

## 付 4 動力費の算出根拠



ポンプ場および処理場で使用している機械類の動力源である電気代は流入汚水量によって異なる。表A4-1、表A4-2および表A4-3は、現況および将来の用途地域別人口である。これに基づいて汚水量を算出したのが表A4-4である。

表A4-1 ブロック別現在人口

用途種別	ブロック	Block1	Block2-1	Block2-2	Block3	計
住居地域		3,780	780	680	6,450	11,690
商業地域		800	2,493	5,707	1,200	10,200
官庁地域		—	1,608	1,392	—	3,000
学校		4,527	—	5,242	3,979	13,748

注：官庁地域および学校の欄の数値は昼間人口である。

表A4-2 ブロック別用途地域別将来人口

用途種別	ブロック	Block 1	Block 2-1	Block 2-2	Block 3	Total
	単位					
住居地域 (120人/ha)	ha	26.89	—	1.06	14.25	42.20
	人	2,277	—	127	1,710	5,064
住居地域 (警察の官舎)	ha	—	3.40	—	—	2.40
	人	—	780	—	—	780
商業地域	ha	12.51	16.86	35.99	31.64	97.0
	人	3,502	3,372	7,198	6,328	19,400
官庁地域	ha	—	6.54	5.66	—	12.2
	人	—	6,443	5,567	—	12,000
学校	ha	22.06	—	6.97	1.67	30.7
	人	9,300	—	10,760	8,300	28,360
寺院	ha	—	—	—	1.50	1.50
計	ha	61.46	26.80	49.68	49.06	187.00

表A 4 · 3 年 次 别 污 水 量

Block 1

Year	Residential			Commercial			Institution			School			Total Waste-water Quantity (m <sup>3</sup> /d)
	Population (per-sons)	Waste-water Quantity (m <sup>3</sup> /d)	Waste-water Quantity (m <sup>3</sup> /d)	Population (per-sons)	Waste-water Quantity (m <sup>3</sup> /d)	Waste-water Quantity (m <sup>3</sup> /d)	Staff (per-sons)	Waste-water Quantity (m <sup>3</sup> /d)	Waste-water Quantity (m <sup>3</sup> /d)	Student (per-sons)	Waste-water Quantity (m <sup>3</sup> /d)	Waste-water Quantity (m <sup>3</sup> /d)	
1979	3,780	0.170	642.6	800	0.340	272.0		0.023		4,527	0.0085	38.5	953
1983	3,675	0.181	665.2	1,124	0.363	408.0		0.023		5,436	0.0091	49.5	1,123
1984	3,648	0.184	671.2	1,205	0.369	444.6		0.023		5,663	0.0092	52.1	1,168
1985	3,662	0.187	677.3	1,286	0.374	481.0		0.023		5,891	0.0094	55.4	1,214
1986	3,596	0.190	683.2	1,367	0.380	519.5		0.023		6,118	0.0095	58.1	1,261
1987	3,569	0.193	688.8	1,448	0.386	558.9		0.023		6,345	0.0096	60.9	1,309
1988	3,543	0.196	694.9	1,529	0.391	597.8		0.023		6,573	0.0098	64.1	1,356
1989	3,517	0.199	699.9	1,610	0.397	639.2		0.023		6,800	0.0099	67.3	1,406
1990	3,490	0.201	701.5	1,692	0.403	681.9		0.023		7,027	0.0101	71.0	1,454
1991	3,464	0.204	706.7	1,773	0.409	725.2		0.023		7,254	0.0102	74.0	1,506
1992	3,438	0.207	711.7	1,854	0.414	767.6		0.023		7,482	0.0104	77.8	1,557
1993	3,411	0.210	716.3	1,935	0.420	812.7		0.023		7,709	0.0105	80.9	1,610
1994	3,385	0.213	721.0	2,016	0.426	858.8		0.023		7,936	0.0106	84.1	1,664
1995	3,359	0.216	725.5	2,097	0.431	903.8		0.023		8,164	0.0108	88.2	1,718
2000	3,227	0.230	742.2	2,502	0.460	1,150.9		0.023		9,300	0.0115	107.0	2,000

- to be continued -

Block 2-1

Year	Residential			Commercial			Institution			School			Total Waste-water Quantity (m <sup>3</sup> /d)
	Population (per-sons)	Waste-water Quantity	Waste-water Quantity (m <sup>3</sup> /d)	Population (per-sons)	Waste-water Quantity	Waste-water Quantity (m <sup>3</sup> /d)	Staff (per-sons)	Waste-water Quantity	Waste-water Quantity (m <sup>3</sup> /d)	Student (per-sons)	Waste-water Quantity	Waste-water Quantity (m <sup>3</sup> /d)	
1979	780	0.170	132.6	2,493	0.340	847.6	1,608	0.023	37.0	-	0.0085		1,107
1983	780	0.181	141.2	2,660	0.363	965.6	2,527	0.023	58.1	-	0.0091		1,165
1984	780	0.184	143.6	2,702	0.369	997.0	2,757	0.023	63.4	-	0.0092		1,204
1985	780	0.187	145.9	2,744	0.374	1,026.3	2,986	0.023	68.6	-	0.0094		1,241
1986	780	0.190	148.2	2,786	0.380	1,058.7	3,216	0.023	74.0	-	0.0095		1,281
1987	780	0.193	150.6	2,828	0.386	1,091.6	3,446	0.023	79.3	-	0.0096		1,322
1988	780	0.196	152.9	2,870	0.391	1,122.2	3,676	0.023	84.5	-	0.0098		1,360
1989	780	0.199	155.2	2,912	0.397	1,156.1	3,906	0.023	89.9	-	0.0099		1,401
1990	780	0.201	156.8	2,953	0.403	1,190.4	4,135	0.023	95.1	-	0.0101		1,442
1991	780	0.204	159.1	2,995	0.409	1,225.0	4,365	0.023	100.4	-	0.0102		1,485
1992	780	0.207	161.4	3,037	0.414	1,257.3	4,595	0.023	105.7	-	0.0104		1,524
1993	780	0.210	163.8	3,079	0.420	1,293.2	4,825	0.023	111.0	-	0.0105		1,568
1994	780	0.210	166.1	3,121	0.420	1,329.5	5,054	0.023	116.3	-	0.0106		1,612
1995	780	0.216	168.5	3,163	0.431	1,363.3	5,284	0.023	121.5	-	0.0108		1,653
2000	780	0.230	179.4	3,372	0.460	1,551.2	6,433	0.023	148.0	-	0.0115		1,879

## Block 2-2

Year	Residential			Commercial			Institution			School			Total Waste-water Quantity (m <sup>3</sup> /d)
	Population (persons)	Waste-water Quantity	Waste-water Quantity (m <sup>3</sup> /d)	Population (persons)	Waste-water Quantity	Waste-water Quantity (m <sup>3</sup> /d)	Staff (persons)	Waste-water Quantity	Waste-water Quantity (m <sup>3</sup> /d)	Student (persons)	Waste-water Quantity	Waste-water Quantity (m <sup>3</sup> /d)	
1979	680	0.170	115.6	5,707	0.340	1,940.3	1,392	0.023	32.0	5,242	0.0085	44.6	2,133
1983	575	0.181	104.1	5,991	0.363	2,174.3	2,187	0.023	50.3	6,293	0.0091	57.3	2,386
1984	548	0.184	100.8	6,062	0.369	2,236.9	2,375	9,923	54.9	6,556	0.0092	60.3	2,453
1985	552	0.187	97.6	6,133	0.374	2,293.7	2,585	0.023	59.5	6,819	0.0094	64.1	2,515
1986	496	0.190	94.2	6,204	0.380	2,357.5	2,784	0.023	64.0	7,081	0.0095	67.3	2,583
1987	469	0.193	90.5	6,275	0.386	2,422.2	2,983	0.023	68.6	7,344	0.0096	70.5	2,651
1988	443	0.196	86.8	6,346	0.391	2,481.3	3,181	0.023	73.2	7,607	0.0098	74.5	2,715
1989	417	0.199	83.0	6,417	0.397	2,547.5	3,380	0.023	77.7	7,820	0.0099	77.4	2,786
1990	390	0.201	78.4	6,488	0.403	2,614.6	3,579	0.023	82.3	8,132	0.0101	82.1	2,857
1991	364	0.204	74.3	6,559	0.409	2,682.6	3,778	0.023	86.9	8,395	0.0102	85.6	2,929
1992	338	0.207	70.0	6,630	0.414	2,744.8	3,976	0.023	91.4	8,658	0.0104	90.0	2,997
1993	311	0.210	65.3	6,701	0.420	2,814.4	4,175	0.023	96.0	8,921	0.0105	93.7	3,069
1994	285	0.213	60.7	6,772	0.426	2,884.9	4,375	0.023	100.6	9,183	0.0106	97.3	3,143
1995	259	0.216	55.9	6,843	0.431	2,949.3	4,573	0.023	105.2	9,446	0.0108	102.0	3,213
2000	127	0.230	29.2	7,198	0.460	3,311.0	5,567	0.023	128.0	10,760	0.0115	123.7	3,592

