

**Table 5.1 Cost Benefit Stream of Urban Drainage (To Lich – 1st)**

(US\$1,000)

No.	Year	Const. Cost	O&M Cost	Cost Total	Benefit Total	B-C
1	1995	5,994		5,994	0	-5,994
2	1996	23,867		23,867	0	-23,867
3	1997	38,330		38,330	0	-38,330
4	1998	46,161		46,161	0	-46,161
5	1999	27,568	342	27,910	3,321	-24,589
6	2000	4,889	572	5,461	5,979	518
7	2001	0	1,143	1,143	12,917	11,774
8	2002	0	1,143	1,143	13,950	12,807
9	2003	0	1,143	1,143	15,066	13,923
10	2004	0	1,143	1,143	16,272	15,129
11	2005	0	1,143	1,143	17,573	16,430
12	2006	0	1,143	1,143	18,979	17,836
13	2007	0	1,143	1,143	20,498	19,355
14	2008	0	1,143	1,143	22,137	20,994
15	2009	0	1,143	1,143	23,908	22,765
16	2010	0	1,143	1,143	25,821	24,678
17	2011	0	1,143	1,143	27,887	26,744
18	2012	0	1,143	1,143	30,118	28,975
19	2013	0	1,143	1,143	32,527	31,384
20	2014	0	1,143	1,143	35,129	33,986
21	2015	0	1,143	1,143	37,940	36,797
22	2016	0	1,143	1,143	37,940	36,797
23	2017	0	1,143	1,143	37,940	36,797
24	2018	0	1,143	1,143	37,940	36,797
25	2019	0	1,143	1,143	37,940	36,797
26	2020	0	1,143	1,143	37,940	36,797
27	2021	0	1,143	1,143	37,940	36,797
28	2022	0	1,143	1,143	37,940	36,797
29	2023	0	1,143	1,143	37,940	36,797
30	2024	0	1,143	1,143	37,940	36,797
31	2025	32,478	1,143	33,621	37,940	4,319
32	2026	0	1,143	1,143	37,940	36,797
33	2027	0	1,143	1,143	37,940	36,797
34	2028	0	1,143	1,143	37,940	36,797
35	2029	0	1,143	1,143	37,940	36,797
36	2030	0	1,143	1,143	37,940	36,797
37	2031	0	1,143	1,143	37,940	36,797
38	2032	0	1,143	1,143	37,940	36,797
39	2033	0	1,143	1,143	37,940	36,797
40	2034	0	1,143	1,143	37,940	36,797
41	2035	0	1,143	1,143	37,940	36,797
42	2036	0	1,143	1,143	37,940	36,797
43	2037	0	1,143	1,143	37,940	36,797
44	2038	0	1,143	1,143	37,940	36,797
45	2039	0	1,143	1,143	37,940	36,797
46	2040	0	1,143	1,143	37,940	36,797
47	2041	0	1,143	1,143	37,940	36,797
48	2042	0	1,143	1,143	37,940	36,797
49	2043	0	1,143	1,143	37,940	36,797
50	2044	0	1,143	1,143	37,940	36,797
	Total	179,287	51,206	230,493	1,460,276	1,229,783

EIRR = 11.7%

**Table 5.2 Cost Benefit Stream of Urban Drainage (To Lich - 2nd)**

(US\$1,000)

