	72,653	74,516	76,379	78,242	80,105	
11yd3	US\$	11,977	11,977	11,977	13,474	13,474	13,474	13,474	13,474	14,971	14,971	
sub-total	US\$	75,316	77,179	79,041	82,401	84,264	86,127	87,990	89,853	93,213	95,076	
physical contingency	10 %	7,532	7,718	7,904	8,240	8,426	8,613	8,799	8,985	9,321	9,508	
personnel cost total	US\$	82,848	84,897	86,945	90,641	92,690	94,740	96,789	98,838	102,534	104,584	
operation cost												
fuel 18yd3 (2001-2010)	US\$	8,626	8,880	9,133	9,387	9,641	9,894	10,148	10,402	10,655	10,909	
fuel 11yd3 (2001-2010)	US\$	1,687	1,687	1,687	1,898	1,898	1,898	1,898	1,898	2,109	2,109	

Delgado	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
fuel total	US\$	10,313	10,867	10,820	11,285	11,539	11,792	12,046	12,300	12,764	13,018	
oil	US\$	1,031	1,057	1,082	1,129	1,154	1,179	1,205	1,230	1,276	1,302	
10 % of fuel	US\$	11,344	11,624	11,902	12,414	12,693	12,971	13,251	13,530	14,040	14,320	
sub-total	US\$	1,134	1,162	1,190	1,241	1,269	1,297	1,325	1,353	1,404	1,432	
physical contingency	US\$	12,478	12,786	13,092	13,655	13,962	14,268	14,576	14,883	15,444	15,752	
sub-total	US\$	1,622	1,662	1,702	1,775	1,815	1,855	1,895	1,935	2,008	2,048	
13 %	US\$	14,100	14,448	14,794	15,430	15,777	16,123	16,471	16,818	17,452	17,800	
operation cost total	US\$											
maintenance cost	US\$	38,250	39,375	40,500	41,625	42,750	43,875	45,000	46,125	47,250	48,375	
18yd3	US\$	7,200	7,200	7,200	8,100	8,100	8,100	8,100	8,100	9,000	9,000	
11yd3	US\$	45,450	46,575	47,700	49,725	50,850	51,975	53,100	54,225	56,250	57,375	
sub-total	US\$	4,545	4,658	4,770	4,973	5,085	5,198	5,310	5,423	5,625	5,738	
physical contingency	US\$	49,995	51,233	52,470	54,698	55,935	57,173	58,410	59,648	61,875	63,113	
sub-total	US\$	6,499	6,660	6,821	7,111	7,272	7,432	7,593	7,754	8,044	8,205	
13 %	US\$	56,494	57,893	59,291	61,809	63,207	64,605	66,003	67,402	69,919	71,318	
maintenance cost total	US\$											
O&M cost total	US\$	153,442	157,238	161,030	167,880	171,674	175,468	179,263	183,058	189,905	193,702	1,732
	1000US\$	153	157	161	168	172	175	179	183	190	194	
Cost summary	ton/day	31.4	32.4	33.4	34.3	35.2	36.1	37.0	37.8	38.7	39.5	Total
collection amount 365-base	1000ton/year	11	12	12	13	13	13	14	14	14	14	130
collection amount	1000US\$/year	0	0	470	0	0	0	0	0	0	0	940
Investment	1000US\$/year	153	157	161	168	172	175	179	183	190	194	1,732
O&M	1000US\$/year	153	157	161	168	172	175	179	183	190	194	2,672
total	US\$/ton	0.00	0.00	39.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.57
Investment per ton	US\$/ton	13.91	13.08	13.42	12.92	13.23	13.46	12.79	13.07	13.57	13.86	13.32
O&M per ton	US\$/ton	13.91	13.08	13.42	12.92	13.23	13.46	12.79	13.07	13.57	13.86	20.55
total	US\$/ton	13.91	13.08	13.42	12.92	13.23	13.46	12.79	13.07	13.57	13.86	47.43

Cuscatancingo

Cuscatancingo	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day	26.7	27.6	28.4	29.2	30.0	30.7	31.5	32.2	32.9	33.6	
collection amount 312-base	ton/day	31.2	32.3	33.2	34.2	35.1	35.9	36.9	37.7	38.5	39.3	

Cuscatancingo	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
		ton/day	ton/day	ton/day	ton/day	ton/day	ton/day	ton/day	ton/day	ton/day	ton/day	ton/day
amount for 18yd3		26.5	27.5	28.2	29.1	29.8	30.5	31.4	32.0	32.7	33.4	
amount for 11yd3		4.7	4.8	5.0	5.1	5.3	5.4	5.5	5.7	5.8	5.9	
required number of vehicle (1)												
net working rate	90 %											
18yd3 (2001-2004)	8.3 ton/day	3.5	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.4	4.5	
11yd3 (2001-2004)	6.3 ton/day	0.8	0.8	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	
18yd3 (2005-2010)	8.3 ton/day											
11yd3 (2005-2010)	6.3 ton/day											
required number of vehicle (2)												
18yd3	unit	4	4	4	4	4	4	4	4	4	5	
11yd3	unit	1	1	1	1	1	1	1	1	1	1	
operable vehicle												
18yd3	unit	3	3	0	4	4	4	4	4	3	0	
11yd3	unit	1	1	0	1	1	1	1	1	1	0	
purchase of vehicle												
18yd3	unit	0	1	4	0	0	0	0	0	1	5	
11yd3	unit	0	0	1	0	0	0	0	0	0	1	
Cost												
Investment												
Vehicle												
18yd3	US\$	0	75,000	300,000	0	0	0	0	0	75,000	375,000	
11yd3	US\$	0	0	60,000	0	0	0	0	0	0	60,000	
sub-total	US\$	0	75,000	360,000	0	0	0	0	0	75,000	435,000	
physical contingency	10 %	0	7,500	36,000	0	0	0	0	0	7,500	43,500	
sub-total	US\$	0	82,500	396,000	0	0	0	0	0	82,500	478,500	
VAT	13 %	0	10,725	51,480	0	0	0	0	0	10,725	62,205	
total	US\$	0	93,225	447,480	0	0	0	0	0	93,225	540,705	
design & supervise	5 %	0	3,750	18,000	0	0	0	0	0	3,750	21,750	
physical contingency	10 %	0	375	1,800	0	0	0	0	0	375	2,175	
sub-total	US\$	0	4,125	19,800	0	0	0	0	0	4,125	23,925	
VAT	13 %	0	536	2,574	0	0	0	0	0	536	3,110	
total	US\$	0	4,661	22,374	0	0	0	0	0	4,661	27,035	
total investment	US\$	0	97,886	469,854	0	0	0	0	0	97,886	567,740	1,234
	1000US\$	0	98	470	0	0	0	0	0	98	568	
O&M cost												
personnel cost												
18yd3	US\$	65,202	68,927	70,790	72,653	74,516	76,379	78,242	80,105	81,968	83,831	
11yd3	US\$	11,977	11,977	13,474	13,474	13,474	14,971	14,971	14,971	14,971	14,971	
sub-total	US\$	77,179	80,904	84,264	86,127	87,990	91,350	93,213	95,076	96,939	98,802	
physical contingency	10 %	7,718	8,090	8,426	8,613	8,799	9,135	9,321	9,508	9,694	9,880	
personnel cost total	US\$	84,897	88,994	92,690	94,740	96,789	100,485	102,534	104,584	106,633	108,682	
operation cost												
fuel 18yd3 (2001-2004)	US\$	11,729	12,399	12,734	13,069	13,404	13,739	14,074	14,409	14,744	15,080	
fuel 11yd3 (2001-2004)	US\$	2,231	2,231	2,510	2,510	2,510	2,789	2,789	2,789	2,789	2,789	

Cuscatancingo	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
fuel 18yd3 (2005-2010)	US\$	13,960	14,630	15,244	15,579	15,914	16,528	16,863	17,198	17,533	17,869	
fuel 11yd3 (2005-2010)	US\$	1,396	1,463	1,524	1,558	1,591	1,653	1,686	1,720	1,753	1,787	
fuel total	US\$	15,356	16,093	16,768	17,137	17,505	18,181	18,549	18,918	19,286	19,656	
oil	10 % of fuel	1,536	1,609	1,677	1,714	1,751	1,818	1,855	1,892	1,929	1,966	
sub-total	10 %	16,892	17,702	18,445	18,851	19,256	19,999	20,404	20,810	21,215	21,622	
physical contingency	US\$	2,196	2,301	2,398	2,451	2,503	2,600	2,653	2,705	2,758	2,811	
sub-total	13 %	19,088	20,003	20,843	21,302	21,759	22,599	23,057	23,515	23,973	24,433	
operation cost total	US\$	39,375	41,625	42,750	43,875	45,000	46,125	47,250	48,375	49,500	50,625	
maintenance cost	US\$	7,200	7,200	8,100	8,100	8,100	9,000	9,000	9,000	9,000	9,000	
18yd3	US\$	46,575	48,825	50,850	51,975	53,100	55,125	56,250	57,375	58,500	59,625	
11yd3	US\$	4,658	4,883	5,085	5,198	5,310	5,513	5,625	5,738	5,850	5,963	
sub-total	10 %	51,233	53,708	55,935	57,173	58,410	60,638	61,875	63,113	64,350	65,588	
physical contingency	US\$	6,660	6,982	7,272	7,432	7,593	7,883	8,044	8,205	8,366	8,526	
sub-total	13 %	57,893	60,690	63,207	64,605	66,003	68,521	69,919	71,318	72,716	74,114	
maintenance cost total	US\$	161,878	169,687	176,740	180,647	184,551	191,605	195,510	199,417	203,322	207,229	1,872
O&M cost total	1000US\$	162	170	177	181	185	192	196	199	203	207	
Cost summary	ton/day	26.7	27.6	28.4	29.2	30.0	30.7	31.5	32.2	32.9	33.6	Total
collection amount 365-base	1000ton/year	10	10	10	11	11	11	11	12	12	12	110
collection amount	1000US\$/year	0	98	470	0	0	0	0	0	98	568	1,234
Investment	1000US\$/year	162	170	177	181	185	192	196	199	203	207	1,872
O&M	1000US\$/year	162	268	647	181	185	192	196	199	301	775	3,106
total	US\$/ton	0.00	9.80	47.00	0.00	0.00	0.00	0.00	0.00	8.17	47.33	11.22
Investment per ton	US\$/ton	16.20	17.00	17.70	16.45	16.82	17.45	17.82	16.58	16.92	17.25	17.02
O&M per ton	US\$/ton	16.20	26.80	64.70	16.45	16.82	17.45	17.82	16.58	25.09	64.58	28.24
total												