## Block 3

Year	Residential			Commercial			Institution			School			Total Waste-water Quantity (m <sup>3</sup> /d)
	Population (per-sons)	Waste-water Quantity	Waste-water Quantity (m <sup>3</sup> /d)	Population (per-sons)	Waste-water Quantity	Waste-water Quantity (m <sup>3</sup> /d)	Staff (per-sons)	Waste-water Quantity	Waste-water Quantity (m <sup>3</sup> /d)	Student (per-sons)	Waste-water Quantity	Waste-water Quantity (m <sup>3</sup> /d)	
1979	6,450	0.170	1,096.5	1,200	0.340	408.0		0.023		3,979	0.0085	33.8	1,538
1983	5,547	0.181	1,004.0	2,177	0.363	790.3		0.023		4,802	0.0091	43.7	1,838
1984	5,321	0.184	979.1	2,421	0.369	893.3		0.023		5,008	0.0092	46.1	1,919
1985	5,096	0.187	953.0	2,665	0.374	996.7		0.023		5,214	0.0094	49.0	1,999
1986	4,870	0.190	925.3	2,909	0.380	1,105.4		0.023		5,419	0.0095	51.5	2,082
1987	4,644	0.193	896.3	3,154	0.386	1,217.4		0.023		5,625	0.0098	54.0	2,168
1988	4,419	0.196	866.1	3,398	0.391	1,328.6		0.023		5,831	0.0098	57.1	2,252
1989	4,193	0.199	834.4	3,642	0.397	1,445.9		0.023		6,037	0.0099	59.8	2,340
1990	3,967	0.201	797.4	3,886	0.403	1,566.1		0.023		6,242	0.0101	63.1	2,427
1991	3,741	0.204	763.2	4,130	0.409	1,689.2		0.023		6,448	0.0102	65.8	2,518
1992	3,516	0.207	727.8	4,374	0.414	1,810.8		0.023		6,654	0.0104	69.2	2,608
1993	3,290	0.210	690.9	4,619	0.420	1,940.0		0.023		6,860	0.0105	72.0	2,703
1994	3,069	0.213	652.6	4,863	0.426	2,071.6		0.023		7,065	0.0106	74.9	2,799
1995	2,839	0.216	613.2	5,107	0.431	2,201.1		0.023		7,271	0.0108	78.5	2,893
2000	1,710	0.230	393.3	6,328	0.460	2,910.9		0.023		8,300	0.0115	95.5	3,400

表A4・4 年次別ポンプ場流入水量

Year	Name of Area Served	Inflows (m <sup>3</sup> /d)	
		*P1 Pumping Station	*P5 Pumping Station & Stabilization Pond
1984	Blocks 2-1, 2-2	2,691	4,022
1985	Blocks 2-1, 2-2, 3	5,004	6,371
1986	Blocks 1, 2-1, 2-2, 3	5,846	8,189
1987	"	6,040	8,432
1988	"	6,228	8,666
1989	"	6,429	8,915
1990	"	6,630	9,162
1991	"	6,837	9,420
1992	"	7,038	9,668
1993	"	7,251	9,932
1994	"	7,468	10,200
1995	"	7,677	10,458
2000	"	8,813	11,852

P<sub>1</sub> : コラム・アエル・ポンプ場

P<sub>5</sub> : タンジョン・ベンダハラ・ポンプ場



## 付 5 水道料金の積算



水道料金にある比率を乗じた値が下水道料金となるので、その基となる水道料金の算出方法を以下に述べることにする。

ケダ州の水道部では水道料金をコード A からコード D まで 4 種類に分類している。その内容は次のとおりである。但し、コード D は第一期計画区域内には該当する工場がないので省略する。

コード A (住居、官舎、デパート、官庁、学校等)

$1.364 \text{ m}^3/\text{月}$ までは  $4.55 \text{ m}^3$ につき  $1 \text{ M}\$$ 、それ以上は  $4.55 \text{ m}^3$ につき  $1.2 \text{ M}\$$

コード B (事務所)

$4.55 \text{ m}^3/\text{月}$ につき  $1.5 \text{ M}\$$

コード C (食堂、コーヒーショップ、マーケット、ビル管理、サービスショップ等)

$4.55 \text{ m}^3/\text{月}$ につき  $2.0 \text{ M}\$$

以上のコード別水道料金に基づいて用途地域別に  $1 \text{ m}^3$ 当りの水道料金を求めると以下のとおりとなる。

〔住居地域〕

現況の 1 人当り使用水量を  $170 \text{ l}/\text{d}$  とし、1 世帯当り家族数を 5.5 人とすると、1 世帯 1 ヶ月当り使用水量は  $28.5 \text{ m}^3 (= 5.5 \times 0.17 \times 30)$  となる。従って  $1 \text{ m}^3$ 当りは  $0.242 \text{ M}\$ (= [(28.5 - 1.364) \times 1.2 \div 4.55 + 3] \div 27.05)$  となる。

又、2000 年では 1 人 1 日当り使用水量は  $230 \text{ l}$  となるので 1 世帯 1 ヶ月当り使用水量は  $37.95 \text{ m}^3 (= 5.5 \times 0.23 \times 30)$  となる。従って  $1 \text{ m}^3$ 当りは  $0.24 \text{ M}\$ (= [(37.95 - 1.364) \times 1.2 \div 4.55 + 3] \div 37.95)$  となる。

〔商業地域〕

商業地域で使用される水道はコード B とコード C に分類される。その比率を 1 : 9 とすると  $1 \text{ m}^3$ 当り水道料金は  $0.429 \text{ M}\$$  となる。

表A 5 · 1 年 次 別 水 道 料 金

Year	Name of Area Served	Water Consumption Rates		Estimated Water Charge (M\$/d)
		Code A (m <sup>3</sup> /d)	Code B, C (m <sup>3</sup> /d)	
1984	Blocks 2-1, 2-2	423.0	3,233.9	1,490
1985	Blocks 2-1, 2-2, 3	1,437.7	4,316.7	2,203
1986	Blocks 1, 2-1, 2-2, 3	2,165.8		
1987	"	2,159.5	5,290.1	2,796
1988	"	2,153.6	5,529.9	2,900
1989	"	2,144.6	5,788.7	3,009
1990	"	2,127.6	6,052.7	3,178
1991	"	2,116.0	6,322.0	3,231
1992	"	2,105.0	6,580.5	3,341
1993	"	2,089.9	6,860.3	3,457
1994	"	2,073.6	7,144.8	3,575
1995	"	2,085.5	7,417.5	3,691
2000	"	1,946.3	8,942.0	4,309

## 付 6 財 政 計 画 の 検 討



表 A 6.1 損益計算表 (1981-1991) ケース I-A

(M\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Operating Revenue											
Sewerage Charge	-	-	-	381	564	690	921	954	991	1,026	1,063
Sewerage Tax (a)	-	-	-	-	-	886	974	1,072	1,179	1,297	1,427
Municipal Fund Allocation	289	333	520	296	205	805	566	533	546	630	448
Total Operating Revenue	289	333	520	677	769	2,381	2,461	2,559	2,716	2,835	2,938
Operating Expenses											
Billing and Collection Fees (b)	-	-	-	8	11	14	18	19	20	21	21
Provision for Bad Debts (c)	-	-	-	4	6	7	9	10	10	10	11
Payroll	197	234	438	473	527	569	615	664	820	907	980
Power	-	-	-	31	56	75	83	92	104	114	126
Maintenance	-	-	11	51	78	89	96	104	112	121	131
Administration	20	24	44	47	52	57	61	66	82	91	98
Total Operating Expenses	217	258	493	614	730	811	882	955	1,148	1,264	1,367
Net Operating Income	72	75	27	63	35	1,570	1,579	1,604	1,568	1,571	1,571
Depreciation (d)	-	-	-	303	429	499	499	499	499	499	499
Interest	-	-	-	-	-	1,222	1,199	1,182	1,159	1,136	1,118
Net Income (Deficit)	72	75	27	(240)	(394)	(151)	(119)	(77)	(90)	(64)	(48)

Note: (a) Estimated at 5% of "Property Value".

(b) Estimated at 2% of "Sewerage Charge".

(c) Estimated at 1% of "Sewerage Charge".

(d) Composite rate of 2.5% for "Assets in service" in the following table.