No.	Year	Const. Cost	O&M Cost	Cost Total	Benefit Total	B-C
1	1995	0		0		0
2	1996	0		0		0
3	1997	0		0		0
4	1998	0		0		0
5	1999	0		0		0
6	2000	7,282		7,282		-7,282
7	2001	15,221		15,221		-15,221
8	2002	50,204	0	50,204	0	-50,204
9	2003	46,841	174	47,015	3,014	-44,001
10	2004	19,346	289	19,635	5,425	-14,210
11	2005	0	579	579	11,716	11,137
12	2006	0	579	579	12,653	12,074
13	2007	0	579	579	13,666	13,087
14	2008	0	579	579	14,759	14,180
15	2009	0	579	579	15,939	15,360
16	2010	0	579	579	17,215	16,636
17	2011	0	579	579	18,592	18,013
18	2012	0	579	579	20,079	19,500
19	2013	0	579	579	21,685	21,106
20	2014	0	579	579	23,420	22,841
21	2015	0	579	579	25,294	24,715
22	2016	0	579	579	25,294	24,715
23	2017	0	579	579	25,294	24,715
24	2018	0	579	579	25,294	24,715
25	2019	0	579	579	25,294	24,715
26	2020	0	579	579	25,294	24,715
27	2021	0	579	579	25,294	24,715
28	2022	0	579	579	25,294	24,715
29	2023	0	579	579	25,294	24,715
30	2024	0	579	579	25,294	24,715
31	2025	0	579	579	25,294	24,715
32	2026	0	579	579	25,294	24,715
33	2027	0	579	579	25,294	24,715
34	2028	0	579	579	25,294	24,715
35	2029	16,285	579	16,864	25,294	8,430
36	2030	0	579	579	25,294	24,715
37	2031	0	579	579	25,294	24,715
38	2032	0	579	579	25,294	24,715
39	2033	0	579	579	25,294	24,715
40	2034	0	579	579	25,294	24,715
41	2035	0	579	579	25,294	24,715
42	2036	0	579	579	25,294	24,715
43	2037	0	579	579	25,294	24,715
44	2038	0	579	579	25,294	24,715
45	2039	0	579	579	25,294	24,715
46	2040	0	579	579	25,294	24,715
47	2041	0	579	579	25,294	24,715
48	2042	0	579	579	25,294	24,715
49	2043	0	579	579	25,294	24,715
50	2044	0	579	579	25,294	24,715
Total		155,179	23,623	178,802	936,984	758,182

EIRR = 11.4%

**Table 5.3 Cost Benefit Stream of Urban Drainage Plan (To Lich)**

(US\$1,000)

No.	Year	Const. Cost		O&M Cost	Cost Total	Benefit			B-C
		1st Stage	2nd Stage			1st Stage	2nd Stage	Total	
1	1995	5,994			5,994	0	0	0	-5,994
2	1996	23,867			23,867	0	0	0	-23,867
3	1997	38,330			38,330	0	0	0	-38,330
4	1998	46,161		0	46,161	0	0	0	-46,161
5	1999	27,568		342	27,910	3,321	0	3,321	-24,589
6	2000	4,889	7,282	572	12,743	5,979	0	5,979	-6,764
7	2001	0	15,221	1,143	16,364	12,917	0	12,917	-3,447
8	2002	0	50,204	1,143	51,347	13,950	0	13,950	-37,397
9	2003	0	46,841	1,317	48,158	15,066	3,012	18,078	-30,080
10	2004	0	19,346	1,432	20,778	16,272	5,425	21,697	919
11	2005	0	0	1,722	1,722	17,573	11,716	29,289	27,567
12	2006	0	0	1,722	1,722	18,979	12,653	31,633	29,911
13	2007	0	0	1,722	1,722	20,498	13,666	34,163	32,441
14	2008	0	0	1,722	1,722	22,137	14,759	36,896	35,174
15	2009	0	0	1,722	1,722	23,908	15,939	39,848	38,126
16	2010	0	0	1,722	1,722	25,821	17,215	43,036	41,314
17	2011	0	0	1,722	1,722	27,887	18,592	46,479	44,757
18	2012	0	0	1,722	1,722	30,118	20,079	50,197	48,475
19	2013	0	0	1,722	1,722	32,527	21,685	54,213	52,491
20	2014	0	0	1,722	1,722	35,129	23,420	58,550	56,828
21	2015	0	0	1,722	1,722	37,940	25,294	63,234	61,512
22	2016	0	0	1,722	1,722	37,940	25,294	63,234	61,512
23	2017	0	0	1,722	1,722	37,940	25,294	63,234	61,512
24	2018	0	0	1,722	1,722	37,940	25,294	63,234	61,512
25	2019	0	0	1,722	1,722	37,940	25,294	63,234	61,512
26	2020	0	0	1,722	1,722	37,940	25,294	63,234	61,512
27	2021	0	0	1,722	1,722	37,940	25,294	63,234	61,512
28	2022	0	0	1,722	1,722	37,940	25,294	63,234	61,512
29	2023	0	0	1,722	1,722	37,940	25,294	63,234	61,512
30	2024	0	0	1,722	1,722	37,940	25,294	63,234	61,512
31	2025	32,478	0	1,722	34,200	37,940	25,294	63,234	29,034
32	2026	0	0	1,722	1,722	37,940	25,294	63,234	61,512
33	2027	0	0	1,722	1,722	37,940	25,294	63,234	61,512
34	2028	0	0	1,722	1,722	37,940	25,294	63,234	61,512
35	2029	0	16,285	1,722	18,007	37,940	25,294	63,234	45,227
36	2030	0	0	1,722	1,722	37,940	25,294	63,234	61,512
37	2031	0	0	1,722	1,722	37,940	25,294	63,234	61,512
38	2032	0	0	1,722	1,722	37,940	25,294	63,234	61,512
39	2033	0	0	1,722	1,722	37,940	25,294	63,234	61,512
40	2034	0	0	1,722	1,722	37,940	25,294	63,234	61,512
41	2035	0	0	1,722	1,722	37,940	25,294	63,234	61,512
42	2036	0	0	1,722	1,722	37,940	25,294	63,234	61,512
43	2037	0	0	1,722	1,722	37,940	25,294	63,234	61,512
44	2038	0	0	1,722	1,722	37,940	25,294	63,234	61,512
45	2039	0	0	1,722	1,722	37,940	25,294	63,234	61,512
46	2040	0	0	1,722	1,722	37,940	25,294	63,234	61,512
47	2041	0	0	1,722	1,722	37,940	25,294	63,234	61,512
48	2042	0	0	1,722	1,722	37,940	25,294	63,234	61,512
49	2043	0	0	1,722	1,722	37,940	25,294	63,234	61,512
50	2044	0	0	1,722	1,722	37,940	25,294	63,234	61,512
	<b>Total</b>	<b>179,287</b>	<b>155,179</b>	<b>74,829</b>	<b>409,295</b>	<b>1,460,276</b>	<b>936,981</b>	<b>2,397,257</b>	<b>1,987,962</b>