Ayutuxtepeque

Ayutuxtepeque	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day	10.5	10.8	11.1	11.5	11.8	12.1	12.3	12.6	12.9	13.2	
collection amount 312-base	ton/day	12.3	12.6	13.0	13.5	13.8	14.2	14.4	14.7	15.1	15.4	
amount for 18yd3	ton/day	10.5	10.7	11.1	11.5	11.7	12.1	12.2	12.5	12.8	13.1	
amount for 11yd3	ton/day	1.8	1.9	2.0	2.0	2.1	2.1	2.2	2.2	2.3	2.3	

required number of vehicle (1)	unit	90 % 10.4 ton/day 7.9 ton/day	net working rate		unit	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.4	1.4
			18yd3 (2001-2010)	11yd3 (2001-2010)												
required number of vehicle (2)	unit		1	0	1.1	0.3	1	0	1	0	1	0	1	0	1	0
operatable vehicle	unit		1	0	1	0	1	0	1	0	1	0	1	0	1	0
purchase of vehicle	unit		1	0	1	0	1	0	1	0	1	0	1	0	1	0
Cost	unit		0	0	0	0	1	0	0	0	0	0	0	0	1	0
Investment	unit		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle	US\$	75,000 US\$/vehicle	0	0	0	0	75,000	0	0	0	0	0	0	0	0	75,000
18yd3	US\$	60,000 US\$/vehicle	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11yd3	US\$		0	0	0	0	75,000	0	0	0	0	0	0	0	0	75,000
sub-total	US\$		0	0	0	0	75,000	0	0	0	0	0	0	0	0	75,000
physical contingency	US\$	10 %	0	0	0	0	7,500	0	0	0	0	0	0	0	0	82,500
sub-total	US\$		0	0	0	0	82,500	0	0	0	0	0	0	0	0	10,725
VAT	US\$	13 %	0	0	0	0	10,725	0	0	0	0	0	0	0	0	10,725
total	US\$		0	0	0	0	93,225	0	0	0	0	0	0	0	0	93,225
design & supervise	US\$	5 %	0	0	0	0	3,750	0	0	0	0	0	0	0	0	3,750
physical contingency	US\$	10 %	0	0	0	0	375	0	0	0	0	0	0	0	0	375
sub-total	US\$		0	0	0	0	4,125	0	0	0	0	0	0	0	0	4,125
VAT	US\$	13 %	0	0	0	0	536	0	0	0	0	0	0	0	0	536
total	US\$		0	0	0	0	4,661	0	0	0	0	0	0	0	0	4,661
total investment	US\$		0	0	0	0	97,886	0	0	0	0	0	0	0	0	97,886
	1000US\$		0	0	0	0	98	0	0	0	0	0	0	0	0	98
O&M cost	US\$		20,492	4,491	20,492	4,491	22,355	22,355	24,218	24,218	24,218	24,218	24,218	24,218	26,081	26,081
personnel cost	US\$	18,629 US\$/vehicle	4,491	4,491	4,491	4,491	4,491	4,491	4,491	4,491	4,491	4,491	4,491	4,491	4,491	4,491
18yd3	US\$	14,971 US\$/vehicle	24,983	24,983	24,983	24,983	26,846	26,846	28,709	28,709	28,709	28,709	28,709	28,709	30,572	30,572
11yd3	US\$		2,498	2,498	2,498	2,498	2,685	2,685	2,871	2,871	2,871	2,871	2,871	2,871	3,057	3,057
sub-total	US\$	10 %	27,481	27,481	27,481	29,531	29,531	29,531	31,580	31,580	31,580	31,580	31,580	31,580	33,629	33,629
physical contingency	US\$		2,708	615	2,708	615	2,954	2,954	3,201	3,201	3,201	3,201	3,201	3,201	3,447	3,447
personnel cost total	US\$		3,323	3,323	3,323	3,569	3,569	3,569	3,816	3,816	3,816	3,816	3,816	3,816	4,062	4,062
operation	US\$	2,462 US\$/vehicle	332	332	332	357	357	357	382	382	382	382	382	382	406	406
fuel 18yd3 (2001-2010)	US\$	2,050 US\$/vehicle	3,655	3,655	3,655	3,926	3,926	3,926	4,198	4,198	4,198	4,198	4,198	4,198	4,468	4,468
fuel 11yd3 (2001-2010)	US\$	10 % of fuel	366	366	366	393	393	393	420	420	420	420	420	420	447	447
fuel total	US\$		4,021	4,021	4,021	4,319	4,319	4,319	4,618	4,618	4,618	4,618	4,618	4,618	4,915	4,915
oil	US\$	10 %														
sub-total	US\$															
physical contingency	US\$															
sub-total	US\$															

		523	523	561	600	600	600	600	600	639	639
VAT	US\$	523	523	561	600	600	600	600	600	639	639
operation cost total	US\$	4,544	4,544	4,880	5,218	5,218	5,218	5,218	5,218	5,554	5,554
maintenance cost	US\$	12,375	12,375	13,500	14,625	14,625	14,625	14,625	14,625	15,750	15,750
18yd3	US\$	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700
11yd3	US\$	15,075	15,075	16,200	17,325	17,325	17,325	17,325	17,325	18,450	18,450
sub-total	US\$	1,508	1,508	1,620	1,733	1,733	1,733	1,733	1,733	1,845	1,845
physical contingency	US\$	16,583	16,583	17,820	19,058	19,058	19,058	19,058	19,058	20,295	20,295
sub-total	US\$	2,156	2,156	2,317	2,478	2,478	2,478	2,478	2,478	2,638	2,638
VAT	US\$	18,739	18,739	20,137	21,536	21,536	21,536	21,536	21,536	22,933	22,933
maintenance cost total	US\$	50,764	50,764	54,548	58,334	58,334	58,334	58,334	58,334	62,116	62,116
O&M cost total	1000US\$	51	51	55	58	58	58	58	58	62	62
Total											568
Cost summary	ton/day	10.5	10.8	11.1	11.8	12.1	12.3	12.6	12.9	13.2	
collection amount 365-base	1000ton/year	4	4	4	4	4	4	4	5	5	43
collection amount											
Investment	1000US\$/year	0	0	0	0	0	0	0	0	0	98
O&M	1000US\$/year	51	51	55	58	58	58	58	58	62	62
total	1000US\$/year	51	51	55	58	58	58	58	58	62	62
Investment per ton	US\$/ton	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.60
O&M per ton	US\$/ton	12.75	12.75	13.75	14.50	14.50	14.50	14.50	14.50	12.40	12.40
total	US\$/ton	12.75	12.75	13.75	14.50	14.50	14.50	14.50	14.50	12.40	12.40
											32.00
											17.77

San Marcos

	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
San Marcos												
collection amount 365-base	ton/day	32.2	33.1	34.1	35.1	36.0	36.9	37.8	38.7	39.6	40.5	40.5
collection amount 312-base	ton/day	37.7	38.7	39.9	41.1	42.1	43.2	44.2	45.3	46.3	47.4	47.4
amount for 18yd3	ton/day	32.0	32.9	33.9	34.9	35.8	36.7	37.6	38.5	39.4	40.3	40.3
amount for 11yd3	ton/day	5.7	5.8	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.1
required number of vehicle (1) net working rate	90 %											

San Marcos	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010 Total
18yd3 (2001-2004)	unit	4.7	4.8	5.0	5.1	5.2	5.4	5.5	5.6	5.8	5.9
11yd3 (2001-2004)	unit	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.4
18yd3 (2005-2010)	unit										
11yd3 (2005-2010)	unit										
required number of vehicle (2)											
operable vehicle	unit	5	5	5	5	5	5	6	6	6	6
purchase of vehicle	unit	1	1	1	1	1	1	1	1	1	1
	unit	2	5	3	5	5	5	5	3	6	4
	unit	1	1	0	1	1	1	1	1	1	0
	unit	3	0	2	0	0	0	1	3	0	2
	unit	0	0	1	0	0	0	0	0	0	1
Investment											
Vehicle											
18yd3	US\$	225,000	0	150,000	0	0	0	75,000	225,000	0	150,000
11yd3	US\$	0	0	60,000	0	0	0	0	0	0	60,000
sub-total	US\$	225,000	0	210,000	0	0	0	75,000	225,000	0	210,000
physical contingency	US\$	22,500	0	21,000	0	0	0	7,500	22,500	0	21,000
sub-total	US\$	247,500	0	231,000	0	0	0	82,500	247,500	0	231,000
VAT	US\$	32,175	0	30,030	0	0	0	10,725	32,175	0	30,030
total	US\$	279,675	0	261,030	0	0	0	93,225	279,675	0	261,030
design & supervise	US\$	11,250	0	10,500	0	0	0	3,750	11,250	0	10,500
physical contingency	US\$	1,125	0	1,050	0	0	0	375	1,125	0	1,050
sub-total	US\$	12,375	0	11,550	0	0	0	4,125	12,375	0	11,550
VAT	US\$	1,609	0	1,502	0	0	0	536	1,609	0	1,502
total	US\$	13,984	0	13,052	0	0	0	4,661	13,984	0	13,052
total investment	US\$	293,659	0	274,082	0	0	0	97,886	293,659	0	274,082
	1000US\$	294	0	274	0	0	0	98	294	0	274
O&M cost											
personnel cost											
18yd3	US\$	87,556	89,419	93,145	95,008	96,871	100,597	102,460	104,322	108,048	109,911
11yd3	US\$	16,468	16,468	16,468	17,965	17,965	17,965	19,462	19,462	19,462	20,959
sub-total	US\$	104,024	105,887	109,613	112,973	114,836	118,562	121,922	123,784	127,510	130,870
physical contingency	US\$	10,402	10,589	10,961	11,297	11,484	11,856	12,192	12,378	12,751	13,087
personnel cost total	US\$	114,426	116,476	120,574	124,270	126,320	130,418	134,114	136,162	140,261	143,957
operation cost											
fuel 18yd3 (2001-2004)	US\$	17,174	17,539	18,270	18,635	19,001	19,732	20,097	20,462	21,193	21,559
fuel 11yd3 (2001-2004)	US\$	3,346	3,346	3,346	3,650	3,650	3,650	3,955	3,955	3,955	4,259
fuel 18yd3 (2004-2010)	US\$										
fuel 11yd3 (2004-2010)	US\$										
fuel total	US\$	20,520	20,885	21,616	22,285	22,651	23,382	24,052	24,417	25,148	25,818
oil	US\$	2,052	2,089	2,162	2,229	2,265	2,338	2,405	2,442	2,515	2,582
	10 % of fuel										