表A 6.2 資金計画表 (1981-1991) ケース I-A

(M\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>Sources of Funds</b>											
Net Operating Income	72	75	27	63	35	1,570	1,579	1,604	1,568	1,571	1,571
Increase in Account Payable	18	4	19	9	9	7	5	6	16	10	8
Decrease in Current Assets (less Cash)	-	-	-	-	-	-	-	-	-	-	-
Foreign Loan	744	908	2,181	1,049	497	-	-	-	-	-	-
Government Loan	3,619	4,163	4,387	3,091	2,234	-	-	-	-	-	-
Government Contribution (Interest-free Advance)	-	-	-	-	-	-	-	-	-	-	-
Total Sources	4,453	5,150	6,614	4,212	2,775	1,577	1,584	1,610	1,584	1,581	1,579
<b>Application of Funds</b>											
Capital Expenditure	4,363	5,071	6,568	4,140	2,731	-	-	-	-	-	-
Interest	-	-	-	-	-	-	-	-	-	-	-
Foreign Loan	-	-	-	-	-	172	167	167	162	156	156
Government Loan	-	-	-	-	-	1,050	1,032	1,015	997	980	962
<b>Amortization of Principal</b>											
Foreign Loan	-	-	-	-	-	108	113	113	118	124	124
Government Loan	-	-	-	-	-	210	228	245	263	280	298
Total Debt Service	-	-	-	-	-	1,540	1,540	1,540	1,540	1,540	1,540
Increase in Current Assets (less Cash)	4	1	5	34	17	13	20	5	6	6	5
Decrease in Current Liabilities	-	-	-	-	-	-	-	-	-	-	-
Total Applications	4,367	5,072	6,573	4,174	2,748	1,553	1,560	1,545	1,546	1,546	1,545
Net Cash Increase (Decrease)	86	78	41	38	27	24	24	65	38	35	34
Cash Available at End of Year (a)	86	164	205	243	270	294	318	383	421	456	490

Note: (a) Estimated at 1/3 of "Operating Expenses" in the previous table.



表A 6.3 貸借対照表 (1981-1991) ケース I-A

(M\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>Assets</b>											
<b>Fixed Assets</b>											
Land	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	3,877	2,877
Utility Plant in Service	-	-	-	13,125	17,265	19,996	19,996	19,996	19,996	19,996	19,996
Less Accumulative Depreciation	-	-	-	303	732	1,231	1,730	2,229	2,728	3,227	3,726
Net Fixed Assets in Service	-	-	-	15,699	19,410	21,642	21,143	20,644	20,145	19,646	19,147
Construction in Progress	1,486	6,557	13,125	4,140	2,731	-	-	-	-	-	-
Total Fixed Assets	4,363	9,437	16,002	19,839	22,141	21,642	21,143	20,644	20,145	19,646	19,147
<b>Current Assets</b>											
Cash	86	164	205	243	270	294	318	383	421	456	490
Account Receivable (a)	-	-	-	32	47	58	77	80	83	86	89
Inventory (b)	4	5	10	12	14	16	17	19	22	25	27
Total Current Assets	90	169	215	287	331	368	412	482	526	567	606
<b>Total Assets</b>	4,453	9,603	16,217	20,126	22,472	22,010	21,555	21,126	20,671	20,213	19,753
<b>Liabilities and Equity</b>											
<b>Long Term Debt</b>											
Foreign Loan	744	1,652	3,833	4,882	5,271	5,158	5,045	4,927	4,803	4,579	4,550
Government Loan	3,619	7,782	12,169	15,260	17,284	17,038	16,811	16,548	16,268	15,970	15,655
Total Long Term Debt	4,363	9,434	16,002	20,142	22,555	22,216	21,856	21,475	21,071	20,649	20,205
<b>Current Liabilities</b>											
Accounts Payable (c)	18	22	41	50	59	66	71	77	93	103	111
Current Debt Maturities					318	341	358	381	404	442	444
Total Current Liabilities	18	22	41	50	377	407	429	458	497	525	555
<b>Equity</b>											
Government Capital Contribution											
Retained Earnings	72	147	174	(66)	(460)	(611)	(730)	(807)	(897)	(961)	(1,009)
Total Equity	72	147	174	(66)	(460)	(611)	(730)	(807)	(897)	(961)	(1,009)
<b>Total Liabilities and Equity</b>	4,453	9,603	16,217	20,126	22,472	22,010	21,555	21,126	20,671	20,213	19,753

Note: (a) Estimated at 1/12 "Sewerage Charges" in the previous table

(b) Estimated at 2% of "Operating Expenses" in the previous table

(c) Estimated at 1/12 of "Operating Expenses" in the previous table

表A 6.4 損益計算表 (1981-1991) ケース I-B

(M\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>Operating Revenue</b>											
Sewerage Charge	-	-	-	381	564	690	921	954	991	1,026	1,063
Sewerage Tax (a)	-	-	-	-	-	886	974	1,072	1,179	1,297	1,427
Municipal Fund Allocation	289	333	520	296	205	752	306	480	493	459	395
Total Operating Revenue	289	333	520	677	769	2,328	2,408	2,506	2,663	2,782	2,885
<b>Operating Expenses</b>											
Billing and Collection Fees (b)	-	-	-	8	11	14	18	19	20	21	21
Provision for Bad Debts (c)	-	-	-	4	6	7	9	10	10	10	11
Payroll	197	234	438	473	527	569	615	664	820	907	980
Power	-	-	-	31	56	75	83	92	104	114	126
Maintenance	-	-	11	51	78	89	96	104	112	121	131
Administration	20	24	44	47	52	57	61	66	82	91	98
Total Operating Expenses	217	258	493	614	730	811	882	955	1,148	1,264	1,367
Net Operating Income	72	75	27	63	35	1,517	1,526	1,551	1,515	1,518	1,518
Depreciation (d)	-	-	-	303	429	499	499	499	499	499	499
Interest	-	-	-	-	-	1,149	1,126	1,111	1,088	1,065	1,050
Net Income (Deficit)	72	75	27	(240)	(394)	(131)	(99)	(59)	(72)	(46)	(31)

Note: (a) Estimated at 5% of "Property Value".

(b) Estimated at 2% of "Sewerage Charge".

(c) Estimated at 1% of "Sewerage Charge".

(d) Composite rate of 2.5% for "Assets in service" in the following table.

表A 6.5 資金計画表 (1981-1991) ケース I-B

(M\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>Sources of Funds</b>											
Net Operating Income	72	75	27	63	35	1,517	1,526	1,551	1,515	1,518	1,518
Increase in Account Payable	18	4	19	9	9	7	5	6	15	10	8
Decrease in Current Assets (Less Cash)	-	-	-	-	-	-	-	-	-	-	-
Foreign Loan	1,104	1,352	3,246	1,560	736	-	-	-	-	-	-
Government Loan	3,259	3,719	3,322	2,580	1,995	-	-	-	-	-	-
Government Contribution (Interest-free Advance)	-	-	-	-	-	-	-	-	-	-	-
<b>Total Sources</b>	<b>4,453</b>	<b>5,150</b>	<b>6,614</b>	<b>4,212</b>	<b>2,775</b>	<b>1,524</b>	<b>1,531</b>	<b>1,557</b>	<b>1,531</b>	<b>1,528</b>	<b>1,526</b>
<b>Application of Funds</b>											
Capital Expenditure	4,363	5,071	6,568	4,140	2,731	-	-	-	-	-	-
Interest	-	-	-	-	-	-	-	-	-	-	-
Foreign Loan	-	-	-	-	-	256	248	248	240	232	232
Government Loan	-	-	-	-	-	893	878	863	848	833	818
<b>Amortization of Principal</b>											
Foreign Loan	-	-	-	-	-	160	168	168	176	184	184
Government Loan	-	-	-	-	-	178	193	208	223	238	253
Total Debt Service	-	-	-	-	-	1,487	1,487	1,487	1,487	1,487	1,487
Increase in Current Assets (Less Cash)	4	1	5	34	17	13	20	5	6	6	5
Decrease in Current Liabilities	-	-	-	-	-	-	-	-	-	-	-
<b>Total Applications</b>	<b>4,367</b>	<b>5,072</b>	<b>6,573</b>	<b>4,174</b>	<b>2,748</b>	<b>1,500</b>	<b>1,507</b>	<b>1,492</b>	<b>1,493</b>	<b>1,493</b>	<b>1,492</b>
Net Cash Increase (Decrease)	86	78	41	38	27	24	24	65	38	35	34
Cash Available at End of Year (a)	86	164	205	243	270	294	318	383	421	456	490

Note: (a) Estimated at 1/3 of "Operating Expenses" in the previous table.