EIRR = 11.6%

**Table 5.4 Cost Benefit Stream of Urban Drainage Plan (To Lich) – Case 1**

(US\$1,000)

No.	Year	Const. Cost		O&M Cost	Cost Total	Benefit			B-C
		1st Stage	2nd Stage			1st Stage	2nd Stage	Total	
1	1995	6,893			6,893	0	0	0	-6,893
2	1996	27,447			27,447	0	0	0	-27,447
3	1997	44,080			44,080	0	0	0	-44,080
4	1998	53,085		0	53,085	0	0	0	-53,085
5	1999	31,703		342	32,045	3,321	0	3,321	-28,724
6	2000	5,622	8,374	572	14,569	5,979	0	5,979	-8,590
7	2001	0	17,504	1,143	18,647	12,917	0	12,917	-5,730
8	2002	0	57,735	1,142	58,877	13,950	0	13,950	-44,926
9	2003	0	53,867	1,317	55,184	15,066	3,012	18,078	-37,106
10	2004	0	22,248	1,432	23,680	16,272	5,425	21,697	-1,983
11	2005	0	0	1,722	1,722	17,573	11,716	29,289	27,567
12	2006	0	0	1,722	1,722	18,979	12,653	31,633	29,911
13	2007	0	0	1,722	1,722	20,498	13,666	34,163	32,441
14	2008	0	0	1,722	1,722	22,137	14,759	36,896	35,174
15	2009	0	0	1,722	1,722	23,908	15,939	39,848	38,126
16	2010	0	0	1,722	1,722	25,821	17,215	43,036	41,314
17	2011	0	0	1,722	1,722	27,887	18,592	46,479	44,757
18	2012	0	0	1,722	1,722	30,118	20,079	50,197	48,475
19	2013	0	0	1,722	1,722	32,527	21,685	54,213	52,491
20	2014	0	0	1,722	1,722	35,129	23,420	58,550	56,828
21	2015	0	0	1,722	1,722	37,940	25,294	63,234	61,512
22	2016	0	0	1,722	1,722	37,940	25,294	63,234	61,512
23	2017	0	0	1,722	1,722	37,940	25,294	63,234	61,512
24	2018	0	0	1,722	1,722	37,940	25,294	63,234	61,512
25	2019	0	0	1,722	1,722	37,940	25,294	63,234	61,512
26	2020	0	0	1,722	1,722	37,940	25,294	63,234	61,512
27	2021	0	0	1,722	1,722	37,940	25,294	63,234	61,512
28	2022	0	0	1,722	1,722	37,940	25,294	63,234	61,512
29	2023	0	0	1,722	1,722	37,940	25,294	63,234	61,512
30	2024	0	0	1,722	1,722	37,940	25,294	63,234	61,512
31	2025	37,350	0	1,722	39,072	37,940	25,294	63,234	24,162
32	2026	0	0	1,722	1,722	37,940	25,294	63,234	61,512
33	2027	0	0	1,722	1,722	37,940	25,294	63,234	61,512
34	2028	0	0	1,722	1,722	37,940	25,294	63,234	61,512
35	2029	0	18,728	1,722	20,450	37,940	25,294	63,234	42,784
36	2030	0	0	1,722	1,722	37,940	25,294	63,234	61,512
37	2031	0	0	1,722	1,722	37,940	25,294	63,234	61,512
38	2032	0	0	1,722	1,722	37,940	25,294	63,234	61,512
39	2033	0	0	1,722	1,722	37,940	25,294	63,234	61,512
40	2034	0	0	1,722	1,722	37,940	25,294	63,234	61,512
41	2035	0	0	1,722	1,722	37,940	25,294	63,234	61,512
42	2036	0	0	1,722	1,722	37,940	25,294	63,234	61,512
43	2037	0	0	1,722	1,722	37,940	25,294	63,234	61,512
44	2038	0	0	1,722	1,722	37,940	25,294	63,234	61,512
45	2039	0	0	1,722	1,722	37,940	25,294	63,234	61,512
46	2040	0	0	1,722	1,722	37,940	25,294	63,234	61,512
47	2041	0	0	1,722	1,722	37,940	25,294	63,234	61,512
48	2042	0	0	1,722	1,722	37,940	25,294	63,234	61,512
49	2043	0	0	1,722	1,722	37,940	25,294	63,234	61,512
50	2044	0	0	1,722	1,722	37,940	25,294	63,234	61,512
	Total	206,180	178,456	74,828	459,464	1,460,276	936,981	2,397,257	1,937,793