San Marcos	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
sub-total	US\$	22,974	23,778	24,514	24,916	25,720	26,457	26,859	27,663	28,400		
physical contingency	US\$	2,257	2,378	2,451	2,492	2,572	2,646	2,686	2,766	2,840		
sub-total	US\$	24,829	26,156	26,965	27,408	28,292	29,103	29,545	30,429	31,240		
VAT	US\$	3,228	3,400	3,505	3,563	3,678	3,783	3,841	3,956	4,061		
operation cost total	US\$	28,057	29,556	30,470	30,971	31,970	32,886	33,386	34,385	35,301		
maintenance cost												
18yd3	US\$	52,875	54,000	56,250	58,500	60,750	61,875	63,000	65,250	66,375		
11yd3	US\$	9,900	9,900	9,900	10,800	10,800	11,700	11,700	11,700	12,600		
sub-total	US\$	62,775	63,900	66,150	69,300	71,550	73,575	74,700	76,950	78,975		
physical contingency	US\$	6,278	6,390	6,615	6,930	7,155	7,358	7,470	7,695	7,898		
sub-total	US\$	69,053	70,290	72,765	76,230	78,705	80,933	82,170	84,645	86,873		
VAT	US\$	8,977	9,138	9,459	9,910	10,232	10,521	10,682	11,004	11,293		
maintenance cost total	US\$	78,030	79,428	82,224	86,140	88,937	91,454	92,852	95,649	98,166		
O&M cost total	US\$	220,513	224,460	232,354	243,431	251,325	258,454	262,400	270,295	277,424		
	1000US\$	221	224	232	243	251	258	262	270	277		2,477
Cost summary												
collection amount	ton/day	32.2	33.1	34.1	35.1	36.0	36.9	37.8	38.7	39.6		Total
collection amount 365-base	1000ton/year	12	12	12	13	13	13	14	14	14		132
Investment	1000US\$/year	294	0	274	0	0	0	98	294	0		1,234
O&M	1000US\$/year	221	224	232	239	243	251	258	262	270		2,477
total	1000US\$/year	515	224	506	239	243	251	356	556	270		3,711
Investment per ton	US\$/ton	24.50	0.00	22.83	0.00	0.00	0.00	7.00	21.00	0.00		9.35
O&M per ton	US\$/ton	18.42	18.67	19.33	18.38	18.69	19.31	18.43	18.71	19.29		18.77
total	US\$/ton	42.92	18.67	42.16	18.38	18.69	19.31	25.43	39.71	19.29		28.12

Nueva San Salvador

Nueva San Salvador	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day	88.2	90.9	93.6	96.2	98.8	101.3	103.8	106.2	108.6		
collection amount 312-base	ton/day	103.2	106.3	109.5	112.5	115.6	118.5	121.4	124.2	127.0		
amount for 18yd3	ton/day	87.7	90.4	93.1	95.6	98.3	100.7	103.2	105.6	108.0		
amount for 11yd3	ton/day	15.5	15.9	16.4	16.9	17.3	17.8	18.2	18.6	19.1		
required number of vehicle (1)												
net working rate	90 %											
18yd3 (2001-2003)	unit	11.9	12.2	12.6	13.0	13.3	13.6	14.0	14.3	14.6		15.0
11yd3 (2001-2003)	unit	2.8	2.8	2.9	3.0	3.1	3.2	3.3	3.3	3.4		3.5

Nueva San Salvador		year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
18yd3 (2004-2010)	8.2 ton/day	unit	12	12	13	13	13	14	14	14	15	15	
11yd3 (2004-2010)	6.2 ton/day	unit	3	3	3	3	3	3	3	3	3	4	
18yd3		unit	4	13	9	13	13	13	14	5	14	11	
11yd3		unit	1	3	2	3	3	3	3	1	3	2	
operatable vehicle		unit	9	0	4	0	0	1	0	9	1	4	
purchase of vehicle		unit	2	0	1	0	0	0	0	2	0	2	
Cost													
Investment													
Vehicle													
18yd3	75,000 US\$/vehicle	US\$	675,000	0	300,000	0	0	75,000	0	675,000	75,000	300,000	
11yd3	60,000 US\$/vehicle	US\$	120,000	0	60,000	0	0	0	0	120,000	0	120,000	
sub-total		US\$	795,000	0	360,000	0	0	75,000	0	795,000	75,000	420,000	
physical contingency	10 %	US\$	79,500	0	36,000	0	0	7,500	0	79,500	7,500	42,000	
sub-total		US\$	874,500	0	396,000	0	0	82,500	0	874,500	82,500	462,000	
VAT	13 %	US\$	113,685	0	51,480	0	0	10,725	0	113,685	10,725	60,060	
total		US\$	988,185	0	447,480	0	0	93,225	0	988,185	93,225	522,060	
design & supervise	5 %	US\$	39,750	0	18,000	0	0	3,750	0	39,750	3,750	21,000	
physical contingency	10 %	US\$	3,975	0	1,800	0	0	375	0	3,975	375	2,100	
sub-total		US\$	43,725	0	19,800	0	0	4,125	0	43,725	4,125	23,100	
VAT	13 %	US\$	5,684	0	2,574	0	0	536	0	5,684	536	3,003	
total		US\$	49,409	0	22,374	0	0	4,661	0	49,409	4,661	26,103	
total investment		US\$	1,037,594	0	469,854	0	0	97,886	0	1,037,594	97,886	548,163	
		1000US\$	1038	0	470	0	0	98	0	1038	98	548	3,290
O&M cost													
personnel cost													
18yd3	18,629 US\$/vehicle	US\$	221,685	227,274	234,725	242,177	247,766	253,354	260,806	266,395	271,983	279,435	
11yd3	14,971 US\$/vehicle	US\$	41,919	41,919	43,416	44,913	46,410	47,907	49,404	49,404	50,901	52,399	
sub-total		US\$	263,604	269,193	278,141	287,090	294,176	301,261	310,210	315,799	322,884	331,834	
physical contingency	10 %	US\$	26,360	26,919	27,814	28,709	29,418	30,126	31,021	31,580	32,288	33,183	
personnel cost total		US\$	289,964	296,112	305,955	315,799	323,594	331,387	341,231	347,379	355,172	365,017	
operation cost													
fuel 18yd3 (2001-2003)	3,407 US\$/vehicle	US\$	40,543	41,565	42,928	44,291	45,313	46,335	47,698	48,720	49,742	51,105	
fuel 11yd3 (2001-2003)	2,839 US\$/vehicle	US\$	7,949	7,949	8,233	8,517	8,801	9,085	9,369	9,369	9,653	9,937	
fuel 18yd3 (2004-2010)	3,407 US\$/vehicle	US\$	48,492	49,514	51,161	52,808	54,114	55,420	57,067	58,089	59,395	61,042	
fuel 11yd3 (2004-2010)	2,839 US\$/vehicle	US\$	4,849	4,951	5,116	5,281	5,411	5,542	5,707	5,809	5,940	6,104	
fuel total		US\$	53,341	54,465	56,277	58,089	59,525	60,962	62,774	63,898	65,335	67,146	
oil	10 % of fuel	US\$	5,334	5,447	5,628	5,809	5,953	6,096	6,277	6,390	6,534	6,715	
sub-total		US\$											
physical contingency	10 %	US\$											

Nueva San Salvador		year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
sub-total	US\$		58,675	59,912	61,905	63,898	65,478	67,058	69,051	70,288	71,869	73,861	
VAT	US\$	13 %	7,628	7,789	8,048	8,307	8,512	8,718	8,977	9,137	9,343	9,602	
operation cost total	US\$		66,303	67,701	69,953	72,205	73,990	75,776	78,028	79,425	81,212	83,463	
maintenance cost	US\$	15 % of vehicle	133,875	137,250	141,750	146,250	149,625	153,000	157,500	160,875	164,250	168,750	
18yd3	US\$	15 % of vehicle	25,200	25,200	26,100	27,000	27,900	28,800	29,700	29,700	30,600	31,500	
11yd3	US\$		159,075	162,450	167,850	173,250	177,525	181,800	187,200	190,575	194,850	200,250	
sub-total	US\$	10 %	15,908	16,245	16,785	17,325	17,753	18,180	18,720	19,058	19,485	20,025	
physical contingency	US\$		174,983	178,695	184,635	190,575	195,278	199,980	205,920	209,633	214,335	220,275	
sub-total	US\$	13 %	22,748	23,230	24,003	24,775	25,386	25,997	26,770	27,252	27,864	28,636	
VAT	US\$		197,731	201,925	208,638	215,350	220,664	225,977	232,690	236,885	242,199	248,911	
maintenance cost total	US\$		553,998	565,738	584,546	603,354	618,248	633,140	651,949	663,889	678,583	697,391	6,251
O&M cost total	1000US\$		554	566	585	603	618	633	652	664	679	697	
Cost summary													Total
collection amount 365-base	ton/day		88.2	90.9	93.6	96.2	98.8	101.3	103.8	106.2	108.6	111.0	365
collection amount	1000ton/year		32	33	34	35	36	37	38	39	40	41	
Investment	1000US\$/year		1,038	0	470	0	0	98	0	1,038	98	548	3,290
O&M	1000US\$/year		554	566	585	603	618	633	652	664	679	697	6,251
total	1000US\$/year		1,592	566	1,055	603	618	731	652	1,702	777	1,245	9,541
Investment per ton	US\$/ton		32.44	0.00	13.82	0.00	0.00	2.65	0.00	26.62	2.45	13.37	9.01
O&M per ton	US\$/ton		17.31	17.15	17.21	17.23	17.17	17.11	17.16	17.03	16.98	17.00	17.13
total	US\$/ton		49.75	17.15	31.03	17.23	17.17	19.76	17.16	43.65	19.43	30.37	26.14

Antiguo Cuscatlan

Antiguo Cuscatlan		year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day		43.3	44.8	46.5	48.0	49.6	51.1	52.6	54.1	55.6	57.1	
collection amount 312-base	ton/day		50.7	52.4	54.4	56.2	58.0	59.8	61.5	63.3	65.0	66.8	
amount for 18yd3	ton/day		43.1	44.5	46.2	47.8	49.3	50.8	52.3	53.8	55.3	56.8	
amount for 11yd3	ton/day		7.6	7.9	8.2	8.4	8.7	9.0	9.2	9.5	9.8	10.0	
required number of vehicle (1)	unit	90 %											
net working rate	unit		5.8	6.0	6.2	6.4	6.6	6.8	7.0	7.2	7.4	7.6	
18yd3 (2001-2003)	unit	8.3 ton/day	1.3	1.4	1.4	1.5	1.5	1.6	1.6	1.7	1.7	1.8	
11yd3 (2001-2003)	unit	6.3 ton/day											
18yd3 (2004-2010)	unit	8.3 ton/day											
11yd3 (2004-2010)	unit	6.3 ton/day											