表A 6.6 貸借対照表 (1981-1991) ケース I-B

(M\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>Assets</b>											
<b>Fixed Assets</b>											
Land	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877
Utility Plant in Service	-	-	-	13,125	17,265	19,996	19,996	19,996	19,996	19,996	19,996
Less Accumulative Depreciation	-	-	-	303	732	1,231	1,730	2,229	2,728	3,227	3,726
<b>Net Fixed Assets in Service</b>	-	-	-	15,699	19,410	21,642	21,143	20,644	20,145	19,646	19,147
Construction in Progress	1,486	6,557	13,125	4,140	2,731	-	-	-	-	-	-
<b>Total Fixed Assets</b>	4,363	9,437	16,002	19,839	22,141	21,642	21,143	20,644	20,145	19,646	19,147
<b>Current Assets</b>											
Cash	86	164	205	243	270	294	318	383	421	456	490
Account Receivable (a)	-	-	-	32	47	58	77	80	83	86	89
Inventory (b)	4	5	10	12	14	16	17	19	22	25	27
<b>Total Current Assets</b>	90	169	215	287	331	368	412	482	526	567	606
<b>Total Assets</b>	4,453	9,603	16,217	20,126	22,472	22,010	21,555	21,126	20,671	20,213	19,753
<b>Liabilities and Equity</b>											
<b>Long Term Debt</b>											
Foreign Loan	1,104	2,456	5,702	7,262	7,838	7,670	7,502	7,326	7,142	6,958	6,766
Government Loan	3,259	6,978	10,300	12,890	14,697	14,504	14,296	14,073	13,835	13,582	13,314
<b>Total Long Term Debt</b>	4,363	9,434	16,002	20,142	22,535	22,174	21,789	21,399	20,977	20,540	20,080
<b>Current Liabilities</b>											
Accounts Payable (c)	18	22	41	50	59	66	71	77	93	103	111
Current Debt Maturities	-	-	-	-	338	361	376	399	422	437	460
<b>Total Current Liabilities</b>	18	22	41	50	397	427	447	486	515	540	571
<b>Equity</b>											
Government Capital Contribution	-	-	-	-	-	-	-	-	-	-	-
Retained Earnings	72	147	174	(66)	(460)	(591)	(690)	(749)	(821)	(867)	(898)
<b>Total Equity</b>	72	147	174	(66)	(460)	(591)	(690)	(749)	(821)	(867)	(898)
<b>Total Liabilities and Equity</b>	4,453	9,603	16,217	20,126	22,472	22,010	21,555	21,126	20,671	20,213	19,753

Note: (a) Estimated at 1/12 "Sewerage Charges" in the previous table  
 (b) Estimated at 2% of "Operating Expenses" in the previous table  
 (c) Estimated at 1/12 of "Operating Expenses" in the previous table

表A 6.7 損益計算表 (1981-1991) ケース II-A

(MSL,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>Operating Revenue</b>											
Sewerage Charge	-	-	-	381	564	690	921	954	991	1,026	1,063
Sewerage Tax (a)	-	-	-	-	-	886	979	1,072	1,179	1,297	1,427
Municipal Fund Allocation	289	333	520	296	205	1,068	829	796	809	775	711
Total Operating Revenue	289	333	520	677	769	2,644	2,724	2,822	2,979	3,098	3,201
<b>Operating Expenses</b>											
Billing and Collection Fees (b)	-	-	-	8	11	14	18	19	20	21	21
Provision for Bad Debts (c)	-	-	-	4	6	7	9	10	10	10	11
Payroll	197	234	438	473	527	569	615	664	820	907	980
Power	-	-	-	31	56	75	83	92	104	114	126
Maintenance	-	-	11	51	78	89	96	104	112	121	131
Administration	20	24	44	47	52	57	61	66	82	91	98
Total Operating Expenses	217	258	493	614	730	811	882	955	1,148	1,264	1,367
Net Operating Income	72	75	27	63	35	1,833	1,842	1,867	1,831	1,834	1,834
Depreciation (d)	-	-	-	303	429	499	499	499	499	499	499
Interest	-	-	-	-	-	1,480	1,452	1,424	1,395	1,367	1,333
Net Income (Deficit)	72	75	27	(240)	(394)	(146)	(109)	(56)	(63)	(32)	(2)

Note: (a) Estimated at 5% of "Property Value".

(b) Estimated at 2% of "Sewerage Charge".

(c) Estimated at 1% of "Sewerage Charge".

(d) Composite rate of 2.5% for "Assets in service" in the following table.

表A 6.8 資金計画表 (1981-1991) ケース II-A

(M\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>Sources of Funds</b>											
Net Operating Income	72	75	27	63	35	1,833	1,842	1,867	1,831	1,834	1,834
Increase in Account Payable	18	4	19	9	9	7	5	6	16	10	8
Decrease in Current Assets (Less Cash)	-	-	-	-	-	-	-	-	-	-	-
Foreign Loan	744	908	2,181	1,049	497	-	-	-	-	-	-
Government Loan	3,619	4,163	4,387	3,091	2,234	-	-	-	-	-	-
Government Contribution (Interest-free Advance)	-	-	-	-	-	-	-	-	-	-	-
Total Sources	4,453	5,150	6,614	4,212	2,775	1,840	1,847	1,873	1,847	1,844	1,842
<b>Application of Funds</b>											
Capital Expenditure	4,363	5,071	6,568	4,140	2,731	-	-	-	-	-	-
Interest	-	-	-	-	-	-	-	-	-	-	-
Foreign Loan	-	-	-	-	-	430	420	409	398	387	371
Government Loan	-	-	-	-	-	1,050	1,032	1,015	997	980	962
Amortization of Principal	-	-	-	-	-	-	-	-	-	-	-
Foreign Loan	-	-	-	-	-	113	123	134	145	156	172
Government Loan	-	-	-	-	-	210	228	245	263	280	298
Total Debt Service	-	-	-	-	-	-	-	-	-	-	-
Increase in Current Assets (Less Cash)	4	1	5	34	17	13	20	5	6	6	5
Decrease in Current Liabilities	-	-	-	-	-	-	-	-	-	-	-
Total Applications	4,367	5,072	6,573	4,174	2,748	1,816	1,823	1,808	1,809	1,809	1,808
Net Cash Increase (Decrease)	86	78	41	38	27	24	24	65	38	35	23
Cash Available at End of Year (a)	86	164	205	243	270	294	318	383	421	456	490

Note: (a) Estimated at 1/3 of "Operating Expenses" in the previous table

表 A 6.9 貸借対照表 (1981-1991) ケース II-A

(M\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>Assets</b>											
<b>Fixed Assets</b>											
Land	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877
Utility Plant in Service	-	-	-	13,125	17,265	19,996	19,996	19,996	19,996	19,996	19,996
Less Accumulative Depreciation	-	-	-	303	732	1,231	1,730	2,229	2,728	3,227	3,726
Net Fixed Assets in Service	-	-	-	15,699	19,410	21,642	21,143	20,644	20,145	19,646	19,147
Construction in Progress	1,486	6,557	13,125	4,140	2,731	-	-	-	-	-	-
Total Fixed Assets	4,363	9,437	16,002	19,839	22,141	21,642	21,143	20,644	20,145	19,646	19,147
<b>Current Assets</b>											
Cash	86	164	205	243	270	294	318	383	421	456	490
Account Receivable (a)	-	-	-	32	47	58	77	80	83	86	89
Inventory (b)	4	5	10	12	14	16	17	19	22	25	27
Total Current Assets	90	169	215	287	331	368	412	482	526	567	606
Total Assets	4,453	9,603	16,217	20,126	22,472	22,010	21,555	21,126	20,671	20,213	19,753
<b>Liabilities and Equity</b>											
Long Term Debt											
Foreign Loan	744	1,562	3,833	4,882	5,266	5,143	5,009	4,864	4,708	4,536	4,353
Government Loan	3,619	7,782	12,169	15,260	17,284	17,056	16,811	16,548	16,268	15,970	15,655
Total Long Term Debt	4,363	9,434	16,002	20,142	22,550	22,199	21,820	21,412	20,976	20,506	20,008
<b>Current Liabilities</b>											
Accounts Payable (c)	18	22	41	50	59	66	71	77	93	103	111
Current Debt Maturities	-	-	-	-	323	351	379	408	436	470	498
Total Current Liabilities	18	22	41	50	382	417	450	485	529	573	609
<b>Equity</b>											
Government Capital Contribution	-	-	-	-	-	-	-	-	-	-	-
Retained Earnings	72	147	174	(66)	(460)	(606)	(715)	(771)	(834)	(866)	(868)
Total Equity	72	147	174	(66)	(460)	(606)	(715)	(771)	(834)	(866)	(868)
Total Liabilities and Equity	4,453	9,603	16,217	20,126	22,472	22,010	21,555	21,126	20,671	20,213	19,753

Note: (a) Estimated at 1/12 "Sewerage Charges" in the previous table

(b) Estimated at 2% of "Operating Expenses" in the previous table

(c) Estimated at 1/12 of "Operating Expenses" in the previous table

表A 6.10 損益計算表 (1981-1991) ケース II-B (M\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Operating Revenue	-	-	-	381	564	690	921	954	991	1,026	1,063
Sewerage Charge	-	-	-	-	-	886	974	1,072	1,179	1,297	1,427
Sewerage Tax (a)	289	333	520	296	205	1,144	905	872	885	851	787
Municipal Fund Allocation	289	333	520	677	769	2,720	2,800	2,898	3,055	3,174	3,277
Total Operating Revenue											
Operating Expenses											
Billing and Collection Fees (b)	-	-	-	8	11	14	18	19	20	21	21
Provision for Bad Debts (c)	-	-	-	4	6	7	9	10	10	10	11
Payroll	197	234	438	473	527	569	615	664	820	907	980
Power	-	-	-	31	56	75	83	92	104	114	126
Maintenance	-	-	11	51	78	89	96	104	112	121	131
Administration	20	24	44	47	52	57	61	66	82	91	98
Total Operating Expenses	217	258	493	614	730	811	882	955	1,148	1,264	1,367
Net Operating Income	72	75	27	63	35	1,909	1,919	1,943	1,907	1,910	1,910
Depreciation (d)	-	-	-	303	429	499	499	499	499	499	499
Interest	-	-	-	-	-	1,533	1,502	1,471	1,440	1,409	1,370
Net Income (Deficit)	72	75	27	(240)	(394)	(123)	(83)	(27)	(32)	2	41

Note: (a) Estimated at 5% of "Property Value".

