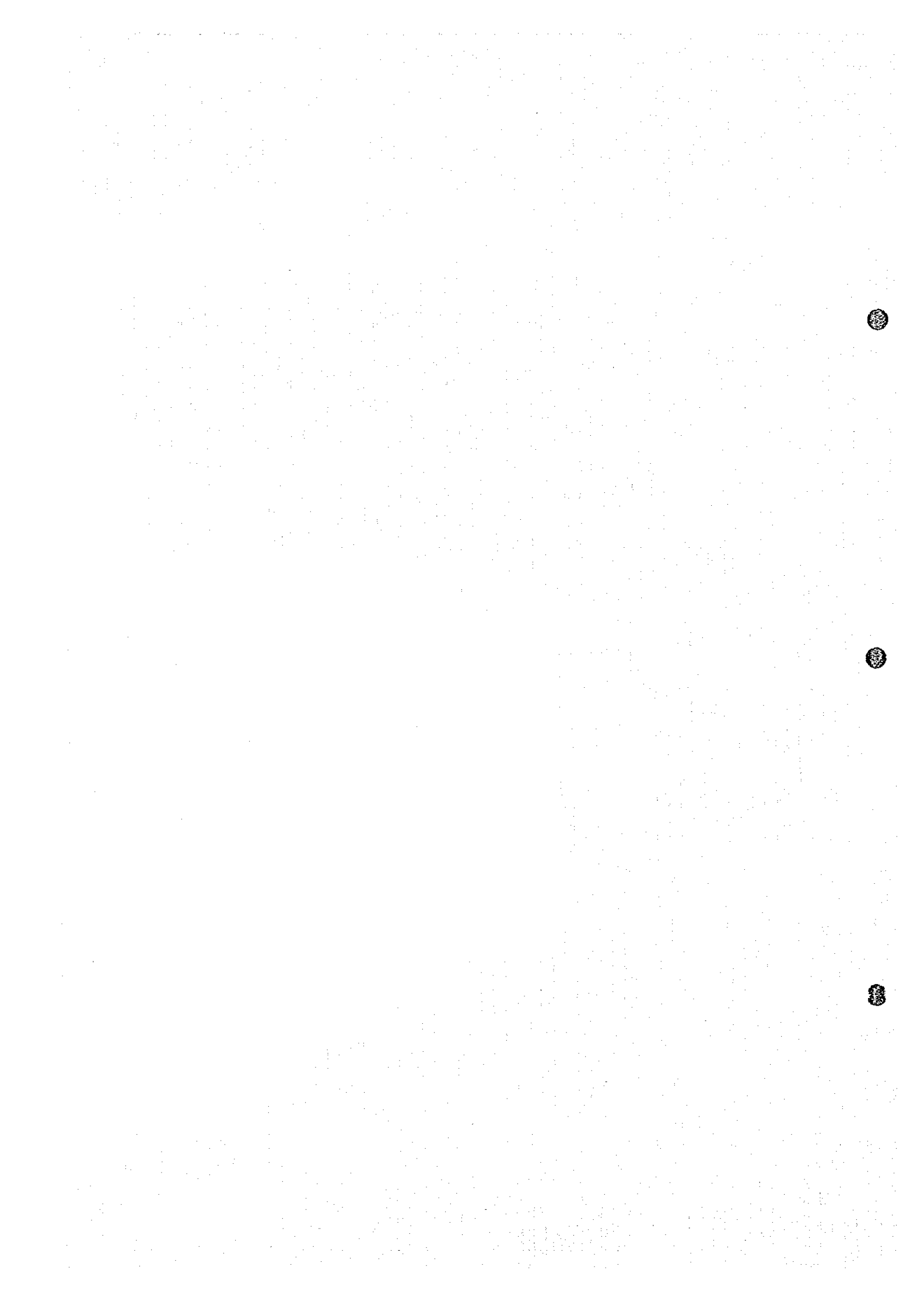

ANNEX-12

**SOCIOECONOMIC DATA
OF INDONESIA**



ANNEX-12

SOCIOECONOMIC DATA OF INDONESIA *

* unless otherwise specified, all data refer to Indonesia

Data sources:

World Development Report 1995

BIRO PUSAT STATISTIC JAKARTA; Welfare indicators 1994

BIRO PUSAT STATISTIC JAKARTA; ECONOMIC INDICATOR JUNE 1995

KANTOR STATISTIC PROPINSI DKI JAKARTA; Jakarta in figures 1994

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1 Basic indicators

Population (millions) mid-19	187.2	
Area (thousands of sq. km)	1,905.0	
GNP per capita		
Dollars 1993	740.0	
Average annual growth 1980-93 (%)		4.2
Average annual rate of inflation (%)		
1970-1983	21.5	
1980-1993	8.5	
Life expect. at birth (years) 1993		63.0
Adult illiteracy 1990 (%)		
Female	32.0	
Total	23.0	