Antiguo Cuscatlan	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
required number of vehicle (2)												
operable vehicle	unit	6	6	6	6	7	7	7	7	7	8	
	unit	1	1	1	2	2	2	2	2	2	2	
purchase of vehicle	unit	1	6	5	6	6	7	7	2	7	6	
	unit	1	2	1	2	2	2	2	1	2	1	
Cost	unit	5	0	1	0	1	0	0	5	0	2	
Investment	unit	1	0	1	0	0	0	0	1	0	1	
	US\$	375,000	0	75,000	0	75,000	0	0	375,000	0	150,000	
Vehicle	US\$	60,000	0	60,000	0	0	0	0	60,000	0	60,000	
18yd3	US\$	435,000	0	135,000	0	75,000	0	0	435,000	0	210,000	
11yd3	US\$											
sub-total	US\$											
physical contingency	10 %											
sub-total	US\$	478,500	0	148,500	0	82,500	0	0	478,500	0	231,000	
VAT	US\$	62,205	0	19,305	0	10,725	0	0	62,205	0	30,030	
total	US\$	540,705	0	167,805	0	93,225	0	0	540,705	0	261,030	
design & supervise	US\$	21,750	0	6,750	0	3,750	0	0	21,750	0	10,500	
physical contingency	US\$	2,175	0	675	0	375	0	0	2,175	0	1,050	
sub-total	US\$	23,925	0	7,425	0	4,125	0	0	23,925	0	11,550	
VAT	US\$	3,110	0	965	0	536	0	0	3,110	0	1,502	
total	US\$	27,035	0	8,390	0	4,661	0	0	27,035	0	13,052	
total investment	US\$	567,740	0	176,195	0	97,886	0	0	567,740	0	274,082	
	1000US\$	568	0	176	0	98	0	0	568	0	274	1,684
O&M cost												
personnel cost												
18yd3	US\$	108,048	111,774	115,500	119,226	122,951	126,677	130,403	134,129	137,855	141,580	
11yd3	US\$	19,462	20,959	20,959	22,457	22,457	23,954	23,954	25,451	25,451	26,948	
sub-total	US\$	127,510	132,733	136,459	141,683	145,408	150,631	154,357	159,580	163,306	168,528	
physical contingency	US\$	12,751	13,273	13,646	14,168	14,541	15,063	15,436	15,958	16,331	16,853	
personnel cost total	US\$	140,261	146,006	150,105	155,851	159,949	165,694	169,793	175,538	179,637	185,381	
operation cost												
fuel 18yd3 (2001-2003)	US\$	19,436	20,106	20,776	21,446	22,117	22,787	23,457	24,127	24,797	25,468	
fuel 11yd3 (2001-2003)	US\$	3,626	3,905	3,905	4,184	4,184	4,462	4,462	4,741	4,741	5,020	
fuel 18yd3 (2004-2010)	US\$											
fuel 11yd3 (2004-2010)	US\$											
fuel total	US\$	23,062	24,011	24,681	25,630	26,301	27,249	27,919	28,868	29,538	30,488	
oil	US\$	2,306	2,401	2,468	2,563	2,630	2,725	2,792	2,887	2,954	3,049	
sub-total	US\$	25,368	26,412	27,149	28,193	28,931	29,974	30,711	31,755	32,492	33,537	
physical contingency	US\$	2,537	2,641	2,715	2,819	2,893	2,997	3,071	3,176	3,249	3,354	
sub-total	US\$	27,905	29,053	29,864	31,012	31,824	32,971	33,782	34,931	35,741	36,891	
VAT	US\$	3,628	3,777	3,882	4,032	4,137	4,286	4,392	4,541	4,646	4,796	

Antiguo Cuscatlan	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
operation cost total	US\$	31,533	32,830	33,746	35,044	35,961	37,257	38,174	39,472	40,387	41,687	
maintenance cost												
18yd3	US\$	65,250	67,500	69,750	72,000	74,250	76,500	78,750	81,000	83,250	85,500	
11yd3	US\$	11,700	12,600	12,600	13,500	13,500	14,400	14,400	15,300	15,300	16,200	
sub-total	US\$	76,950	80,100	82,350	85,500	87,750	90,900	93,150	96,300	98,550	101,700	
physical contingency	US\$	7,695	8,010	8,235	8,550	8,775	9,090	9,315	9,630	9,855	10,170	
sub-total	US\$	84,645	88,110	90,585	94,050	96,525	99,990	102,465	105,930	108,405	111,870	
VAT	US\$	11,004	11,454	11,776	12,227	12,548	12,999	13,320	13,771	14,093	14,543	
maintenance cost total	US\$	95,649	99,564	102,361	106,277	109,073	112,989	115,785	119,701	122,498	126,413	
O&M cost total	US\$	267,443	278,400	286,212	297,172	304,983	315,940	323,752	334,711	342,522	353,481	
O&M cost total	1000US\$	267	278	286	297	305	316	324	335	343	353	3,104
Cost summary												Total
collection amount 365-base	ton/day	43.3	44.8	46.5	48.0	49.6	51.1	52.6	54.1	55.6	57.1	184
collection amount	1000ton/year	16	16	17	18	18	19	19	20	20	21	
Investment	1000US\$/year	568	0	176	0	98	0	0	568	0	274	1,684
O&M	1000US\$/year	267	278	286	297	305	316	324	335	343	353	3,104
total	1000US\$/year	835	278	462	297	403	316	324	903	343	627	4,788
Investment per ton	US\$/ton	35.50	0.00	10.35	0.00	5.44	0.00	0.00	28.40	0.00	13.05	9.15
O&M per ton	US\$/ton	16.69	17.38	16.82	16.50	16.94	16.63	17.05	16.75	17.15	16.81	16.87
total	US\$/ton	52.19	17.38	27.17	16.50	22.38	16.63	17.05	45.15	17.15	29.86	26.02

Soyapango

Soyapango	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day	133.4	138.5	143.6	148.7	153.7	158.7	163.6	168.4	173.2	178.3	
collection amount 312-base	ton/day	156.1	162.0	168.0	174.0	179.8	185.7	191.4	197.0	202.6	208.6	
amount for 18yd3	ton/day	132.7	137.7	142.8	147.9	152.8	157.8	162.7	167.5	172.2	177.3	
amount for 11yd3	ton/day	23.4	24.3	25.2	26.1	27.0	27.9	28.7	29.6	30.4	31.3	
required number of vehicle (1)												
net working rate	90 %											
18yd3 (2001-2004)	8.8 ton/day	16.8	17.4	18.0	18.7	19.3	19.9	20.5	21.1	21.7	22.4	
11yd3 (2001-2004)	6.7 ton/day	3.9	4.0	4.2	4.3	4.5	4.6	4.8	4.9	5.0	5.2	
18yd3 (2005-2010)	8.8 ton/day											
11yd3 (2005-2010)	6.7 ton/day											
required number of vehicle (2)												
18yd3	unit	17	17	18	19	19	20	21	21	22	22	

Soyapango		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010 Total
operable vehicle	11yd3	4	4	4	4	5	5	5	5	5	5
	unit										
	18yd3	10	19	9	19	19	19	20	12	21	12
	unit										
	11yd3	3	5	2	5	5	5	5	3	5	2
	unit										
purchase of vehicle	18yd3	9	0	10	0	0	1	1	9	1	10
	unit										
	11yd3	2	0	3	0	0	0	0	2	0	3
	unit										
Cost											
Investment											
	Vehicle										
	18yd3	675,000	0	750,000	0	0	75,000	75,000	675,000	75,000	750,000
	US\$/vehicle										
	11yd3	120,000	0	180,000	0	0	0	0	120,000	0	180,000
	US\$/vehicle										
	sub-total	795,000	0	930,000	0	0	75,000	75,000	795,000	75,000	930,000
	US\$										
	physical contingency	79,500	0	93,000	0	0	7,500	7,500	79,500	7,500	93,000
	10 %										
	sub-total	874,500	0	1,023,000	0	0	82,500	82,500	874,500	82,500	1,023,000
	US\$										
	VAT	113,685	0	132,990	0	0	10,725	10,725	113,685	10,725	132,990
	13 %										
	total	988,185	0	1,155,990	0	0	93,225	93,225	988,185	93,225	1,155,990
	US\$										
	design & supervise	39,750	0	46,500	0	0	3,750	3,750	39,750	3,750	46,500
	5 %										
	physical contingency	3,975	0	4,650	0	0	375	375	3,975	375	4,650
	10 %										
	sub-total	43,725	0	51,150	0	0	4,125	4,125	43,725	4,125	51,150
	US\$										
	VAT	5,684	0	6,650	0	0	536	536	5,684	536	6,650
	13 %										
	total	49,409	0	57,800	0	0	4,661	4,661	49,409	4,661	57,800
	US\$										
	total investment	1,037,594	0	1,213,790	0	0	97,886	97,886	1,037,594	97,886	1,213,790
	US\$										
	1000US\$	1038	0	1214	0	0	98	98	1038	98	1214
	US\$										
	4,798										
O&M cost											
	personnel cost										
	18yd3	312,967	324,145	335,322	348,362	359,540	370,717	381,895	393,072	404,249	417,290
	US\$										
	11yd3	58,387	59,894	62,878	64,375	67,370	68,867	71,861	73,358	74,855	77,849
	US\$										
	sub-total	371,354	384,029	398,200	412,737	426,910	439,584	453,756	466,430	479,104	495,139
	US\$										
	physical contingency	37,135	38,403	39,820	41,274	42,691	43,958	45,376	46,643	47,910	49,514
	10 %										
	personnel cost total	408,489	422,432	438,020	454,011	469,601	483,542	499,132	513,073	527,014	544,653
	US\$										
	operation cost										
	fuel 18yd3 (2001-2004)	52,466	54,340	56,214	58,400	60,274	62,148	64,022	65,895	67,769	69,955
	US\$										
	fuel 11yd3 (2001-2004)	10,148	10,408	10,928	11,189	11,709	11,969	12,490	12,750	13,010	13,530
	US\$										
	fuel 18yd3 (2005-2010)										
	US\$										
	fuel 11yd3 (2005-2010)										
	US\$										
	fuel total	62,614	64,748	67,142	69,589	71,983	74,117	76,512	78,645	80,779	83,485
	US\$										
	oil	6,261	6,475	6,714	6,959	7,198	7,412	7,651	7,865	8,078	8,349
	10 % of fuel										
	sub-total	68,875	71,223	73,856	76,548	79,181	81,529	84,163	86,510	88,857	91,834
	US\$										
	physical contingency	6,888	7,122	7,386	7,655	7,918	8,153	8,416	8,651	8,886	9,183
	10 %										
	sub-total	75,763	78,345	81,242	84,203	87,099	89,682	92,579	95,161	97,743	101,017
	US\$										
	VAT	9,849	10,185	10,561	10,946	11,323	11,659	12,035	12,371	12,707	13,132
	13 %										
	operation cost total	85,612	88,530	91,803	95,149	98,422	101,341	104,614	107,532	110,450	114,149
	US\$										