(b) Estimated at 2% of "Sewerage Charge".

(c) Estimated at 1% of "Sewerage Charge".

(d) Composite rate of 2.5% for "Assets in service" in the following table.



表 A 6.11 資金計画表 (1981-1991) ケース II-B

(M\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Sources of Funds											
Net Operating Income	72	75	27	63	35	1,909	1,918	1,943	1,907	1,910	1,910
Increase in Account Payable	18	4	19	9	9	7	5	6	16	10	8
Decrease in Current Assets (Less Cash)	-	-	-	-	-	-	-	-	-	-	-
Foreign Loan	1,104	1,352	3,246	1,560	736	-	-	-	-	-	-
Government Loan	3,259	3,719	3,322	2,580	1,995	-	-	-	-	-	-
Government Contribution (Interest-free Advance)	-	-	-	-	-	-	-	-	-	-	-
Total Sources	4,453	5,150	6,614	4,212	2,775	1,916	1,923	1,949	1,923	1,920	1,918
Application of Funds											
Capital Expenditure	4,363	5,071	6,568	4,140	2,731	-	-	-	-	-	-
Interest	-	-	-	-	-	-	-	-	-	-	-
Foreign Loan	-	-	-	-	-	640	524	608	592	576	552
Government Loan	-	-	-	-	-	893	878	863	848	833	818
Amortization of Principal	-	-	-	-	-	-	-	-	-	-	-
Foreign Loan	-	-	-	-	-	168	184	200	216	232	256
Government Loan	-	-	-	-	-	178	193	208	223	238	253
Total Debt Service	-	-	-	-	-	-	-	-	-	-	-
Increase in Current Assets (Less Cash)	4	1	5	34	17	13	20	5	6	6	5
Decrease in Current Liabilities	-	-	-	-	-	-	-	-	-	-	-
Total Applications	4,367	5,072	6,573	4,174	2,748	1,892	1,899	1,884	1,885	1,885	1,884
Net Cash Increase (Decrease)	86	78	41	38	27	24	24	65	38	35	34
Cash Available at End of Year (a)	86	164	205	243	270	294	318	383	421	456	490

Note: (a) Estimated at 1/3 of "Operating Expenses" in the previous table

表A 6.12 貸借対照表 (1981-1991) ケース II-B

(M\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>Assets</b>											
<b>Fixed Assets</b>											
Land	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877
Utility Plant in Service	-	-	-	13,125	17,265	19,996	19,996	19,996	19,996	19,996	19,996
Less Accumulative Depreciation	-	-	-	303	732	1,231	1,730	2,229	2,728	3,227	3,726
Net Fixed Assets in Service	-	-	-	15,699	19,410	21,642	21,143	20,644	20,145	19,646	19,147
Construction in Progress	1,486	6,557	13,125	4,140	2,731	-	-	-	-	-	-
Total Fixed Assets	4,363	9,434	16,002	19,839	22,141	21,642	21,143	20,644	20,145	19,646	19,147
<b>Current Assets</b>											
Cash	86	164	205	243	270	294	318	383	421	456	490
Account Receivable (a)	-	-	-	32	47	58	77	80	83	86	89
Inventory (b)	4	5	10	12	14	16	17	19	22	25	27
Total Current Assets	90	169	215	287	331	368	412	482	526	567	606
<b>Total Assets</b>	4,453	9,603	16,217	20,126	22,472	22,010	21,555	21,126	20,671	20,213	19,753
<b>Liabilities and Equity</b>											
<b>Long Term Debt</b>											
Foreign Loan	1,104	2,456	5,702	7,262	7,830	7,646	7,446	7,230	6,998	6,742	6,470
Government Loan	3,259	6,978	10,300	12,880	14,697	14,504	14,296	14,073	13,835	13,582	13,314
Total Long Term Debt	4,363	9,434	16,002	20,142	22,527	22,150	21,742	21,303	20,833	20,324	19,784
<b>Current Liabilities</b>											
Account Payable (c)	18	22	41	50	59	66	71	77	93	103	111
Current Debt Maturities	-	-	-	-	346	377	408	439	470	509	540
Total Current Liabilities	18	22	41	50	405	443	479	516	583	612	651
<b>Equity</b>											
Government Capital Contribution	-	-	-	-	-	-	-	-	-	-	-
Retained Earnings	72	147	174	(66)	(460)	(583)	(666)	(693)	(725)	(723)	(682)
Total Equity	72	147	174	(66)	(460)	(583)	(666)	(693)	(725)	(723)	(682)
<b>Total Liabilities and Equity</b>	4,453	9,603	16,217	20,126	22,472	22,010	21,555	21,126	20,671	20,213	19,753

Note: (a) Estimated at 1/12 "Sewerage Charges" in the previous table  
 (b) Estimated at 2% of "Operating Expenses" in the previous table  
 (c) Estimated at 1/12 of "Operating Expenses" in the previous table

表A 6.13 損益計算表 (1981-1991) ケース III-A

(M\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Operating Revenue											
Sewerage Charge	-	-	-	381	564	690	921	954	991	1,026	1,063
Sewerage Tax (a)	-	-	-	-	-	886	974	1,072	1,179	1,297	1,427
Municipal Fund Allocation	289	333	520	296	205	597	358	325	338	304	240
Total Operating Revenue	289	333	520	677	769	2,173	2,253	2,351	2,508	2,627	2,730
Operating Expenses											
Billing and Collection Fees (b)	-	-	-	8	11	14	18	19	20	21	21
Provision for Bad Debts (c)	-	-	-	4	6	7	9	10	10	10	11
Payroll	197	234	438	473	527	569	615	664	820	907	980
Power	-	-	-	31	56	75	83	92	104	114	126
Maintenance	-	-	11	51	78	89	96	104	112	121	131
Administration	20	24	44	47	52	57	61	66	82	91	98
Total Operating Expenses	217	258	493	614	730	811	882	955	1,148	1,264	1,367
Net Operating Income	72	75	27	63	35	1,362	1,371	1,396	1,360	1,363	1,363
Depreciation (d)	-	-	-	303	429	499	499	499	499	499	499
Interest	-	-	-	-	-	1,049	1,029	1,015	995	975	960
Net Income (Deficit)	72	75	27	(240)	(394)	(186)	(157)	(118)	(134)	(111)	(96)

Note: (a) - Estimated at 5% of "Property Tax".

(b) - Estimated at 2% of "Sewerage Charge".

(c) - Estimated at 1% of "Sewerage Charge".

(d) - Composite rate of 2.5% for "Assets in service" in the following table.

表A 6.14 資金計画表 (1981-1991) ケース III-A

(M\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>Sources of Funds</b>											
Net Operating Income	72	75	27	63	35	1,362	1,371	1,396	1,360	1,363	1,363
Increase in Account Payable	18	4	19	9	9	7	5	6	16	10	8
Decrease in Current Assets (Less Cash)	-	-	-	-	-	-	-	-	-	-	-
Foreign Loan	744	908	2,181	1,049	497	-	-	-	-	-	-
Government Loan	742	4,163	4,387	3,091	2,234	-	-	-	-	-	-
Government Contribution (Interest-free Advance)	2,287	-	-	-	-	-	-	-	-	-	-
Total Sources	4,453	5,150	6,614	4,212	2,775	1,369	1,376	1,402	1,376	1,373	1,371
<b>Application of Funds</b>											
Capital Expenditure	4,363	5,071	6,568	4,140	2,731	-	-	-	-	-	-
Interest	-	-	-	-	-	172	167	167	162	156	156
Foreign Loan	-	-	-	-	-	877	862	848	833	819	804
Government Loan	-	-	-	-	-	-	-	-	-	-	-
Amortization of Principal	-	-	-	-	-	108	113	113	118	124	124
Foreign Loan	-	-	-	-	-	175	190	204	219	233	248
Government Loan	-	-	-	-	-	-	-	-	-	-	-
Total Debt Service	-	-	-	-	-	-	-	-	-	-	-
Increase in Current Assets (Less Cash)	4	1	5	34	17	13	20	5	6	6	5
Decrease in Current Liabilities	-	-	-	-	-	-	-	-	-	-	-
Total Applications	4,367	5,072	6,573	4,174	2,748	1,345	1,352	1,337	1,338	1,338	1,337
Net Cash Increase (Decrease)	86	78	41	38	27	24	24	65	38	35	34
Cash Available at End of year (a)	86	164	205	243	270	294	318	383	421	456	490