2 Production**2.1 Growth of production (average annual growth rate, %)**

	GDP	Agriculture	Industry	Manufact'g	Services, etc
1970-80	7.2	4.1	9.6	14.0	7.7
1980-93	5.8	3.2	6.3	11.8	6.9

2.2 Structure of production**GDP (million \$)**

1970	9,657.0
1993	144,707.0

Composition (distribution of GDP, %)

	Agriculture	Industry	Manufact'g	Services, etc
1970	45	19	10	36
1993	19	39	22	42

2.3 GDP comparison (billion rupiahs)

	DKI Jakarta	Jawa Barat	Indonesia
1988	16,796.0	20,618.5	121,606.0
1989	19,783.9	23,938.2	142,454.7
1990	22,830.2	29,294.6	166,518.4
1991	26,355.2	33,326.2	192,803.1
1992	30,923.6	37,772.4	227,795.4

2.4 GDP growth comparison (%)

	DKI Jakarta	Jawa Barat	Indonesia
1988	6.61	9.11	7.44
1989	9.74	8.74	8.25
1990	8.57	8.95	7.59
1991	7.80	7.56	6.53
1992	8.27	7.67	8.45

2.5 Agriculture and food

Value added in agriculture (million \$)

1980	18,701.0
1993	27,189.0

Cereal imports (thousand t)

1980	3,534.0
1993	3,105.0

Food aid in cereals (thousand t)

1979/80	831.0
1992/93	40.0

Fertilizer consumption (hundred grams per hectare of arable land)

1979/80	600.0
1992/93	1,147.0

Food production per capita (avg. ann. growth rate, %)

1979-93	2.2
---------	-----

Fish products (% of total daily protein supply)

1980	8.1
1990	8.7

2.6 Commercial energy

Energy production (avg. annual growth rate, %)

1971-80	7.7
1980-93	3.7

Energy consumption (avg. annual growth rate, %)

1971-80	12.5
1980-93	7.5

Energy use per capita (oil equivalent, kg)

1971	7.1
1993	321.0

Energy use GDP output per kg (oil equivalent, \$)

1971	1.1
1993	2.3

Energy imports as a % of merchandise exports

1970	30.0
1993	6.0

2.7 Structure of manufacturing

Value added in manufacturing (million \$)

1970	994.0
1992	27,854.0

Composition (distribution of manufacturing value added, %)

	1970	1992
Food, beverages, and tobacco	65	23
Textiles and clothing	14	16
Machinery, transport equipment	2	14
Chemicals	6	7
Other	13	40

2.8 Manufacturing earnings and output**Earnings per employee (avg. annual growth rate, %)**

1970-80 5.2

1980-92 4.3

Earnings per employee index (1980=100)

1990 164.0

1991 171.0

1992 172.0

Total earnings as % of value added

1970 26.0

1990 20.0

1991 20.0

1992 19.0

Gross output per employee (1980=100)

1970 42.0

1990 206.0

1991 214.0

1992 214.0

3 Domestic absorption**3.1 Growth of consumption and investment (average annual growth rate, %)**

	1970-80	1980-93
General government consumption	13.1	4.8
Private consumption, etc.	6.5	4.4
Gross domestic investment	14.1	7.1

3.2 Structure of demand (distribution of GDP, %)

	1970	1993
General govt. consumption	8	10
Private consumption	78	60
Gross domestic investment	16	28
Gross domestic savings	14	31
Exports of goods & nonfactor service	13	28
Resource balance	-2	2

4 Fiscal and monetary accounts**4.1 Central government expenditure****Total expenditure (% of GNP)**

1980 23.1

1993 18.9

Overall surplus/deficit (% of GNP)

1980 -2.3

1993 0.7

Composition of expenditure (% of total expenditure)

	1980	1993
Defense	13.5	6.2
Education	8.3	10.0
Health	2.5	2.7
Housing, etc., social security, welfare	1.8	1.6
Economic services	40.2	27.3
Other	3.7	52.2

4.2 Central government current revenue

Total current revenue (% of GNP)

1980 22.2

1993 19.4

Composition of current revenue (% of total current revenue)

	1980	1993
Income, profit, capital gains/tax revenue	78.0	49.3
Social security/tax revenue	0.0	0.0
Goods & services/tax revenue	8.6	26.4
Intl. trade & transactions/tax revenue	7.2	5.2
Other/tax revenue	1.2	3.2
Nontax revenue	4.9	15.9

4.3 Money and interest rates

Avg. annual nominal growth rate of broadly defined money (%)

1970-80 35.9

1980-93 26.3

Avg. outstanding of broadly defined money as % of GDP

1970 7.8

1980 13.2

1993 48.2

Inflation (%)