Soyapango	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
maintenance cost												
18yd3	US\$	189,000	195,750	202,500	210,375	217,125	223,875	230,625	237,375	244,125	252,000	
11yd3	US\$	35,100	36,000	37,800	38,700	40,500	41,400	43,200	44,100	45,000	46,800	
sub-total	US\$	224,100	231,750	240,300	249,075	257,625	265,275	273,825	281,475	289,125	298,800	
physical contingency	US\$	22,410	23,175	24,030	24,908	25,763	26,528	27,383	28,148	28,913	29,880	
sub-total	US\$	246,510	254,925	264,330	273,983	283,388	291,803	301,208	309,623	318,038	328,680	
VAT	US\$	32,046	33,140	34,363	35,618	36,840	37,934	39,157	40,251	41,345	42,728	
maintenance cost total	US\$	278,556	288,065	298,693	309,601	320,228	329,737	340,365	349,874	359,383	371,408	
O&M cost total	US\$	772,657	799,027	828,516	858,761	888,251	914,620	944,111	970,479	996,847	1,030,210	
	1000US\$	773	799	829	859	888	915	944	970	997	1,030	9,004
Cost summary												Total
collection amount 365-base	ton/day	133.4	138.5	143.6	148.7	153.7	158.7	163.6	168.4	173.2	178.3	
collection amount	1000ton/year	49	51	52	54	56	58	60	61	63	65	569
Investment	1000US\$/year	1,038	0	1,214	0	0	98	98	1,038	98	1,214	4,798
O&M	1000US\$/year	773	799	829	859	888	915	944	970	997	1,030	9,004
total	1000US\$/year	1,811	799	2,043	859	888	1,013	1,042	2,008	1,095	2,244	13,802
Investment per ton	US\$/ton	21.18	0.00	23.35	0.00	0.00	1.69	1.63	17.02	1.56	18.68	8.43
O&M per ton	US\$/ton	15.78	15.67	15.94	15.91	15.86	15.78	15.73	15.90	15.83	15.85	15.82
total	US\$/ton	36.96	15.67	39.29	15.91	15.86	17.47	17.36	32.92	17.39	34.53	24.25

Ilopango

Ilopango	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day	44.1	45.5	46.9	48.2	49.5	50.8	52.0	53.2	54.4	55.7	
collection amount 312-base	ton/day	51.6	53.2	54.9	56.4	57.9	59.4	60.8	62.2	63.6	65.2	
amount for 18yd3	ton/day	43.9	45.2	46.7	47.9	49.2	50.5	51.7	52.9	54.1	55.4	
amount for 11yd3	ton/day	7.7	8.0	8.2	8.5	8.7	8.9	9.1	9.3	9.5	9.8	
required number of vehicle (1)												
net working rate	90 %											
18yd3 (2001-2004)	unit	6.0	6.2	6.4	6.6	6.7	6.9	7.1	7.3	7.4	7.6	
11yd3 (2001-2004)	unit	1.4	1.4	1.5	1.5	1.6	1.6	1.6	1.7	1.7	1.8	
18yd3 (2005-2010)	unit											
11yd3 (2005-2010)	unit											
required number of vehicle (2)												
18yd3	unit	6	6	6	7	7	7	7	7	7	8	
11yd3	unit	1	1	2	2	2	2	2	2	2	2	
operable vehicle												

Ilopingo	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010 Total
purchase of vehicle	18yd3 unit	4	7	3	7	7	7	7	4	7	3
	11yd3 unit	1	2	1	2	2	2	2	1	2	1
Cost	18yd3 unit	3	0	4	0	0	0	0	3	0	5
	11yd3 unit	1	0	1	0	0	0	0	1	0	1
Investment	Vehicle										
	18yd3 US\$	225,000	0	300,000	0	0	0	0	225,000	0	375,000
	11yd3 US\$	60,000	0	60,000	0	0	0	0	60,000	0	60,000
	sub-total US\$	285,000	0	360,000	0	0	0	0	285,000	0	435,000
	physical contingency 10 % US\$	28,500	0	36,000	0	0	0	0	28,500	0	43,500
	sub-total US\$	313,500	0	396,000	0	0	0	0	313,500	0	478,500
	VAT 13 % US\$	40,755	0	51,480	0	0	0	0	40,755	0	62,205
	total US\$	354,255	0	447,480	0	0	0	0	354,255	0	540,705
	design & supervise US\$	14,250	0	18,000	0	0	0	0	14,250	0	21,750
	physical contingency 10 % US\$	1,425	0	1,800	0	0	0	0	1,425	0	2,175
sub-total US\$	15,675	0	19,800	0	0	0	0	15,675	0	23,925	
VAT 13 % US\$	2,038	0	2,574	0	0	0	0	2,038	0	3,110	
total US\$	17,713	0	22,374	0	0	0	0	17,713	0	27,035	
total investment US\$	371,968	0	469,854	0	0	0	0	371,968	0	567,740	
	1000US\$	372	0	470	0	0	0	0	372	0	568
O&M cost	personnel cost										
	18yd3 US\$	111,774	115,500	119,226	122,951	124,814	128,540	132,266	135,992	137,855	141,580
	11yd3 US\$	20,959	20,959	22,457	22,457	23,954	23,954	23,954	25,451	25,451	26,948
	sub-total US\$	132,733	136,459	141,683	145,408	148,768	152,494	156,220	161,443	163,306	168,528
	physical contingency 10 % US\$	13,273	13,646	14,168	14,541	14,877	15,249	15,622	16,144	16,331	16,853
	personnel cost total US\$	146,006	150,105	155,851	159,949	163,645	167,743	171,842	177,587	179,637	185,381
	operation cost										
	fuel 18yd3 (2001-2004) US\$	20,556	21,241	21,926	22,612	22,954	23,639	24,325	25,010	25,352	26,038
	fuel 11yd3 (2001-2004) US\$	3,997	3,997	4,283	4,283	4,568	4,568	4,568	4,854	4,854	5,139
	fuel 18yd3 (2005-2010) US\$	24,553	25,238	26,209	26,895	27,522	28,207	28,893	29,864	30,206	31,177
fuel 11yd3 (2005-2010) US\$	2,455	2,524	2,621	2,690	2,752	2,821	2,889	2,986	3,021	3,118	
oil sub-total US\$	27,008	27,762	28,830	29,585	30,274	31,028	31,782	32,850	33,227	34,295	
physical contingency 10 % US\$	2,701	2,776	2,883	2,959	3,027	3,103	3,178	3,285	3,323	3,430	
sub-total US\$	29,709	30,538	31,713	32,544	33,301	34,131	34,960	36,135	36,550	37,725	
VAT 13 % US\$	3,862	3,970	4,123	4,231	4,329	4,437	4,545	4,698	4,752	4,904	
operation cost total US\$	33,571	34,508	35,836	36,775	37,630	38,568	39,505	40,833	41,302	42,629	
maintenance cost											
18yd3 US\$	67,500	69,750	72,000	74,250	75,375	77,625	79,875	82,125	83,250	85,500	

Ilopingo	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
11yd3 sub-total	US\$	12,600	12,600	13,500	13,500	14,400	14,400	14,400	15,300	15,300	16,200	
15 % of vehicle	US\$	80,100	82,350	85,500	87,750	89,775	92,025	94,275	97,425	98,550	101,700	
physical contingency	US\$	8,010	8,235	8,550	8,775	8,978	9,203	9,428	9,743	9,855	10,170	
10 %	US\$	88,110	90,585	94,050	96,525	98,753	101,228	103,703	107,168	108,405	111,870	
13 %	US\$	11,454	11,776	12,227	12,548	12,838	13,160	13,481	13,932	14,093	14,543	
VAT	US\$	99,564	102,361	106,277	109,073	111,591	114,388	117,184	121,100	122,498	126,413	
maintenance cost total	US\$	279,141	286,974	297,964	305,797	312,866	320,699	328,531	339,520	343,437	354,423	
O&M cost total	1000US\$	279	287	298	306	313	321	329	340	343	354	3,170
Cost summary												Total
collection amount 365-base	ton/day	44.1	45.5	46.9	48.2	49.5	50.8	52.0	53.2	54.4	55.7	183
collection amount	1000ton/year	16	17	17	18	18	19	19	19	20	20	
Investment	1000US\$/year	372	0	470	0	0	0	0	372	0	568	1,782
O&M	1000US\$/year	279	287	298	306	313	321	329	340	343	354	3,170
total	1000US\$/year	651	287	768	306	313	321	329	712	343	922	4,952
Investment per ton	US\$/ton	23.25	0.00	27.65	0.00	0.00	0.00	0.00	19.58	0.00	28.40	9.74
O&M per ton	US\$/ton	17.44	16.88	17.53	17.00	17.39	16.89	17.32	17.89	17.15	17.70	17.32
total	US\$/ton	40.69	16.88	45.18	17.00	17.39	16.89	17.32	37.47	17.15	46.10	27.06

San Martin

San Martin	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day	29.0	25.7	26.5	27.2	27.9	28.7	29.4	30.0	30.7	31.4	
collection amount 312-base	ton/day	29.2	30.1	31.0	31.8	32.6	33.6	34.4	35.1	35.9	36.7	
amount for 18yd3	ton/day	24.8	25.6	26.4	27.0	27.7	28.6	29.2	29.8	30.5	31.2	
amount for 11yd3	ton/day	4.4	4.5	4.7	4.8	4.9	5.0	5.2	5.3	5.4	5.5	
required number of vehicle (1)												
net working rate	90 %											
18yd3 (2001-2004)	unit	2.0	2.0	2.1	2.2	2.2	2.3	2.3	2.4	2.4	2.5	
11yd3 (2001-2004)	unit	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	
18yd3 (2005-2010)	unit											
11yd3 (2005-2010)	unit											
required number of vehicle (2)												
18yd3	unit	2	2	2	2	2	2	2	2	2	3	
11yd3	unit	1	1	1	1	1	1	1	1	1	1	
operatable vehicle												
18yd3	unit	3	3	0	2	2	2	2	2	2	0	
11yd3	unit	1	1	0	1	1	1	1	1	1	0	