Note: (a) Estimated at 1/3 of "Operating Expenses" in the previous table

表A 6.15 貸借対照表 (1981-1991) ケース III-A

(¥\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>Assets</b>											
<b>Fixed Assets</b>											
Land	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877
Utility Plant in Service	-	-	-	13,125	17,265	19,996	19,996	19,996	19,996	19,996	19,996
Less Accumulative Depreciation	-	-	-	303	732	1,231	1,730	2,229	2,728	3,227	3,726
Net Fixed Assets in Service	-	-	-	15,669	19,410	21,642	21,143	20,644	20,145	19,646	19,147
Construction in Progress	1,486	6,557	13,125	4,140	2,731	-	-	-	-	-	-
Total Fixed Assets	4,363	9,434	16,002	19,839	22,141	21,642	21,143	20,644	20,145	19,646	19,147
<b>Current Assets</b>											
Cash	86	164	205	243	270	294	318	383	421	456	490
Account Receivable (a)	-	-	-	32	47	58	77	80	83	86	89
Inventory (b)	4	5	10	12	14	16	17	19	22	25	27
Total Current Assets	90	169	215	287	331	368	412	482	526	567	606
Total Assets	4,453	9,603	16,217	20,126	22,472	22,010	21,555	21,126	20,671	20,213	19,753
<b>Liabilities and Equity</b>											
Long Term Debt											
Foreign Loan	744	1,652	3,833	4,882	5,271	5,158	5,045	4,927	4,803	4,679	4,550
Government Loan	742	4,905	9,292	12,383	14,442	14,252	14,048	13,829	13,596	13,348	13,085
Total Long Term Debt	1,486	6,557	13,125	17,265	19,713	19,410	19,093	18,756	18,399	18,027	17,635
<b>Current Liabilities</b>											
Account Payable (c)	18	22	41	50	59	66	71	77	93	103	111
Current Debt Maturities	-	-	-	-	283	303	317	337	357	372	392
Total Current Liabilities	18	22	41	50	343	369	388	414	450	475	503
<b>Equity</b>											
Government Capital Contribution	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877
Retained Earnings	72	147	174	(66)	(460)	(646)	(803)	(921)	(1,055)	(1,166)	(1,262)
Total Equity	2,949	3,024	3,051	2,811	2,417	2,231	2,074	1,956	1,822	1,711	1,615
Total Liabilities and Equity	4,453	9,603	16,217	20,126	22,472	22,010	21,555	21,126	20,671	20,213	19,753

Note: (a) Estimated at 1/12 "Sewerage Charges" in the previous table

(b) Estimated at 2% of "Operating Expenses" in the previous table

(c) Estimated at 1/12 of "Operating Expenses" in the previous table

表 A 6.16 損益計算表 (1981-1991) ケース IV-A (M\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Operating Revenue	-	-	-	381	564	690	921	954	991	1,026	1,063
Sewerage Charge	-	-	-	-	-	886	974	1,072	1,179	1,297	1,427
Sewerage Tax (a)	289	333	520	296	205	860	621	588	601	567	503
Municipal Fund Allocation	289	333	520	677	769	2,436	2,516	2,614	2,771	2,890	2,993
Total Operating Revenue	-	-	-	381	564	690	921	954	991	1,026	1,063
Operating Expenses	-	-	-	8	11	14	18	19	20	21	21
Billing and Collection Fees (b)	-	-	-	4	6	7	9	10	10	10	11
Provision for Bad Debts (c)	197	234	438	473	527	569	615	664	820	907	980
Payroll	-	-	-	31	56	75	83	92	104	114	126
Power	-	-	11	51	78	89	96	104	112	121	131
Maintenance	20	24	44	47	52	57	61	66	82	91	98
Administration	217	258	493	614	730	811	882	955	1,148	1,264	1,367
Total Operating Expenses	217	258	493	614	730	811	882	955	1,148	1,264	1,367
Net Operating Income	72	75	27	63	35	1,625	1,634	1,659	1,623	1,626	1,626
Depreciation (d)	-	-	-	303	429	499	499	499	499	499	499
Interest	-	-	-	-	-	1,307	1,282	1,257	1,231	1,206	1,175
Net Income (Deficit)	72	75	27	(240)	(394)	(181)	(147)	(97)	(107)	(79)	(48)

Note: (a) Estimated at 5% of "Property Value".

(b) Estimated at 2% of "Sewerage Charge".

(c) Estimated at 1% of "Sewerage Charge".

(d) Composite rate of 2.5% for "Assets in service" in the following table.

表A 6.17 資金計画表 (1981-1991) ケース IV-A

(M\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>Sources of Funds</b>											
Net Operating Income	72	75	27	63	35	1,625	1,634	1,659	1,623	1,626	1,626
Increase in Account Payable	18	4	19	9	9	7	5	6	16	10	8
Decrease in Current Assets (Less Cash)	-	-	-	-	-	-	-	-	-	-	-
Foreign Loan	744	908	2,181	1,049	497	-	-	-	-	-	-
Government loan	742	4,163	4,387	3,091	2,234	-	-	-	-	-	-
Government Contribution (Interest-free Advance)	2,877	-	-	-	-	-	-	-	-	-	-
<b>Total Sources</b>	<b>4,453</b>	<b>5,150</b>	<b>6,614</b>	<b>4,212</b>	<b>2,775</b>	<b>1,632</b>	<b>1,639</b>	<b>1,665</b>	<b>1,639</b>	<b>1,636</b>	<b>1,634</b>
<b>Application of Funds</b>											
Capital Expenditure	4,363	5,071	6,566	4,140	2,731	-	-	-	-	-	-
Interest	-	-	-	-	-	-	-	-	-	-	-
Foreign Loan	-	-	-	-	-	430	420	409	398	387	371
Government Loan	-	-	-	-	-	877	862	848	833	819	804
<b>Amortization of Principal</b>											
Foreign Loan	-	-	-	-	-	113	123	134	145	156	172
Government Loan	-	-	-	-	-	175	190	204	219	233	248
<b>Total Debt Service</b>											
Increase in Current Assets (Less Cash)	4	1	5	34	17	13	20	5	6	6	5
Decrease in Current Liabilities	-	-	-	-	-	-	-	-	-	-	-
<b>Total Applications</b>	<b>4,367</b>	<b>5,072</b>	<b>6,573</b>	<b>4,174</b>	<b>2,748</b>	<b>1,608</b>	<b>1,515</b>	<b>1,600</b>	<b>1,601</b>	<b>1,601</b>	<b>1,600</b>
<b>Net Cash Increase (Decrease)</b>	<b>86</b>	<b>78</b>	<b>41</b>	<b>38</b>	<b>27</b>	<b>24</b>	<b>24</b>	<b>65</b>	<b>38</b>	<b>35</b>	<b>34</b>
<b>Cash Available at End of Year (a)</b>	<b>86</b>	<b>164</b>	<b>205</b>	<b>243</b>	<b>270</b>	<b>294</b>	<b>318</b>	<b>383</b>	<b>421</b>	<b>456</b>	<b>490</b>