	Jakarta	Indonesia
1987	9.02	8.90
1988	4.44	5.47
1989	5.56	5.97
1990	11.26	9.53
1991	10.38	9.52
1992	5.46	4.94
1993	10.28	9.77
1994	10.56	9.24

Nominal deposit rate of banks (avg. annual %)

1980 6.0

1993 20.4

Nominal lending rate of banks 1993 (avg. annual %)

20.2

5 Core international transactions

5.1 Growth of merchandise trade

Exports of merchandise 1993 (million \$)	33,612.0
Imports of merchandise 1993 (million \$)	28,086.0
Avg. annual growth rate of exports (%)	
1970-80	6.5
1980-93	6.7
Avg. annual growth rate of imports (%)	
1970-80	12.1
1980-93	4.5
Terms of trade (1987=100)	
1985	145.0
1993	90.0

5.2 Structure of merchandise imports (% of total merchandise imports)

	1970	1993
Food	9.0	7.0
Fuels	3.0	8.0
Other primary commodities	4.0	9.0
Machinery & transport equip	40.0	42.0
Other manufactures	45.0	34.0

5.3 Structure of merchandise exports (% of total merchandise exports)

	1970	1993
Fuel, minerals, metals	44.0	32.0
Other primary commodities	54.0	15.0
Machinery & transport equip	0.0	5.0
Other manufactures	1.0	48.0
Textile fibers, textiles, clothi	0.0	17.0

5.4 OECD imports of manufactured goods

Value of imports of manufactured goods by origin (million \$)

1970	15.0
1993	12,060.0

Composition of 1993 imports of manufactures (%)

Textiles, clothing	32.6
Chemicals	2.2
Elect. machinery, electronics	5.6
Transport equipment	0.7
Other	59.0

5.5 Balance of payments and reserves

	1970	1993
Current account balance after official transfers (millio	-310.0	-2,016.0
Current account balance before official transfers (mill	-376.0	-2,298.0
Net workers' remittances (million \$)	n.a.	346.0
Gross international reserves (million \$)	160.0	12,474.0
Import coverage by gross international reserves (mont	n.a.	3.3

INTERNATIONAL BALANCE OF PAYMENT

(Unit : US\$ million)

Items	Fiscal Year					
	1988/ 1989	1989/ 1990	1990/ 1991	1991/ 1992	1992/ 1993	1993/ 1994
A) Current Account	-1,859	-1,599	-3,741	-4,352	-2,561	-2,940
1) Merchandise	5,513	6,456	5,115	4,911	7,986	7,371
a) Export (F.O.B)	19,824	23,830	28,143	29,714	35,303	36,504
Non-oil and non-gas	12,184	14,493	15,380	19,008	24,823	27,170
Oil and gas	7,640	9,337	12,763	10,706	10,480	9,334
- Oil	5,007	6,288	8,053	6,869	6,363	5,512
- LNG	2,508	2,801	4,304	3,510	3,764	3,507
- LPG	125	248	406	327	353	315
b) Import (F.O.B)	-14,311	-17,374	-23,028	-24,803	-27,317	-29,127
Non-oil and non-gas	-12,239	-14,845	-19,448	-21,660	-23,751	-25,311
Oil and gas	-2,072	-2,529	-3,580	-3,143	-3,566	-3,816
- Oil	-1,912	-2,342	-3,388	-2,915	-3,314	-3,555
- LNG	-160	-187	-192	-228	-252	-261
2) Services (net)	-7,372	-8,055	-8,856	-9,263	-10,547	-10,317
a) Non-oil and non-gas	-4,864	-5,158	-5,683	-6,262	-7,148	-7,333
b) Oil and gas	-2,508	-2,897	-3,173	-3,001	-3,399	-2,984
- Oil	-1,560	-1,635	-1,783	-1,796	-1,722	-1,638
- LNG	-948	-1,262	-1,390	-1,205	-1,677	-1,346
B) Capital Account	2,614	2,405	6,780	5,551	5,199	5,711
1) Official capital (net)	2,825	1,830	924	1,418	915	1,063
a) inflows	6,588	5,516	5,006	5,600	5,755	6,195
IGGI	5,468	4,668	4,897	5,250	5,527	5,778
non-IGGI	1,120	848	109	350	228	417
b) Debt repayment	-3,763	-3,686	-4,082	-4,182	-4,840	-5,132
2) Private capital	-211	575	5,856	4,133	4,284	4,648
a) Direct investment	585	722	1,424	1,531	1,705	1,971
b) Others	-796	-147	4,432	2,602	2,579	2,677
C) Total (A through B)	755	806	3,039	1,199	2,638	2,771
D) Errors and Omissions (net)	-1,432	-558	263	-218	-1,199	-2,044
E) Reserves	677	-248	-3,302	-981	-1,439	-727
1) Foreign assets	677	-248	-3,302	-981	-1,439	-727
2) Foreign liabilities	0	0	0	0	0	0

Sources : Indikator Ekonomi January 1993 and August 1995, Biro Pusat Statistik.