EIRR = 10.5%

**Table 5.5 Cost Benefit Stream of Urban Drainage Plan (To Lich) – Case 2**

(US\$1,000)

No.	Year	Const. Cost		O&M Cost	Cost Total	Benefit			B-C
		1st Stage	2nd Stage			1st Stage	2nd Stage	Total	
1	1995	5,994			5,994	0	0	0	-5,994
2	1996	23,867			23,867	0	0	0	-23,867
3	1997	38,330			38,330	0	0	0	-38,330
4	1998	46,161		0	46,161	0	0	0	-46,161
5	1999	27,568		342	27,910	2,823	0	2,823	-25,087
6	2000	4,889	7,282	572	12,743	5,082	0	5,082	-7,661
7	2001	0	15,221	1,143	16,364	10,979	0	10,979	-5,385
8	2002	0	50,204	1,143	51,347	11,858	0	11,858	-39,489
9	2003	0	46,841	1,317	48,158	12,806	2,560	15,367	-32,791
10	2004	0	19,346	1,432	20,778	13,831	4,611	18,442	-2,336
11	2005	0	0	1,722	1,722	14,937	9,959	24,896	23,174
12	2006	0	0	1,722	1,722	16,132	10,755	26,888	25,166
13	2007	0	0	1,722	1,722	17,423	11,616	29,039	27,317
14	2008	0	0	1,722	1,722	18,817	12,545	31,362	29,640
15	2009	0	0	1,722	1,722	20,322	13,549	33,871	32,149
16	2010	0	0	1,722	1,722	21,948	14,632	36,580	34,858
17	2011	0	0	1,722	1,722	23,704	15,803	39,507	37,785
18	2012	0	0	1,722	1,722	25,600	17,067	42,667	40,945
19	2013	0	0	1,722	1,722	27,648	18,433	46,081	44,359
20	2014	0	0	1,722	1,722	29,860	19,907	49,767	48,045
21	2015	0	0	1,722	1,722	32,249	21,500	53,749	52,027
22	2016	0	0	1,722	1,722	32,249	21,500	53,749	52,027
23	2017	0	0	1,722	1,722	32,249	21,500	53,749	52,027
24	2018	0	0	1,722	1,722	32,249	21,500	53,749	52,027
25	2019	0	0	1,722	1,722	32,249	21,500	53,749	52,027
26	2020	0	0	1,722	1,722	32,249	21,500	53,749	52,027
27	2021	0	0	1,722	1,722	32,249	21,500	53,749	52,027
28	2022	0	0	1,722	1,722	32,249	21,500	53,749	52,027
29	2023	0	0	1,722	1,722	32,249	21,500	53,749	52,027
30	2024	0	0	1,722	1,722	32,249	21,500	53,749	52,027
31	2025	32,478	0	1,722	34,200	32,249	21,500	53,749	19,549
32	2026	0	0	1,722	1,722	32,249	21,500	53,749	52,027
33	2027	0	0	1,722	1,722	32,249	21,500	53,749	52,027
34	2028	0	0	1,722	1,722	32,249	21,500	53,749	52,027
35	2029	0	16,285	1,722	18,007	32,249	21,500	53,749	35,742
36	2030	0	0	1,722	1,722	32,249	21,500	53,749	52,027
37	2031	0	0	1,722	1,722	32,249	21,500	53,749	52,027
38	2032	0	0	1,722	1,722	32,249	21,500	53,749	52,027
39	2033	0	0	1,722	1,722	32,249	21,500	53,749	52,027
40	2034	0	0	1,722	1,722	32,249	21,500	53,749	52,027
41	2035	0	0	1,722	1,722	32,249	21,500	53,749	52,027
42	2036	0	0	1,722	1,722	32,249	21,500	53,749	52,027
43	2037	0	0	1,722	1,722	32,249	21,500	53,749	52,027
44	2038	0	0	1,722	1,722	32,249	21,500	53,749	52,027
45	2039	0	0	1,722	1,722	32,249	21,500	53,749	52,027
46	2040	0	0	1,722	1,722	32,249	21,500	53,749	52,027
47	2041	0	0	1,722	1,722	32,249	21,500	53,749	52,027
48	2042	0	0	1,722	1,722	32,249	21,500	53,749	52,027
49	2043	0	0	1,722	1,722	32,249	21,500	53,749	52,027
50	2044	0	0	1,722	1,722	32,249	21,500	53,749	52,027
	Total	179,287	155,179	74,829	409,295	1,241,241	796,437	2,037,678	1,628,383