Note: (a) Estimated at 1/3 of "Operating Expenses" in the previous table

表A 6.18 貸借対照表 (1981-1991) ケース IV-A

(M\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>Assets</b>											
<b>Fixed Assets</b>											
Land	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877
Utility Plant in Service	-	-	-	13,125	17,265	19,996	19,996	19,996	19,996	19,996	19,996
Less Accumulative Depreciation	-	-	-	303	732	1,231	1,730	2,229	2,728	3,227	3,726
Net Fixed Assets in Service	-	-	-	15,699	19,410	21,642	21,143	20,644	20,145	19,646	19,147
Construction in Progress	1,486	6,557	13,125	4,140	2,731	-	-	-	-	-	-
Total Fixed Assets	4,363	9,434	16,002	19,839	22,141	21,642	21,143	20,644	20,145	19,646	19,147
<b>Current Assets</b>											
Cash	86	164	205	243	270	294	318	383	421	456	490
Account Receivable (a)	-	-	-	32	47	58	77	80	83	86	89
Inventory (b)	4	5	10	12	14	16	17	19	22	25	27
Total Current Assets	90	169	215	287	331	368	412	482	526	567	606
<b>Total Assets</b>	<b>4,453</b>	<b>9,603</b>	<b>16,217</b>	<b>20,126</b>	<b>22,472</b>	<b>22,010</b>	<b>21,555</b>	<b>21,126</b>	<b>20,671</b>	<b>20,213</b>	<b>19,753</b>
<b>Liabilities and Equity</b>											
Long Term Debt											
Foreign Loan	744	1,652	3,833	4,882	5,266	5,143	5,009	4,864	4,708	4,536	4,353
Government Loan	742	4,905	9,292	12,383	14,442	14,252	14,048	13,829	13,596	13,348	13,085
Total Long Term Debt	1,486	6,557	13,125	17,265	19,708	19,395	19,057	18,693	18,304	17,884	17,438
<b>Current Liabilities</b>											
Account Payable (c)	18	22	41	50	59	66	71	77	93	103	111
Current Debt Maturities	-	-	-	-	288	313	338	364	389	420	446
Total Current Liabilities	18	22	41	50	347	379	409	441	482	523	557
<b>Equity</b>											
Government Capital Contribution	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877
Retained Earnings	72	147	174	(66)	(460)	(641)	(788)	(885)	(992)	(1,071)	(1,119)
Total Equity	2,949	3,024	3,051	2,811	2,417	2,236	2,089	1,992	1,885	1,806	1,758
<b>Total Liabilities and Equity</b>	<b>4,453</b>	<b>9,603</b>	<b>16,217</b>	<b>20,126</b>	<b>22,472</b>	<b>22,010</b>	<b>21,555</b>	<b>21,126</b>	<b>20,671</b>	<b>20,213</b>	<b>19,753</b>

Note: (a) Estimated at 1/12 "Sewerage Charges" in the previous table  
 (b) Estimated at 2% of "Operating Expenses" in the previous table  
 (c) Estimated at 1/12 of "Operating Expenses" in the previous table



表A 6.19 損益計算表 (1981-1991) ケース IV-B

(M\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Operating Revenue											
Sewerage Charge	-	-	-	381	564	690	921	954	991	1,026	1,063
Sewerage Tax (a)	-	-	-	-	-	886	974	1,072	1,179	1,297	1,427
Municipal Fund Allocation	289	333	520	296	205	937	698	665	696	644	580
Total Operating Revenue	289	333	520	677	769	2,513	2,593	2,691	2,848	2,967	3,070
Operating Expenses											
Billing and Collection Fees (b)	-	-	-	8	11	14	18	19	20	21	21
Provision for Bad Debts (c)	-	-	-	4	6	7	9	10	10	10	11
Payroll	197	234	438	473	527	569	615	664	820	907	980
Power	-	-	-	31	56	75	83	92	104	114	126
Maintenance	-	-	11	51	78	89	96	104	112	121	131
Administration	20	24	44	47	52	57	61	66	82	91	98
Total Operating Expenses	217	258	493	614	730	811	882	955	1,148	1,264	1,367
Net Operating Income	72	75	27	63	35	1,702	1,711	1,736	1,700	1,703	1,703
Depreciation (d)	-	-	-	303	429	499	499	499	499	499	499
Interest	-	-	-	-	-	1,360	1,332	1,304	1,276	1,248	1,212
Net Income (Deficit)	72	75	27	(240)	(394)	(157)	(120)	(67)	(75)	(44)	(8)

Note: (a) Estimated at 5% of "Property Value".

(b) Estimated at 2% of "Sewerage Charge".

(c) Estimated at 1% of "Sewerage Charge".

(d) Composite rate of 2.5% for "Assets in service" in the following table.

表A 6.20 資金計画表 (1981-1991) ケース IV-B

(M\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>Sources of Funds</b>											
Net Operating Income	72	75	27	63	35	1,702	1,711	1,736	1,700	1,703	1,703
Increase in Account Payable	18	4	19	9	9	7	5	6	16	10	8
Decrease in Current Assets (less Cash)	-	-	-	-	-	-	-	-	-	-	-
Foreign Loan	1,104	1,352	3,246	1,560	736	-	-	-	-	-	-
Government Loan	382	719	3,322	2,580	1,995	-	-	-	-	-	-
Government Contribution (Interest-free Advance)	2,877	-	-	-	-	-	-	-	-	-	-
<b>Total Sources</b>	4,453	5,150	6,614	4,212	2,775	1,709	1,716	1,742	1,716	1,713	1,711
<b>Application of Funds</b>											
Capital Expenditure	4,363	5,071	6,568	4,140	2,731	-	-	-	-	-	-
Interest	-	-	-	-	-	640	624	608	592	576	552
Foreign Loan	-	-	-	-	-	720	708	696	684	672	660
Government Loan	-	-	-	-	-	-	-	-	-	-	-
Amortization of Principal	-	-	-	-	-	168	184	200	216	232	256
Foreign Loan	-	-	-	-	-	144	156	158	180	192	204
Government Loan	-	-	-	-	-	-	-	-	-	-	-
Total Debt Service	4	1	5	34	17	13	20	5	6	6	5
Increase in Current Assets (Less Cash)	-	-	-	-	-	-	-	-	-	-	-
Decrease in Current Liabilities	-	-	-	-	-	-	-	-	-	-	-
<b>Total Applications</b>	4,367	5,072	6,573	4,174	2,748	1,685	1,692	1,677	1,678	1,678	1,677
<b>Net Cash Increase (Decrease)</b>	86	78	41	38	27	24	24	65	38	35	34
<b>Cash Available at End of Year (a)</b>	86	164	205	243	270	294	318	383	421	456	490

Note: (a) Estimated at 1/3 of "Operating Expenses" in the previous table

表A 6.21 貸借対照表 (1981-1991) ケース IV-B

(\$M1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>Assets</b>											
<b>Fixed Assets</b>											
Land	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877
Utility Plant in Service	-	-	-	13,125	17,265	19,996	19,996	19,996	19,996	19,996	19,996
Less Accumulative Depreciation	-	-	-	303	732	1,231	1,730	2,229	2,728	3,227	3,726
Net Fixed Assets in Service	-	-	-	15,699	19,410	21,642	21,143	20,644	20,145	19,646	19,147
Construction in Progress	1,486	6,557	13,125	4,140	2,731	-	-	-	-	-	-
Total Fixed Assets	4,363	9,434	16,002	19,839	22,141	21,642	21,143	20,644	20,145	19,646	19,147
<b>Current Assets</b>											
Cash	86	164	205	243	270	294	318	383	421	456	490
Account Receivable (a)	-	-	-	32	47	58	77	80	83	86	89
Inventory (b)	4	5	10	12	14	16	17	19	22	25	27
Total Current Assets	90	169	215	287	331	368	412	482	526	567	606
<b>Total Assets</b>	<b>4,453</b>	<b>9,603</b>	<b>16,217</b>	<b>20,126</b>	<b>22,472</b>	<b>22,010</b>	<b>21,555</b>	<b>21,126</b>	<b>20,671</b>	<b>20,213</b>	<b>19,753</b>
<b>Liabilities and Equity</b>											
Long Term Debt											
Foreign Loan	1,104	2,456	5,702	7,262	7,830	7,646	7,446	7,230	6,998	6,742	6,470
Government Loan	382	4,101	7,423	10,003	11,854	11,698	11,530	11,350	11,158	10,954	10,738
Total Long Term Debt	1,486	6,557	13,125	17,265	19,684	19,344	18,976	18,580	18,156	17,696	17,208
<b>Current Liabilities</b>											
Account Payable (c)	18	22	41	50	59	66	71	77	93	103	111
Current Debt Maturities	-	-	-	-	312	340	368	396	424	460	488
Total Current Liabilities	18	22	41	50	371	406	439	473	517	563	599
<b>Equity</b>											
Government Capital Contribution	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877
Retained Earnings	72	147	174	(66)	(460)	(617)	(737)	(804)	(879)	(923)	(931)
Total Equity	2,894	3,024	3,051	2,811	2,417	2,260	2,140	2,073	1,998	1,954	1,946
<b>Total Liabilities and Equity</b>	<b>4,453</b>	<b>9,603</b>	<b>16,217</b>	<b>20,126</b>	<b>22,472</b>	<b>22,010</b>	<b>21,555</b>	<b>21,126</b>	<b>20,671</b>	<b>20,213</b>	<b>19,753</b>

Note: (a) Estimated at 1/12 "Sewerage Charges" in the previous table.