MAIN IMPORT AND EXPORT COMMODITIES OF INDONESIA

Commodity Group	1980		1990		1993		Rate (%)
	Volume (1,000 ton)	Value (US\$ million)	Volume (1,000 ton)	Value (US\$ million)	Volume (1,000 ton)	Value (US\$ million)	
<i>A) Import</i>							
a) Foodstuff and livestock	4,280	1,285	2,877	852	4,860	1,342	4.74%
b) Beverages and tobacco	34	42	31	54	46	119	0.42%
c) Raw materials (inedible)	1,326	491	7,739	1,885	9,419	2,428	8.57%
d) Fuel, lubricants and related materials	7,576	1,754	10,394	1,937	13,120	2,155	7.61%
e) Animal & vegetable oils & fats	10	9	48	26	212	101	0.36%
f) Chemical materials	1,633	1,255	4,205	3,394	4,665	4,043	14.27%
g) Manufactured goods classified chiefly by materials	3,324	2,053	3,381	3,553	4,303	4,843	17.10%
h) Machinery and vehicles	760	3,634	1,512	9,328	1,224	12,158	42.92%
i) Miscellaneous manufactured articles	65	285	90	797	111	1,133	4.00%
j) Commodities & transactions not classified above	1	27	2	13	1	6	0.02%
Total	19,009	10,835	30,279	21,839	37,961	28,328	100.00%
<i>B) Export</i>							
a) Crude petroleum	-	-	37,855	6,220	36,178	4,778	16.39%
b) Petroleum and related products	56,525	12,859	45,561	7,404	44,502	5,693	19.53%
c) Gas	11,964	2,881	23,954	3,667	27,123	4,053	13.91%
d) Rubber	976	1,165	1,077	847	1,214	977	3.35%
e) Coffee	239	658	423	379	352	352	1.21%
f) Tea	74	113	111	181	125	156	0.54%
g) Tobacco	28	59	17	59	38	66	0.23%
h) Shrimp	35	181	90	665	95	859	2.95%
i) White pepper	12	25	35	57	14	30	0.10%
j) Black pepper	17	25	13	22	9	10	0.03%
k) Quinine, quinine crundum and quinine salt	-	-	0.16	8	0.04	3	0.01%
l) Wood sawn	15	11	472	326	370	391	1.34%
m) Tin	28	444	29	174	18	90	0.31%
n) Copper	194	128	414	418	931	715	2.45%
o) Weaving yarns, textile and related products	8	46	185	1,241	441	2,637	9.05%
p) Ready made cloths	9	98	116	1,646	228	3,502	12.02%
q) Plywood and similar laminated wood products	164	55	5,027	2,726	5,774	4,221	14.48%
r) Palm oil	503	255	815	204	1,372	472	1.62%
s) Fertilizer	231	35	1,542	191	1,248	140	0.48%
Total	71,022	19,038	117,736	26,435	120,032	29,144	100.00%

Source : Statistik Indonesia 1982, 1991 and 1994

Note : Symbol of (*) indicates percentage distribution in value within major import and export commodities.

SOURCE : THE STUDY ON COMPREHENSIVE RIVER WATER MANAGEMENT PLAN IN JABOTABEK, PROGRESS REPORT (1), JICA, 1995

6 External finance**6.1 Official development assistance: receipts**

Net disbursement of ODA from all sources (million \$)

1987	1,245.0
1988	1,632.0
1989	1,840.0
1990	1,747.0
1991	1,874.0
1992	2,095.0
1993	2,026.0
Receipts of ODA per capita 1993 (\$)	10.8
Receipts of ODA as % of GNP 1993	1.4

6.2 Total external debt

	1980	1993
Long-term debt (million \$)	18,169	68,865
Use of IMF credit (million \$)	0	0
Short-term debt (million \$)	2,775	20,674
Total external debt (million \$)	89,539	0
Total arrears on long-term debt outstanding and disbursed (million \$)	0	1
Ratio of present value to nominal value of debt 1993		91

6.3 Flow of public and private external capital

Disbursements (million \$)

	1980	1993
Long-term public and publicly guaranteed	2,551.0	5,935.0
Private nonguaranteed	695.0	3,573.0

Repayment of principal (million \$)

	1980	1993
Long-term public and publicly guaranteed	940.0	5,256.0
Private nonguaranteed	693.0	3,440.0

Interest payments (million \$)

	1980	1993
Long-term public and publicly guaranteed	824.0	2,883.0
Private nonguaranteed	358.0	879.0