San Martin	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
purchase of vehicle												
	18yd3	0	0	2	0	0	0	0	0	0	0	
	11yd3	0	0	1	0	0	0	0	0	0	0	3
Cost												
Investment												
	Vehicle											
	18yd3	0	0	150,000	0	0	0	0	0	0	0	225,000
	11yd3	0	0	60,000	0	0	0	0	0	0	0	60,000
	sub-total	0	0	210,000	0	0	0	0	0	0	0	285,000
	physical contingency	0	0	21,000	0	0	0	0	0	0	0	28,500
	sub-total	0	0	231,000	0	0	0	0	0	0	0	313,500
	VAT	0	0	30,030	0	0	0	0	0	0	0	40,755
	total	0	0	261,030	0	0	0	0	0	0	0	354,255
	design & supervise	0	0	10,500	0	0	0	0	0	0	0	14,250
	physical contingency	0	0	1,050	0	0	0	0	0	0	0	1,425
	sub-total	0	0	11,550	0	0	0	0	0	0	0	15,675
	VAT	0	0	1,502	0	0	0	0	0	0	0	2,038
	total	0	0	13,052	0	0	0	0	0	0	0	17,713
	total investment	0	0	274,082	0	0	0	0	0	0	0	371,968
		0	0	274	0	0	0	0	0	0	0	646
O&M cost												
	personnel cost											
	18yd3	37,258	37,258	39,121	40,984	40,984	42,847	42,847	44,710	44,710	46,573	465,733
	11yd3	7,486	7,486	7,486	7,486	7,486	7,486	7,486	8,983	8,983	8,983	89,833
	sub-total	44,744	44,744	46,607	48,470	48,470	50,333	50,333	53,693	53,693	55,556	555,566
	physical contingency	4,474	4,474	4,661	4,847	4,847	5,033	5,033	5,369	5,369	5,556	55,556
	personnel cost total	49,218	49,218	51,268	53,317	53,317	55,366	55,366	59,062	59,062	61,112	611,112
	operation cost											
	fuel 18yd3 (2001-2004)	1,854	1,854	1,947	2,039	2,039	2,132	2,132	2,225	2,225	2,318	23,183
	fuel 11yd3 (2001-2004)	384	384	384	384	384	384	384	461	461	461	4,613
	fuel 18yd3 (2005-2010)											
	fuel 11yd3 (2005-2010)											
	fuel total	2,238	2,238	2,331	2,423	2,423	2,516	2,516	2,686	2,686	2,779	27,796
	oil	224	224	233	242	242	252	252	269	269	278	2,778
	sub-total	2,462	2,462	2,564	2,665	2,665	2,768	2,768	2,955	2,955	3,057	30,574
	physical contingency	246	246	256	267	267	277	277	296	296	306	3,063
	sub-total	2,708	2,708	2,820	2,932	2,932	3,045	3,045	3,251	3,251	3,363	33,637
	VAT	352	352	367	381	381	396	396	423	423	437	4,373
	operation cost total	3,060	3,060	3,187	3,313	3,313	3,441	3,441	3,674	3,674	3,800	38,003
	maintenance cost											
	18yd3	22,500	22,500	23,625	24,750	24,750	25,875	25,875	27,000	27,000	28,125	281,250
	11yd3	4,500	4,500	4,500	4,500	4,500	4,500	4,500	5,400	5,400	5,400	54,000
	sub-total	27,000	27,000	28,125	29,250	29,250	30,375	30,375	32,400	32,400	33,525	335,250

San Martin	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
physical contingency	10 %	2,700	2,700	2,813	2,925	2,925	3,038	3,038	3,240	3,240	3,353	
sub-total		29,700	29,700	30,938	32,175	32,175	33,413	33,413	35,640	35,640	36,878	
VAT		3,861	3,861	4,022	4,183	4,183	4,344	4,344	4,633	4,633	4,794	
maintenance cost total	13 %	33,561	33,561	34,960	36,358	36,358	37,757	37,757	40,273	40,273	41,672	
O&M cost total		85,839	85,839	89,415	92,988	92,988	96,564	96,564	103,009	103,009	106,584	954
	1000US\$	86	86	89	93	93	97	97	103	103	107	
Cost summary												Total
collection amount 365-base	ton/day	25.0	25.7	26.5	27.2	27.9	28.7	29.4	30.0	30.7	31.4	
collection amount	1000ton/year	9	9	10	10	10	10	11	11	11	11	102
Investment	1000US\$/year	0	0	274	0	0	0	0	0	0	372	646
O&M	1000US\$/year	86	86	89	93	93	97	97	103	103	107	954
total	1000US\$/year	86	86	363	93	93	97	97	103	103	479	1,600
Investment per ton	US\$/ton	0.00	0.00	27.40	0.00	0.00	0.00	0.00	0.00	0.00	33.82	6.33
O&M per ton	US\$/ton	9.56	9.56	8.90	9.30	9.30	9.70	8.82	9.36	9.36	9.73	9.35
total	US\$/ton	9.56	9.56	36.30	9.30	9.30	9.70	8.82	9.36	9.36	43.55	15.68

Apopa

Apopa	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day	47.0	48.5	49.9	51.3	52.7	54.0	55.3	56.6	57.9	59.2	
collection amount 312-base	ton/day	55.0	56.7	58.4	60.0	61.7	63.2	64.7	66.2	67.7	69.3	
amount for 18yd3	ton/day	46.8	48.2	49.6	51.0	52.4	53.7	55.0	56.3	57.5	58.9	
amount for 11yd3	ton/day	8.3	8.5	8.8	9.0	9.3	9.5	9.7	9.9	10.2	10.4	
required number of vehicle (1)												
net working rate	90 %											
18yd3 (2001-2010)	unit	4.3	4.4	4.6	4.7	4.8	4.9	5.1	5.2	5.3	5.4	
11yd3 (2001-2010)	unit	1.0	1.0	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.3	
required number of vehicle (2)												
18yd3	unit	4	4	5	5	5	5	5	5	5	5	
11yd3	unit	1	1	1	1	1	1	1	1	1	1	
operatable vehicle												
18yd3	unit	4	4	0	5	5	5	5	5	5	0	
11yd3	unit	1	1	0	1	1	1	1	1	1	0	
purchase of vehicle												
18yd3	unit	0	0	5	0	0	0	0	0	0	5	
11yd3	unit	0	0	1	0	0	0	0	0	0	1	
Cost												

Apopa Investment	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
Vehicle												
18yd3	75,000 US\$/vehicle	0	0	375,000	0	0	0	0	0	0	375,000	
11yd3	60,000 US\$/vehicle	0	0	60,000	0	0	0	0	0	0	60,000	
sub-total		0	0	435,000	0	0	0	0	0	0	435,000	
physical contingency	10 %	0	0	43,500	0	0	0	0	0	0	43,500	
sub-total		0	0	478,500	0	0	0	0	0	0	478,500	
VAT	13 %	0	0	62,205	0	0	0	0	0	0	62,205	
total		0	0	540,705	0	0	0	0	0	0	540,705	
design & supervise												
18yd3	5 %	0	0	21,750	0	0	0	0	0	0	21,750	
11yd3	10 %	0	0	2,175	0	0	0	0	0	0	2,175	
sub-total		0	0	23,925	0	0	0	0	0	0	23,925	
VAT	13 %	0	0	3,110	0	0	0	0	0	0	3,110	
total		0	0	27,035	0	0	0	0	0	0	27,035	
total investment		0	0	567,740	0	0	0	0	0	0	567,740	1,136
	US\$ 1000US\$	0	0	568	0	0	0	0	0	0	568	
O&M cost												
personnel cost												
18yd3	18,629 US\$/vehicle	80,105	81,968	85,693	87,556	89,419	91,282	95,008	96,871	98,734	100,597	
11yd3	14,971 US\$/vehicle	14,971	14,971	16,468	16,468	16,468	16,468	17,965	17,965	17,965	19,462	
sub-total		95,076	96,939	102,161	104,024	105,887	107,750	112,973	114,836	116,699	120,059	
physical contingency	10 %	9,508	9,994	10,216	10,402	10,589	10,775	11,297	11,484	11,670	12,006	
personnel cost total		104,584	106,933	112,377	114,426	116,476	118,525	124,270	126,320	128,369	132,065	
operation cost												
fuel 18yd3 (2001-2010)	1,704 US\$/vehicle	7,327	7,498	7,838	8,009	8,179	8,350	8,690	8,861	9,031	9,202	
fuel 11yd3 (2001-2010)	1,413 US\$/vehicle	1,413	1,413	1,554	1,554	1,554	1,554	1,696	1,696	1,696	1,837	
fuel total		8,740	8,911	9,392	9,563	9,733	9,904	10,386	10,557	10,727	11,039	
oil	10 % of fuel	874	891	939	956	973	990	1,039	1,056	1,073	1,104	
sub-total		9,614	9,802	10,331	10,519	10,706	10,894	11,425	11,613	11,800	12,143	
physical contingency	10 %	961	980	1,033	1,052	1,071	1,089	1,143	1,161	1,180	1,214	
sub-total		10,575	10,782	11,364	11,571	11,777	11,983	12,568	12,774	12,980	13,357	
VAT	13 %	1,375	1,402	1,477	1,504	1,531	1,558	1,634	1,661	1,687	1,736	
operation cost total		11,950	12,184	12,841	13,075	13,308	13,541	14,202	14,435	14,667	15,093	
maintenance cost												
18yd3	15 % of vehicle	48,375	49,500	51,750	52,875	54,000	55,125	57,375	58,500	59,625	60,750	
11yd3	15 % of vehicle	9,000	9,000	9,900	9,900	9,900	9,900	10,800	10,800	10,800	11,700	
sub-total		57,375	58,500	61,650	62,775	63,900	65,025	68,175	69,300	70,425	72,450	
physical contingency	10 %	5,738	5,850	6,165	6,278	6,390	6,503	6,818	6,930	7,043	7,245	
sub-total		63,113	64,350	67,815	69,053	70,290	71,528	74,993	76,230	77,468	79,695	
VAT	13 %	8,205	8,366	8,816	8,977	9,138	9,299	9,749	9,910	10,071	10,360	
maintenance cost total		71,318	72,716	76,631	78,030	79,428	80,827	84,742	86,140	87,539	90,055	
O&M cost total		187,852	191,533	201,849	205,531	209,212	212,893	223,214	226,895	230,575	237,213	