EIRR = 10.2%

**Table 5.6 Cost Benefit Stream of Urban Drainage Plan (To Lich) – Case 3**

(US\$1,000)

No.	Year	Const. Cost		O&M Cost	Cost Total	Benefit			B-C
		1st Stage	2nd Stage			1st Stage	2nd Stage	Total	
1	1995	6,893			6,893	0	0	0	-6,893
2	1996	27,447			27,447	0	0	0	-27,447
3	1997	44,080			44,080	0	0	0	-44,080
4	1998	53,085		0	53,085	0	0	0	-53,085
5	1999	31,703		342	32,045	2,823	0	2,823	-29,222
6	2000	5,622	8,374	572	14,569	5,082	0	5,082	-9,487
7	2001	0	17,504	1,143	18,647	10,979	0	10,979	-7,668
8	2002	0	57,735	1,143	58,878	11,858	0	11,858	-47,020
9	2003	0	53,867	1,317	55,184	12,806	2,560	15,367	-39,818
10	2004	0	22,248	1,432	23,680	13,831	4,611	18,442	-5,238
11	2005	0	0	1,722	1,722	14,937	9,959	24,896	23,174
12	2006	0	0	1,722	1,722	16,132	10,755	26,888	25,166
13	2007	0	0	1,722	1,722	17,423	11,616	29,039	27,317
14	2008	0	0	1,722	1,722	18,817	12,545	31,362	29,640
15	2009	0	0	1,722	1,722	20,322	13,549	33,871	32,149
16	2010	0	0	1,722	1,722	21,948	14,632	36,580	34,858
17	2011	0	0	1,722	1,722	23,704	15,803	39,507	37,785
18	2012	0	0	1,722	1,722	25,600	17,067	42,667	40,945
19	2013	0	0	1,722	1,722	27,648	18,433	46,081	44,359
20	2014	0	0	1,722	1,722	29,860	19,907	49,767	48,045
21	2015	0	0	1,722	1,722	32,249	21,500	53,749	52,027
22	2016	0	0	1,722	1,722	32,249	21,500	53,749	52,027
23	2017	0	0	1,722	1,722	32,249	21,500	53,749	52,027
24	2018	0	0	1,722	1,722	32,249	21,500	53,749	52,027
25	2019	0	0	1,722	1,722	32,249	21,500	53,749	52,027
26	2020	0	0	1,722	1,722	32,249	21,500	53,749	52,027
27	2021	0	0	1,722	1,722	32,249	21,500	53,749	52,027
28	2022	0	0	1,722	1,722	32,249	21,500	53,749	52,027
29	2023	0	0	1,722	1,722	32,249	21,500	53,749	52,027
30	2024	0	0	1,722	1,722	32,249	21,500	53,749	52,027
31	2025	37,350	0	1,722	39,072	32,249	21,500	53,749	14,677
32	2026	0	0	1,722	1,722	32,249	21,500	53,749	52,027
33	2027	0	0	1,722	1,722	32,249	21,500	53,749	52,027
34	2028	0	0	1,722	1,722	32,249	21,500	53,749	52,027
35	2029	0	18,728	1,722	20,450	32,249	21,500	53,749	33,299
36	2030	0	0	1,722	1,722	32,249	21,500	53,749	52,027
37	2031	0	0	1,722	1,722	32,249	21,500	53,749	52,027
38	2032	0	0	1,722	1,722	32,249	21,500	53,749	52,027
39	2033	0	0	1,722	1,722	32,249	21,500	53,749	52,027
40	2034	0	0	1,722	1,722	32,249	21,500	53,749	52,027
41	2035	0	0	1,722	1,722	32,249	21,500	53,749	52,027
42	2036	0	0	1,722	1,722	32,249	21,500	53,749	52,027
43	2037	0	0	1,722	1,722	32,249	21,500	53,749	52,027
44	2038	0	0	1,722	1,722	32,249	21,500	53,749	52,027
45	2039	0	0	1,722	1,722	32,249	21,500	53,749	52,027
46	2040	0	0	1,722	1,722	32,249	21,500	53,749	52,027
47	2041	0	0	1,722	1,722	32,249	21,500	53,749	52,027
48	2042	0	0	1,722	1,722	32,249	21,500	53,749	52,027
49	2043	0	0	1,722	1,722	32,249	21,500	53,749	52,027
50	2044	0	0	1,722	1,722	32,249	21,500	53,749	52,027
	Total	206,180	178,456	74,829	459,465	1,241,241	796,437	2,037,678	1,578,214