6.4 Aggregate net resources flows and net transfers (million \$)

	1980	1993
Total net flows long-term debt	1,613.0	812.0
Official grants	109.0	280.0
Net foreign direct investment	180.0	2,004.0
Portfolio equity flows	0.0	1,836.0
Aggregate net resource flows	1,902.0	4,932.0
Aggregate net transfers	-2,514.0	-1,407.0

6.5 Total external debt ratios

	1990	1993
Net present value of external debt as % of exports	192.6	194.6
Net present value of external debt as % of GNP	56.9	58.5
Total debt service as % of exports	13.9	31.8
Interest payments as % of exports	6.5	11.0
Concessional debt as % of total external debt	36.4	27.9
Multilateral debt as % of total external debt	8.8	19.9

6.6 Terms of external public borrowing

	1980	1993
Commitments (million \$)	4,277.0	7,415.0
Average interest rate (%)	8.1	5.2
Average maturity (years)	19.0	19.0
Average grace period (years)	6.0	5.0
Public loans with variable int. rate as % of public deb	30.7	43.6

7 Human resources development

7.1 Population and labor force

Total population (thousands)

	DKI Jakarta	Jawa Barat	Indonesia
1961	2,974	17,614	97,085
1971	4,579	21,624	119,208
1980	6,503	27,454	147,490
1990	8,259	35,384	179,379

Average annual population growth (%)

	DKI Jakarta	Jawa Barat	Indonesia
1971	4.46	3.93	2.42
1980	2.09	2.66	2.57
1990	2.10	2.32	1.98

Total household (thousands)

	DKI Jakarta	Jawa Barat	Indonesia
1980	1,164	6,101	30,372
1990	1,740	8,180	39,695

Population of age 15-64 in 1993 (million)

111.0

Total labor force (thousands)

1989	Indonesia	73,425
1990	Indonesia	75,851
1991	Indonesia	76,423
1992	Indonesia	78,518
1993	Indonesia	79,201
1993	DKI Jakarta	2,947
1993	Jawa Barat	13,876

Composition of labor force aged 10 and over in 1993 (%)

	Indonesia	DKI Jakarta	Jawa Barat
Agriculture	50.6	1.1	37.2
Manufacturing	11.1	17.4	14.9
Trade	15.8	30.5	19.6
Services *	17.8	44.0	21.9
Others	4.8	7.0	6.4

* include transport and communication, financial intermediaries, real estate and public services

Average annual growth of labor force (%)

1970-80	2.1
1980-93	2.3

7.2 Demography and fertility

Crude birth rate per 1,000 population

1970	40.0
1993	24.0

Crude death rate per 1,000 population

1970	18.0
1993	8.0

Total fertility rate

1970	5.3
1993	2.8

Percentage of birth in 1993 to women aged

under 20	14.0
over 35	12.0

Married women of childbearing age using contraception 1988-93 () 50.0

7.3 Health and nutrition

Population per physician in 1970 27,440.0

Population per nursing person in 1970 4,910.0

Infant mortality rate per 1,000 live births

	DKI Jakarta	Jawa Barat	Indonesia
1971	129	167	145
1980	82	134	109
1990	40	90	70

Under-5 mortality rate (per 1,000 live births)

	DKI Jakarta	Jawa Barat	Indonesia
1971	193	251	218
1980	119	200	162
1990	57	132	103

Patients and deaths by kind of disease (DKI Jakarta 1990-1993)

	Patient		Death	
Malaria	41	0%	0	0%
Gastro Enteritis	18,040	54%	77	25%
Cholera	76	0%	3	1%
Leprosy	62	0%	0	0%
Tuberculosis	2,502	7%	72	23%
DHF	3,981	12%	45	14%
Typoid Fever	4,831	14%	67	22%
Diphthria	136	0%	3	1%
Measles	1,457	4%	12	4%
Rabies	68	0%	0	0%
Hepatitis (common)	2,238	7%	32	10%
Total	33,432	100%	311	100%

7.4 Education

Primary school enrollment as % of same school-age group population

	1970	1992
Total	80.0	115.0
Female	73.0	113.0

Secondary school enrollment as % of same school-age group population

	1970	1992
Total	16.0	38.0
Female	11.0	n.a.

Tertiary school enrollment as % of same school-age group population

1980	4.0
1992	10.0

Primary school net enrollment (%)

1975	72.0
1992	97.0

Primary school pupil/teacher ratio

1992	23.0
------	------

7.5 Gender comparisons

Health

	1970	1993
Female life expectancy at birth (years)	49.0	65.0
Male life expectancy at birth (years)	47.0	61.0
Maternal mortality per 100,000 live birth, 1988-93		450.0

Education

Female % of cohort persisting to grade 4

1970	67.0
1988	83.0

Male % of cohort persisting to grade 4

1970	89.0
1988	99.0

Females per 100 males at primary school

1992	94.0
------	------

Females per 100 males at secondary school	
1970	59.0
1992	81.0
Employment / female share of labor force (%)	
1970	30.0
1993	31.0