Apopa	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
	1000US\$	188	192	202	206	209	213	223	227	231	237	2,128
Cost summary	ton/day	47.0	48.5	49.9	51.3	52.7	54.0	55.3	56.6	57.9	59.2	Total
collection amount 365-base	1000ton/year	17	18	18	19	19	20	20	21	21	22	195
collection amount	1000US\$/year	0	0	568	0	0	0	0	0	0	0	1,136
Investment	1000US\$/year	188	192	202	206	209	213	223	227	231	237	2,128
O&M	1000US\$/year	188	192	770	206	209	213	223	227	231	805	3,264
total	1000US\$/year	0.00	0.00	31.56	0.00	0.00	0.00	0.00	0.00	0.00	25.82	5.83
Investment per ton	US\$/ton	11.06	10.67	11.22	10.84	11.00	10.65	11.15	10.81	11.00	10.77	10.91
O&M per ton	US\$/ton	11.06	10.67	42.78	10.84	11.00	10.65	11.15	10.81	11.00	36.59	16.74
total	US\$/ton											

Nejapa

Nejapa	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day	4.9	5.1	5.2	5.4	5.5	5.7	5.8	5.9	6.1	6.2	
collection amount 312-base	ton/day	5.7	6.0	6.1	6.3	6.4	6.7	6.8	6.9	7.1	7.3	
amount for 18yd3	ton/day	4.8	5.1	5.2	5.4	5.4	5.7	5.8	5.9	6.0	6.2	
amount for 11yd3	ton/day	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.1	1.1	
required number of vehicle (1)												
net working rate	90 %											
18yd3 (2001-2010)	unit	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
11yd3 (2001-2010)	unit	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
required number of vehicle (2)												
18yd3	unit	1	1	1	1	1	1	1	1	1	1	
11yd3	unit	0	0	0	0	0	0	0	0	0	0	
operatable vehicle												
18yd3	unit	1	1	0	1	1	1	1	1	1	0	
11yd3	unit	1	1	0	0	0	0	0	0	0	0	
purchase of vehicle												
18yd3	unit	0	0	1	0	0	0	0	0	0	1	
11yd3	unit	0	0	0	0	0	0	0	0	0	0	
Cost												
Investment	Vehicle											

Nejapa		year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
	18yd3	US\$	0	0	75,000	0	0	0	0	0	0	75,000	
	11yd3	US\$	0	0	0	0	0	0	0	0	0	0	
	sub-total	US\$	0	0	75,000	0	0	0	0	0	0	75,000	
	physical contingency	US\$	0	0	7,500	0	0	0	0	0	0	7,500	
	sub-total	US\$	0	0	82,500	0	0	0	0	0	0	82,500	
	VAT	US\$	0	0	10,725	0	0	0	0	0	0	10,725	
	total	US\$	0	0	93,225	0	0	0	0	0	0	93,225	
	design & supervise	US\$	0	0	3,750	0	0	0	0	0	0	3,750	
	physical contingency	US\$	0	0	375	0	0	0	0	0	0	375	
	sub-total	US\$	0	0	4,125	0	0	0	0	0	0	4,125	
	VAT	US\$	0	0	536	0	0	0	0	0	0	536	
	total	US\$	0	0	4,661	0	0	0	0	0	0	4,661	
	total investment	US\$	0	0	97,886	0	0	0	0	0	0	97,886	196
		1000US\$	0	0	98	0	0	0	0	0	0	98	
O&M cost	personnel cost	US\$	7,452	7,452	9,315	9,315	9,315	9,315	9,315	9,315	9,315	9,315	
	18yd3	US\$	1,497	1,497	1,497	1,497	1,497	1,497	1,497	1,497	1,497	1,497	
	11yd3	US\$	8,949	8,949	10,812	10,812	10,812	10,812	10,812	10,812	10,812	10,812	
	sub-total	US\$	895	895	1,081	1,081	1,081	1,081	1,081	1,081	1,081	1,081	
	physical contingency	US\$	9,844	9,844	11,893	11,893	11,893	11,893	11,893	11,893	11,893	11,893	
	personnel cost total	US\$	560	560	701	701	701	701	701	701	701	701	
	operation cost	US\$	116	116	116	116	116	116	116	116	116	116	
	fuel 18yd3 (2001-2010)	US\$	676	676	817	817	817	817	817	817	817	817	
	fuel 11yd3 (2001-2010)	US\$	68	68	82	82	82	82	82	82	82	82	
	sub-total	US\$	744	744	899	899	899	899	899	899	899	899	
	physical contingency	US\$	74	74	90	90	90	90	90	90	90	90	
	sub-total	US\$	818	818	989	989	989	989	989	989	989	989	
	VAT	US\$	106	106	129	129	129	129	129	129	129	129	
	operation cost total	US\$	924	924	1,118	1,118	1,118	1,118	1,118	1,118	1,118	1,118	
	maintenance cost	US\$	4,500	4,500	5,625	5,625	5,625	5,625	5,625	5,625	5,625	5,625	
	18yd3	US\$	900	900	900	900	900	900	900	900	900	900	
	11yd3	US\$	5,400	5,400	6,525	6,525	6,525	6,525	6,525	6,525	6,525	6,525	
	sub-total	US\$	540	540	653	653	653	653	653	653	653	653	
	physical contingency	US\$	5,940	5,940	7,178	7,178	7,178	7,178	7,178	7,178	7,178	7,178	
	sub-total	US\$	772	772	933	933	933	933	933	933	933	933	
	VAT	US\$	6,712	6,712	8,111	8,111	8,111	8,111	8,111	8,111	8,111	8,111	
	maintenance cost total	US\$	17,480	17,480	21,122	21,122	21,122	21,122	21,122	21,122	21,122	21,122	
	O&M cost total	US\$	17	17	21	21	21	21	21	21	21	21	
		1000US\$	17	17	21	21	21	21	21	21	21	21	202

Nejapa		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
Cost summary												
collection amount	ton/day	4.9	5.1	5.2	5.4	5.5	5.7	5.8	5.9	6.1	6.2	
collection amount	1000ton/year	2	2	2	2	2	2	2	2	2	2	20
Investment	1000US\$/year	0	0	98	0	0	0	0	0	0	98	196
O&M	1000US\$/year	17	17	21	21	21	21	21	21	21	21	202
total	1000US\$/year	17	17	119	21	21	21	21	21	21	119	398
Investment per ton	US\$/ton	0.00	0.00	49.00	0.00	0.00	0.00	0.00	0.00	0.00	49.00	9.80
O&M per ton	US\$/ton	8.50	8.50	10.50	10.50	10.50	10.50	10.50	10.50	10.50	10.50	10.10
total	US\$/ton	8.50	8.50	59.50	10.50	10.50	10.50	10.50	10.50	10.50	59.50	19.90

Tonacatepeque

Tonacatepeque	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day	21.7	22.4	23.0	23.7	24.3	24.9	25.5	26.1	26.7	27.3	
collection amount 312-base	ton/day	25.4	26.2	26.9	27.7	28.4	29.1	29.8	30.5	31.2	31.9	
amount for 18yd3	ton/day	21.6	22.3	22.9	23.5	24.1	24.7	25.3	25.9	26.5	27.1	
amount for 11yd3	ton/day	3.8	3.9	4.0	4.2	4.3	4.4	4.5	4.6	4.7	4.8	
required number of vehicle (1)												
net working rate	90 %											
18yd3 (2001-2004)	unit	1.7	1.8	1.8	1.9	1.9	2.0	2.0	2.1	2.1	2.2	
11yd3 (2001-2004)	unit	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	
18yd3 (2005-2010)	unit											
11yd3 (2005-2010)	unit											
required number of vehicle (2)												
18yd3	unit	2	2	2	2	2	2	2	2	2	2	
11yd3	unit	0	0	0	0	1	1	1	1	1	1	
operatable vehicle												
18yd3	unit	2	2	0	2	2	2	2	2	2	0	
11yd3	unit	0	0	0	0	0	1	1	1	1	1	
purchase of vehicle												
18yd3	unit	0	0	2	0	0	0	0	0	0	2	
11yd3	unit	0	0	0	0	1	0	0	0	0	0	
Cost												
Investment												
Vehicle	US\$	0	0	150,000	0	0	0	0	0	0	0	150,000
18yd3	US\$	0	0	0	0	60,000	0	0	0	0	0	0
11yd3	US\$	0	0	150,000	0	60,000	0	0	0	0	0	150,000
sub-total	US\$	0	0	150,000	0	60,000	0	0	0	0	0	150,000
physical contingency	10 %	0	0	15,000	0	6,000	0	0	0	0	0	15,000
sub-total	US\$	0	0	165,000	0	66,000	0	0	0	0	0	165,000
VAT	13 %	0	0	21,450	0	8,580	0	0	0	0	0	21,450
total	US\$	0	0	186,450	0	74,580	0	0	0	0	0	186,450
design & supervise	5 %	0	0	7,500	0	3,000	0	0	0	0	0	7,500
physical contingency	10 %	0	0	750	0	300	0	0	0	0	0	750
sub-total	US\$	0	0	8,250	0	3,300	0	0	0	0	0	8,250
VAT	13 %	0	0	1,073	0	429	0	0	0	0	0	1,073
total	US\$	0	0	9,323	0	3,729	0	0	0	0	0	9,323
total investment	US\$	0	0	195,773	0	78,309	0	0	0	0	0	195,773
	1000US\$	0	0	196	0	78	0	0	0	0	0	196
O&M cost												
personnel cost	US\$	31,669	33,532	33,532	35,395	35,395	37,258	37,258	39,121	39,121	40,984	
18yd3	US\$	5,988	5,988	5,988	5,988	7,486	7,486	7,486	7,486	7,486	7,486	
11yd3	US\$	37,657	39,520	39,520	41,383	42,881	44,744	44,744	46,607	46,607	48,470	
sub-total	US\$											