EIRR = 9.2%

Table 5.7 (1) Investment and Government Fund Requirement (1/2)

	(1) 1995	(2) 1996	(3) 1997	(4) 1998	(5) 1999	(6) 2000	(7) 2001	(8) 2002	(9) 2003	(10) 2004	(11) 2005	(12) 2006	(13) 2007	(14) 2008	(15) 2009
<b>I. Investment</b>															
1.1 1st Stage Construction	174,887	8,391	31,116	46,456	52,127	31,293	5,504	0	0	0	0	0	0	0	0
1.2 2nd Stage Construction	192,714	0	0	0	0	12,664	26,738	69,848	58,574	24,890	0	0	0	0	0
(Total)	367,601	8,391	31,116	46,456	52,127	31,293	18,168	69,848	58,574	24,890	0	0	0	0	0
<b>II. Long Term Loan (85%)</b>															
(Loan Accumulated: End of year)	7,132	26,449	39,488	44,308	26,599	15,443	22,727	59,371	49,788	21,157	0	0	0	0	0
	7,132	33,581	73,068	117,376	143,975	159,418	182,145	241,516	291,304	312,461	296,837	281,214	265,591	249,968	234,345
<b>III. Government Fund Requirement</b>															
3.1 Investment Cost (15%)	55,140	1,259	4,667	6,968	7,819	4,694	2,725	4,011	10,477	8,786	3,734	0	0	0	0
3.2 Interest on Loan (2.5%)	113,259	0	178	840	1,827	2,934	3,599	4,554	6,038	7,283	7,812	7,421	7,030	6,640	6,249
3.3 Loan Repayment	312,461										15,623	15,623	15,623	15,623	15,623
(Total Gov. Fund Req.)	480,860	1,259	4,846	7,808	9,646	7,628	6,325	7,996	15,031	14,824	11,017	23,435	22,653	22,263	21,872

Table 5.7 (2) Investment and Government Fund Requirement (2/2)