7.6 Income distribution and purchasing power parity estimate of GNP

Percentage share of income or consumption in 1990

Lowest 20 percent	8.7
Second quintile	12.1
Third quintile	15.9
Fourth quintile	21.1
Highest 20 percent	42.3
Highest 10 percent	27.9

PPP estimates of GNP per capita (United States = 100)

1987	10.1
1993	12.7

PPP estimate by current intl. dollars in 1993 3,150.0

8 Environmentally sustainable development

8.1 Urbanization

Urban population as % of total population

1970	17.0
1993	33.0

Average annual growth rate of urban population (%)

1970-80	4.9
1980-93	4.8

Population in capital city in 1990, as % of

Urban	17.0
Total	5.0

Population in urban agglomerations of 1 million or more, as % of

	1970	1993
Urban	45.0	38.0
Total	5.0	13.0

8.2 Water supply and sanitation

Pop. with access to safe water 1991 (% of total) 42.0

Losses 1986 (% of total water provision) 29.0

Household by source of drinking water (%)

	Pipe	Pump	Well	Others
DKI Jakarta				
1990	46.0	43.2	9.2	1.7
1992	13.9	47.5	8.2	0.4
1993	44.1	45.7	8.6	1.6
Jawa Barat				
1990	7.8	19.4	48.0	24.8
1992	7.7	18.8	51.0	22.2
1993	8.1	20.2	49.8	21.9
Indonesia				
1990	12.9	10.7	51.5	24.9
1992	14.7	10.6	52.3	22.4
1993	14.7	10.4	52.3	22.6

Household by facility of drinking water in 1993 (%)

	Private	Shared	Public	Purchase	Others
DKI Jakarta	56.63	16.03	1.18	25.79	0.37
Jawa Barat	42.19	29.85	23.12	2.21	2.63
Indonesia	42.44	26.79	18.57	5.45	6.75

Household by toilet facilities (%)

	Private with septic tank	Priv.without septic tank	Shared, public, etc
DKI Jakarta			
1990	57.9	9.7	32.4
1992	65.9	2.6	31.5
1993	61.7	7.2	31.1
Jawa Barat			
1990	17.3	8.8	73.9
1992	19.5	8.4	72.1
1993	19.6	9.6	70.9
Indonesia			
1990	17.9	14.4	67.7
1992	20.1	15.9	64.0
1993	19.6	5.8	74.6

8.3 Infrastructure

Electric power

Production 1992 (kwh per person) 233.0

System losses 1992 (% of total output) 17.0

Telecommunications

Telephone mainlines 1992 (per 1,000 persons) 8.0

Faults 1992 (per 100 mainlines per year) 49.0

Paved roads

Road density 1992 (km per million persons) 160.0

Road in good condition 1988 (% of paved roads) 30.0

Railways

Rail traffic units 1991 (per thousand \$ GDP)	37.0
Diesels in use 1992 (% of diesel inventory)	75.0

8.4 Natural resources

Total forest area (thousand sq. km.)