Tonacatepeque		year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
physical contingency	10 %	US\$	3,766	3,952	3,952	4,138	4,288	4,474	4,474	4,661	4,661	4,847	
personnel cost total		US\$	41,423	43,472	43,472	45,521	47,169	49,218	49,218	51,268	51,268	53,317	
operation cost		US\$	1,576	1,669	1,669	1,761	1,761	1,854	1,854	1,947	1,947	2,039	
fuel 18yd3 (2001-2004)	927 US\$/vehicle	US\$	307	307	307	307	384	384	384	384	384	384	
fuel 11yd3 (2001-2004)	768 US\$/vehicle	US\$											
fuel 18yd3 (2001-2004)	927 US\$/vehicle	US\$											
fuel 11yd3 (2001-2004)	768 US\$/vehicle	US\$											
fuel total		US\$	1,883	1,976	1,976	2,068	2,145	2,238	2,238	2,331	2,331	2,423	
oil		US\$	188	198	198	207	215	224	224	233	233	242	
sub-total	10 % of fuel	US\$	2,071	2,174	2,174	2,275	2,360	2,462	2,462	2,564	2,564	2,665	
physical contingency	10 %	US\$	207	217	217	228	236	246	246	256	256	267	
sub-total		US\$	2,278	2,391	2,391	2,503	2,596	2,708	2,708	2,820	2,820	2,932	
VAT		US\$	296	311	311	325	337	352	352	367	367	381	
operation cost total	13 %	US\$	2,574	2,702	2,702	2,828	2,933	3,060	3,060	3,187	3,187	3,313	
maintenance cost		US\$	19,125	20,250	20,250	21,375	21,375	22,500	22,500	23,625	23,625	24,750	
18yd3	15 % of vehicle	US\$	3,600	3,600	3,600	3,600	4,500	4,500	4,500	4,500	4,500	4,500	
11yd3	15 % of vehicle	US\$	22,725	23,850	23,850	24,975	25,875	27,000	27,000	28,125	28,125	29,250	
sub-total		US\$	2,273	2,385	2,385	2,498	2,588	2,700	2,700	2,813	2,813	2,925	
physical contingency	10 %	US\$	24,998	26,235	26,235	27,473	28,463	29,700	29,700	30,938	30,938	32,175	
sub-total		US\$	3,250	3,411	3,411	3,571	3,700	3,861	3,861	4,022	4,022	4,183	
VAT	13 %	US\$	28,248	29,646	29,646	31,044	32,163	33,561	33,561	34,960	34,960	36,358	
maintenance cost total		US\$	72,245	75,820	75,820	79,393	82,265	85,839	85,839	89,415	89,415	92,988	
O&M cost total		1000US\$	72	76	76	79	82	86	86	89	89	93	828
Cost summary		ton/day	21.7	22.4	23.0	23.7	24.3	24.9	25.5	26.1	26.7	27.3	Total
collection amount 365-base		1000ton/year	8	8	8	9	9	9	9	10	10	10	90
collection amount		1000US\$/year	0	0	196	0	78	0	0	0	0	196	470
Investment		1000US\$/year	72	76	76	79	82	86	86	89	89	93	828
O&M		1000US\$/year	72	76	76	79	160	86	86	89	89	289	1,298
total		US\$/ton	0.00	0.00	24.50	0.00	8.67	0.00	0.00	0.00	0.00	19.60	5.22
Investment per ton		US\$/ton	9.00	9.50	9.50	8.78	9.11	9.56	9.56	8.90	8.90	9.30	9.20
O&M per ton		US\$/ton	9.00	9.50	34.00	8.78	17.78	9.56	9.56	8.90	8.90	28.90	14.42
total													

Total

Total	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount 365-base	ton/day	1069.9	1109.5	1149.0	1187.6	1225.9	1264.0	1301.0	1337.7	1374.6	1412.0	
collection amount 312-base	ton/day	1251.7	1297.8	1344.1	1389.4	1434.0	1478.8	1522.0	1564.8	1607.9	1652.0	
amount for 18yd3	ton/day	1064.0	1103.1	1142.6	1181.0	1218.7	1256.9	1293.7	1330.2	1366.8	1404.3	
amount for 11yd3	ton/day	187.9	194.7	201.7	208.5	215.3	222.0	228.4	234.7	241.3	247.8	
required number of vehicle (1)												
net working rate	90 %											
18yd3	ton/day	129.4	134.1	139.1	143.9	148.1	153.0	157.4	161.9	166.4	171.0	
11yd3	ton/day	30.0	31.1	32.1	33.3	34.3	35.6	36.6	37.5	38.5	39.6	
required number of vehicle (2)												
18yd3	unit	131	134	141	146	148	153	158	162	166	171	
11yd3	unit	30	32	33	34	37	37	38	39	39	40	
operatable vehicle												
18yd3	unit	81	144	64	145	146	148	153	95	160	85	
11yd3	unit	20	37	17	35	35	37	37	21	39	21	
purchase of vehicle												
18yd3	unit	63	2	81	1	2	5	5	67	6	86	
11yd3	unit	17	0	18	0	2	0	1	18	0	19	
Cost												
Investment												
Vehicle												
18yd3	US\$	4,725,000	150,000	6,075,000	75,000	150,000	375,000	375,000	5,025,000	450,000	6,450,000	
11yd3	US\$	1,020,000	0	1,080,000	0	120,000	0	60,000	1,080,000	0	1,140,000	
sub-total	US\$	5,745,000	150,000	7,155,000	75,000	270,000	375,000	435,000	6,105,000	450,000	7,590,000	
physical contingency	10 %	574,500	15,000	715,500	7,500	27,000	37,500	43,500	610,500	45,000	759,000	
sub-total	US\$	6,319,500	165,000	7,870,500	82,500	297,000	412,500	478,500	6,715,500	495,000	8,349,000	
VAT	13 %	821,535	21,450	1,023,165	10,725	38,610	53,625	62,205	873,015	64,350	1,085,370	
total	US\$	7,141,035	186,450	8,893,665	93,225	335,610	466,125	540,705	7,588,515	559,350	9,434,370	
design & supervise	5 %	287,250	7,500	357,750	3,750	13,500	18,750	21,750	305,250	22,500	379,500	
physical contingency	10 %	28,725	750	35,775	375	1,350	1,875	2,175	30,525	2,250	37,950	
sub-total	US\$	315,975	8,250	393,525	4,125	14,850	20,625	23,925	335,775	24,750	417,450	
VAT	13 %	41,077	1,072	51,160	536	1,930	2,680	3,109	43,650	3,217	54,270	
total	US\$	357,052	9,322	444,685	4,661	16,780	23,305	27,034	379,425	27,967	471,720	
total investment	US\$	7,498,087	195,772	9,338,350	97,886	352,390	489,430	567,739	7,967,940	587,317	9,906,090	
	1000US\$	7,500	196	9,339	98	352	490	568	7,969	588	9,907	37,007
O&M cost												
personnel cost												
18yd3	US\$	2,410,593	2,498,151	2,591,294	2,680,712	2,758,956	2,850,238	2,932,208	3,016,038	3,099,868	3,185,562	
11yd3	US\$	449,130	465,599	480,570	498,535	513,508	532,969	547,940	561,414	576,384	592,852	
sub-total	US\$	2,859,723	2,963,750	3,071,864	3,179,247	3,272,464	3,383,207	3,480,148	3,577,452	3,676,252	3,778,414	
physical contingency	10 %	285,972	296,372	307,186	317,924	327,247	338,320	348,015	357,745	367,625	377,843	
personnel cost total	US\$	3,145,696	3,260,122	3,379,050	3,497,171	3,599,711	3,721,527	3,828,163	3,935,197	4,043,877	4,156,257	
operation cost												

Total	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
	fuel 18yd3	387,205	401,458	416,235	430,600	443,387	458,011	471,399	484,793	498,545	512,230	
	fuel 11yd3	74,678	77,450	79,958	83,891	86,373	89,757	92,248	94,465	96,971	99,831	
	fuel total	461,883	478,908	496,193	514,491	529,760	547,768	563,647	579,258	595,516	612,061	
	oil	46,188	47,893	49,620	51,450	52,976	54,778	56,366	57,928	59,554	61,208	
	sub-total	508,071	526,801	545,813	565,941	582,736	602,546	620,013	637,186	655,070	673,269	
	physical contingency	50,807	52,679	54,583	56,597	58,277	60,254	62,001	63,720	65,509	67,329	
	sub-total	558,878	579,480	600,396	622,538	641,013	662,800	682,014	700,906	720,579	740,598	
	VAT	72,654	75,333	78,052	80,930	83,331	86,165	88,662	91,120	93,677	96,277	
	operation cost total	631,532	654,813	678,448	703,468	724,344	748,965	770,676	792,026	814,256	836,875	
	maintenance cost											
	18yd3	1,455,750	1,508,625	1,564,875	1,618,875	1,666,125	1,721,250	1,770,750	1,821,375	1,872,000	1,923,750	
	11yd3	270,000	279,900	288,900	299,700	308,700	320,400	329,400	337,500	346,500	356,400	
	sub-total	1,725,750	1,788,525	1,853,775	1,918,575	1,974,825	2,041,650	2,100,150	2,158,875	2,218,500	2,280,150	
	physical contingency	172,579	178,856	185,380	191,862	197,488	204,170	210,019	215,894	221,854	228,019	
	sub-total	1,898,329	1,967,381	2,039,155	2,110,437	2,172,313	2,245,820	2,310,169	2,374,769	2,440,354	2,508,169	
	VAT	246,783	255,760	265,091	274,358	282,400	291,957	300,322	308,719	317,248	326,060	
	maintenance cost total	2,145,112	2,223,141	2,304,246	2,384,795	2,454,713	2,537,777	2,610,491	2,683,488	2,757,602	2,834,229	
	O&M cost total	5,922,340	6,138,076	6,361,744	6,585,434	6,778,768	7,008,269	7,209,330	7,410,711	7,615,735	7,827,361	68,857
	1000US\$	5,923	6,138	6,361	6,586	6,779	7,010	7,210	7,409	7,616	7,825	
Cost summary	year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
collection amount	ton/day	1069.9	1109.5	1149.0	1187.6	1225.9	1264.0	1301.0	1337.7	1374.6	1412.0	
collection amount	1000ton/year	391	405	419	433	447	461	475	488	502	515	4,536
Investment	1000US\$/year	7,500	196	9,339	98	352	490	568	7,969	588	9,907	37,007
O&M	1000US\$/year	5,923	6,138	6,361	6,586	6,779	7,010	7,210	7,409	7,616	7,825	68,857
total	1000US\$/year	13,423	6,334	15,700	6,684	7,131	7,500	7,778	15,378	8,204	17,732	105,864
Investment per ton	US\$/ton	19.18	0.48	22.29	0.23	0.79	1.06	1.2	16.33	1.17	19.24	8.16
O&M per ton	US\$/ton	15.15	15.16	15.18	15.21	15.17	15.21	15.18	15.18	15.17	15.19	15.18
total	US\$/ton	34.33	15.64	37.47	15.44	15.96	16.27	16.38	31.51	16.34	34.43	23.34