	(16) 2010	(17) 2011	(18) 2012	(19) 2013	(20) 2014	(21) 2015	(22) 2016	(23) 2017	(24) 2018	(25) 2019	(26) 2020	(27) 2021	(28) 2022	(29) 2023	(30) 2024
<b>I. Investment</b>															
1.1 1st Stage Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.2 2nd Stage Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(Total)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
<b>II. Long Term Loan (8.5%)</b>															
(Loan Accumulated : End of Year)	218,722	203,099	187,476	171,853	156,230	140,607	124,984	109,361	93,738	78,115	62,492	46,869	31,246	15,623	0
<b>III. Government Fund Requirement</b>															
3.1 Investment Cost (15%)	5,859	5,468	5,077	4,687	4,296	3,906	3,515	3,125	2,734	2,343	1,953	1,562	1,172	781	391
3.2 Interest on Loan	15,623	15,623	15,623	15,623	15,623	15,623	15,623	15,623	15,623	15,623	15,623	15,623	15,623	15,623	15,623
3.3 Loan Repayment															
(Total Gov. Fund Req.)	21,482	21,091	20,700	20,310	19,919	19,529	19,138	18,748	18,357	17,966	17,576	17,185	16,795	16,404	16,014



Table 5.8 ENVIRONMENTAL IMPACTS OF TO LICH RIVER BASIN DRAINAGE PROJECT

Subject	Water Quality		Flora and Fauna		Health and Hygiene		Living Conditions		Landscape		Resettlement	
	During Construction	In the Future	During Construction	In the Future	During Construction	In the Future	During Construction	In the Future	During Construction	In the Future	During Construction	In the Future
1) Yen So pumping station and channel	No	Medium	High	Small	No	Small	Small	Small	High	Medium	No	No
2) Yen So regulation reservoir	High	High	High	Medium	Small	Medium	Medium	Medium	High	High	Small	No
3) Linh Dam and Dinh Cong channel	Small	Medium	High	Small	No	Small	Medium	Medium	High	High	Small	No
4) Linh Dam and Dinh Con lakes	High	Medium	High	Medium	Small	Medium	Medium	Medium	Medium	Small	No	No
5) River improvement	High	Small	High	Small	Small	Small	Medium	Small	Small	Small	Medium	Small
6) Drainage channel improvement	Medium	Small	Small	Small	Medium	Medium	Medium	Medium	High	High	High	Medium
7) Lake dredging	High	Medium	High	Medium	High	Medium	High	High	Small	No	No	No
8) Sewer construction	Medium	High	No	No	High	High	High	High	Medium	Small	Small	No
9) Equipment supply	High	High	No	No	High	High	High	High	No	No	No	No

## 6. RECOMMENDATIONS

### (1) Implementation of the Project

The Study Team has conducted a feasibility study on the To Lich River Basin Drainage Project selected as the priority project in the Master Plan. The feasibility study includes preliminary design of facilities, implementation scheduling, cost estimation, and project evaluation. The concepts for the formulation of the Project almost completely coincide with those applied to the Master Plan in the subject area, although more detailed discussions have been made in this feasibility study. Through such studies, the Project is again economically assessed as follows:

Stage	Protection Level Expected	Economic Cost (US\$ million)		EIRR (%)
		For Construction	For O/M	
1st	Approx. 2-year	147	1.14	11.7
2nd	10-year	139	0.58	11.4
Total	—	286	1.72	11.6

Note : 1) At the price level as of mid-1994.  
2) Refer to Section 5.2.

The Project is economically justified as shown above, and serious negative impacts are not expected on the environment. The early implementation of the Project is recommended in accordance with the following schedule (for details, see Figure 4.1):

- (a) 1st stage construction : Year 1995 – 2000
- (b) 2nd stage construction : Year 2000 – 2004

The first stage construction project, particularly, may require foreign assistance due to local budgetary restrictions. Therefore, applications for foreign assistance should be submitted as soon as possible.

### (2) Land Acquisition and House Evacuation

The exact areas of land acquisition and specific houses to be evacuated will be identified in the detailed design stage. However, this feasibility study preliminarily suggests areas. Land acquisition and house evacuation are one of most serious issues concerning the smooth implementation of the project, and will involve various agencies, especially local authorities, and the residents concerned. It is recommended that the HPC should initiate dialog between the agencies and residents, and make every effort in reaching a consensus on the issue. Moreover, the HPC should prepare the fund and relocation sites for the Project as early as possible.

### (3) Establishment of Organizations

The Study Team has recommended the establishment of organizations for project implementation, and its operation and maintenance shown in Figures 4.2 and 4.3. As these organizations involve many agencies and authorities, so that HPC should coordinate this preparation as soon as possible.