1980	1,217.0
1990	1,095.0

Annual deforestation 1981-90

Thousand square km.	12.1
As % of total area	1.0

Nationally protected areas 1993

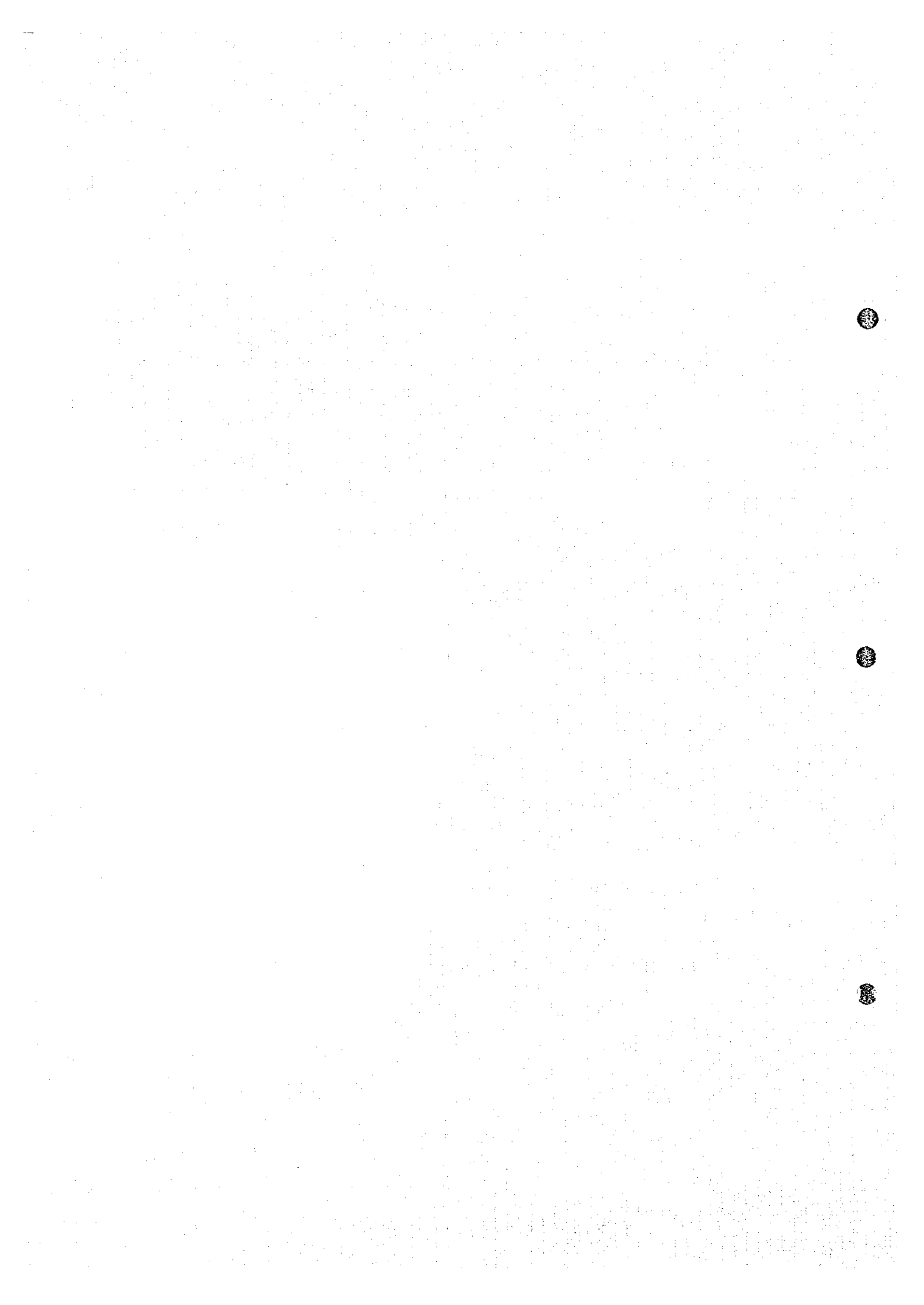
Thousand square km.	185.7
Number	175.0
As % of total area	9.7

Freshwater resources: annual withdrawal, 1970-92

Total withdrawal (cubic km)	16.6
As % of total water resources	0.7
Total withdrawal per capita (cu m)	95.0
Domestic withdrawal per capita (cu m)	12.0
Industrial & agric. withdrawal per capita (cu m)	83.0

ANNEX-17

THE SOCIAL WEAK



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- National Level Depressed Kelurahan in Study Area
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List of Depressed Kelurahan in Study Area

no.	Kabupaten / Kotamadya	Kecamatan	Kelurahan.	category	area (ha)	pop 1990	pop 2000	pop 2010	density '90
1	73	Jakarta Pusat	041 Johar Baru	urban	27.00	19,719	17,344	14,259	730.33
2	74	Jakarta Barat	021 Kali Deres	urban	493.00	44,567	75,583	111,770	90.40
3	74	Jakarta Barat	021 Kali Deres	urban	276.00	13,376	22,460	32,883	48.46
4	75	Jakarta Utara	010 Penjaringan	urban	1,053.00	8,087	16,573	30,338	7.68
5	75	Jakarta Utara	010 Penjaringan	urban	1,006.00	20,793	38,172	62,596	20.67
6	75	Jakarta Utara	040 Cilincing	urban	831.00	27,465	38,850	49,225	33.05
7	75	Jakarta Utara	040 Cilincing	urban	247.00	55,163	63,251	64,962	223.33
8	75	Jakarta Utara	050 Kepulauan Seribu	urban	175.00	4,182	4,476	4,415	23.90
9	75	Jakarta Utara	050 Kepulauan Seribu	urban	215.00	1,140	1,208	1,180	5.30
10	75	Jakarta Utara	050 Kepulauan Seribu	urban	98.00	3,593	3,884	3,870	36.66
11	75	Jakarta Utara	050 Kepulauan Seribu	urban	692.00	5,887	6,893	7,441	8.51
12	18	Bekasi	011 Jatiasih	urban	617.26	5,614	9,738	18,883	9.10
13	18	Bekasi	100 Tarumajaya	rural	697.01	3,030	3,787	4,666	4.35
14	19	Tangerang	160 Teluknaga	urban	261.00	7,036	10,725	12,153	26.96
15	19	Tangerang	160 Teluknaga	rural	146.22	5,589	8,357	10,628	38.22
16	19	Tangerang	160 Teluknaga	rural	179.01	4,046	6,169	7,977	22.60
17	19	Tangerang	160 Teluknaga	rural	388.09	4,104	5,517	6,534	10.57
18	19	Tangerang	160 Teluknaga	rural	547.97	4,831	6,349	7,520	8.82
19	19	Tangerang	160 Teluknaga	rural	490.57	2,289	2,949	3,380	4.67
20	19	Tangerang	161 Kosambi	urban	169.45	7,089	10,346	13,156	41.84
21	19	Tangerang	161 Kosambi	urban	150.31	6,029	8,467	10,768	40.11
22	19	Tangerang	161 Kosambi	urban	243.24	5,566	8,484	10,971	22.88
23	75	Tangerang (kodya)	050 Baru Ceper	urban	167.21	11,681	17,211	19,081	69.86
					9,170.34	270,876	386,793	508,656	66.45