(b) Estimated at 2% of "Operating Expenses" in the previous table

(c) Estimated at 1/12 of "Operating Expenses" in the previous table

表A 6.22 損益計算表 (1981-1991) ケースV

(MSL,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Operating Revenue	-	-	-	381	564	690	921	954	991	1,026	1,063
Sewerage Charge	-	-	-	-	-	886	979	1,072	1,179	1,297	1,427
Sewerage Tax (a)	289	333	520	296	205	901	466	433	446	412	348
Municipal Fund Allocation	289	333	520	677	769	2,281	2,361	2,459	2,515	2,735	2,838
Total Operating Revenue	-	-	-	381	564	690	921	954	991	1,026	1,063
Operating Expenses	-	-	-	8	11	14	18	19	20	21	21
Billing and Collection Fees (b)	-	-	-	4	6	7	9	10	10	10	11
Provision for Bad Debts (c)	197	234	438	473	527	569	615	664	820	907	980
Payroll	-	-	-	31	56	75	83	92	104	114	126
Power	-	-	11	51	78	89	96	104	112	121	131
Maintenance	20	24	44	47	52	57	61	66	82	91	98
Administration	217	258	493	614	730	811	882	955	1,148	1,264	1,367
Total Operating Expenses	-	-	-	8	11	14	18	19	20	21	21
Net Operating Income	72	75	27	63	35	1,470	1,479	1,504	1,468	1,471	1,471
Depreciation (d)	-	-	-	303	429	499	499	499	499	499	499
Interest	-	-	-	-	-	1,200	1,180	1,160	1,140	1,120	1,100
Net Income (Deficit)	72	75	27	(240)	(394)	(229)	(200)	(155)	(171)	(148)	(128)

Note: (a) Estimated at 5% of "Property Value".

(b) Estimated at 2% of "Sewerage Charge".

(c) Estimated at 1% of "Sewerage Charge".

(d) Composite rate of 2.5% for "Assets in service" in the following table.

表A 6.23 資金計画表 (1981-1991) ケース V

(M\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>Sources of Funds</b>											
Net Operating Income	72	75	27	63	35	1,470	1,479	1,504	1,468	1,471	1,471
Increase in Account Payable	18	4	19	9	9	7	5	6	16	10	8
Decrease in Current Assets (Less Cash)	-	-	-	-	-	-	-	-	-	-	-
Foreign Loan	-	-	-	-	-	-	-	-	-	-	-
Government Loan	1,486	5,071	6,568	4,140	2,731	-	-	-	-	-	-
Government Contribution (Interest-free Advance)	2,877	-	-	-	-	-	-	-	-	-	-
Total Sources	4,453	5,150	6,614	4,212	2,775	1,477	1,484	1,510	1,484	1,481	1,479
<b>Application of Funds</b>											
Capital Expenditure	4,363	5,071	6,568	4,140	2,731	-	-	-	-	-	-
Interest	-	-	-	-	-	-	-	-	-	-	-
Foreign Loan	-	-	-	-	-	-	-	-	-	-	-
Government Loan	-	-	-	-	-	1,200	1,180	1,160	1,140	1,120	1,100
Amortization of Principal	-	-	-	-	-	-	-	-	-	-	-
Foreign Loan	-	-	-	-	-	-	-	-	-	-	-
Government Loan	-	-	-	-	-	240	260	280	300	320	340
Total Debt Service	-	-	-	-	-	-	-	-	-	-	-
Increase in Current Assets (Less Cash)	4	1	5	34	17	13	20	5	6	6	5
Decrease in Current Liabilities	-	-	-	-	-	-	-	-	-	-	-
Total Applications	4,367	5,072	6,573	4,174	2,748	1,453	1,460	1,445	1,446	1,446	1,445
Net Cash Increase (Decrease)	86	78	41	38	27	24	24	65	38	35	34
Cash Available at End of Year (a)	86	164	205	243	270	294	318	383	421	456	490

Note: (a) Estimated at 1/3 of "Operating Expenses" in the previous table

表 A 6.24 貸借対照表 (1981-1991) ケース V

(M\$1,000)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
<b>Assets</b>											
<b>Fixed Assets</b>											
Land	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877
Utility Plant in Service	-	-	-	13,125	17,265	19,996	19,996	19,996	19,996	19,996	19,996
Less Accumulative Depreciation	-	-	-	303	732	1,231	1,730	2,229	2,728	3,227	3,726
Net Fixed Assets in Service	-	-	-	15,699	19,410	21,642	21,143	20,644	20,145	19,646	19,147
Construction in Progress	1,486	6,557	13,125	4,140	2,731	-	-	-	-	-	-
Total Fixed Assets	4,363	9,434	16,002	19,839	22,141	21,642	21,143	20,644	20,145	19,646	19,147
<b>Current Assets</b>											
Cash	86	164	205	243	270	294	318	383	421	456	490
Account Receivable (a)	-	-	-	32	47	58	77	80	83	86	89
Inventory (b)	4	5	10	12	14	16	17	19	22	25	27
Total Current Assets	90	169	215	287	331	368	412	482	526	567	606
<b>Total Assets</b>	4,453	9,603	16,217	20,126	22,472	22,010	21,555	21,126	20,671	20,213	19,753
<b>Liabilities and Equity</b>											
<b>Long Term Debt</b>											
Foreign Loan	-	-	-	-	-	-	-	-	-	-	-
Government Loan	1,486	6,557	13,125	17,265	19,756	19,496	19,216	18,916	18,596	18,256	17,896
Total Long Term Debt	1,486	6,557	13,125	17,265	19,756	19,496	19,216	18,916	18,596	18,256	17,896
<b>Current Liabilities</b>											
Account Payable (c)	18	22	41	50	59	66	71	77	93	103	111
Current Debt Maturities	-	-	-	-	240	260	280	300	320	340	360
Total Current Liabilities	18	22	41	50	299	326	351	377	413	443	471
<b>Equity</b>											
Government Capital Contribution	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877	2,877
Retained Earnings	72	147	174	(66)	(460)	(689)	(889)	(1,044)	(1,215)	(1,363)	(1,491)
Total Equity	2,949	3,024	3,051	2,811	2,417	2,188	1,988	1,833	1,662	1,514	1,386
<b>Total Liabilities and Equity</b>	4,453	9,603	16,217	20,026	22,472	22,010	21,555	21,126	20,671	20,213	19,753

Note: (a) Estimated at 1/12 "Sewerage Charges" in the previous table  
 (b) Estimated at 2% of "Operating Expenses" in the previous table  
 (c) Estimated at 1/12 of "Operating Expenses" in the previous table

付 7 流 量 計 算 表









No of Sewers	Area by Land Use and Population												Area				Design Flow				Designed Sewer						Remarks											
	Commercial 400 persons/ha			Residential 120 persons/ha			Residential 225 persons/ha			Institution 984 persons/ha			School			Mosque 0 persons/ha			Total	Population	Peaking Factor	Domestic Waste m <sup>3</sup> /sec	Other m <sup>3</sup> /sec	Area Flow ha m <sup>3</sup> /sec	Area Flow ha m <sup>3</sup> /sec	Infiltration II m <sup>3</sup> /sec		Flow Total m <sup>3</sup> /sec	No of Sewers	Diameter mm	Length m	Slope %	Velocity (Full) m/sec	Capacity (Full) m <sup>3</sup> /sec	Elevation Ground Surface m	Sewer Invert m	Earth Covering m	
	Area ha	Population	Increment	Area ha	Population	Increment	Area ha	Population	Increment	Area ha	Population	Increment	Area ha	Population	Increment	Area ha	Population	Increment																				Area ha
39	0.66	276																								225	1000	2.0	0.61	0.283	1.52	0.303	1.00					
40	0.15	60																								0.75	400	2.0	0.61	0.283	1.52	0.303	1.00					
41	0.55	220																								0.75	400	2.0	0.61	0.283	1.52	0.303	1.00					
42	0.37	148																								0.75	400	2.0	0.61	0.283	1.52	0.303	1.00					
43	0.39	156																								0.75	400	2.0	0.61	0.283	1.52	0.303	1.00					
44	0.81	324																								0.75	400	2.0	0.61	0.283	1.52	0.303	1.00					
45	0.39	156																								0.75	400	2.0	0.61	0.283	1.52	0.303	1.00					
46	0.15	60																								0.75	400	2.0	0.61	0.283	1.52	0.303	1.00					
47	0.87	348																								0.75	400	2.0	0.61	0.283	1.52	0.303	1.00					
48	0.04	16																								0.75	400	2.0	0.61	0.283	1.52	0.303	1.00					
49	0.17	68																								0.75	400	2.0	0.61	0.283	1.52	0.303	1.00					
50	0.12	48																								0.75	400	2.0	0.61	0.283	1.52	0.303	1.00					
51	0.01	36																								0.75	400	2.0	0.61	0.283	1.52	0.303	1.00					
52	0.23	92																								0.75	400	2.0	0.61	0.283	1.52	0.303	1.00					
53	0.01	36																								0.75	400	2.0	0.61	0.283	1.52	0.303	1.00					
54	0.25	100																								0.75	400	2.0	0.61	0.283	1.52	0.303	1.00					
55	0.06	24																								0.75	400	2.0	0.61	0.283	1.52	0.303	1.00					
56	0.33	132																								0.75	400	2.0	0.61	0.283	1.52	0.303	1.00					
57	0.29	116																								0.75	400	2.0	0.61	0.283	1.52	0.303	1.00					
58	0.50	180																								0.75	400	2.0	0.61	0.283	1.52	0.303	1.00					



















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