source : Daftar Nama dan Indeks Pera Desa Tertinggal Menurut kabupaten/Kotamadya dan Kecamatan PropinsiZ di Pulau Jawa & Madura 1994

List of Depressed Kelurahan in DKI Jakarta, 1993

No	Kabupaten /kotamadya	Kecamatan	Kelurahan	Area (ha)	populasi 1993	depressed area	depressed population	populasi 1995	populasi 2000	populasi 2005	populasi 2010
1	(71) JAKARTA SELATAN	(010) KEBAYORAN LAMA	(001) PONDOK PINANG	684	50.735	3,25	841	76.212	84.552	90.973	94.900
2	(71) JAKARTA SELATAN	(010) KEBAYORAN LAMA	(002) KEDAYORAN LAMA SELATAN	178	44.654	4,21	3.456	46.257	45.513	43.443	40.185
3	(71) JAKARTA SELATAN	(010) KEBAYORAN LAMA	(003) KEBAYORAN LAMA UTARA	257	50.047	4,60	3.487	45.352	42.237	38.157	33.406
4	(71) JAKARTA SELATAN	(010) KEBAYORAN LAMA	(004) CIPULIR	194	37.301	2,70	2.131	38.971	38.155	36.237	33.352
5	(71) JAKARTA SELATAN	(010) KEBAYORAN LAMA	(005) Grogol SELATAN	285	46.384	2,65	600	42.543	38.389	34.892	30.892
6	(71) JAKARTA SELATAN	(010) KEBAYORAN LAMA	(006) Grogol UTARA	333	47.560	4,37	3.105	56.935	54.913	51.376	46.582
7	(71) JAKARTA SELATAN	(011) PESANGGRAHAN	(001) BUNTAU	456	34.483	3,90	1.847	47.863	59.087	70.944	82.791
8	(71) JAKARTA SELATAN	(011) PESANGGRAHAN	(002) PESANGGRAHAN	270	27.139	4,00	700	29.222	29.222	31.589	33.189
9	(71) JAKARTA SELATAN	(011) PESANGGRAHAN	(004) PETUKANGAN SELATAN	211	22.330	4,00	632	30.443	37.581	45.123	52.658
10	(71) JAKARTA SELATAN	(011) PESANGGRAHAN	(005) PETUKANGAN UTARA	299	32.218	2,50	600	46.322	56.615	67.300	77.257
11	(71) JAKARTA SELATAN	(020) CLANDAK	(001) PONDOK LABU	361	31.264	6,08	5.928	40.353	47.228	53.479	58.532
12	(71) JAKARTA SELATAN	(020) CLANDAK	(003) CLANDAK BARAT	605	60.055	22,50	13.919	61.272	64.242	63.893	63.893
13	(71) JAKARTA SELATAN	(020) CLANDAK	(004) GANDARIA SELATAN	176	22.248	11,53	6.445	23.580	23.992	23.618	22.471
14	(71) JAKARTA SELATAN	(020) CLANDAK	(005) CIPETE SELATAN	237	23.978	4,08	2.873	30.854	32.024	32.166	31.224
15	(71) JAKARTA SELATAN	(030) PASAR MINGGU	(001) CLANDAK TIMUR	353	34.112	3,90	574	39.052	43.948	43.948	48.111
16	(71) JAKARTA SELATAN	(030) PASAR MINGGU	(002) RAGULAN	305	32.116	4,75	875	43.371	47.742	51.133	53.207
17	(71) JAKARTA SELATAN	(030) PASAR MINGGU	(004) PASAR MINGGU	479	31.169	1,50	673	28.080	29.110	29.362	28.795
18	(71) JAKARTA SELATAN	(030) PASAR MINGGU	(005) JATI PADANG	250	29.660	10,90	3.998	37.218	42.855	48.011	52.298
19	(71) JAKARTA SELATAN	(030) PASAR MINGGU	(007) PEJATEN TIMUR	288	47.825	3,34	3.227	6.459	51.266	56.715	63.896
20	(71) JAKARTA SELATAN	(040) MAMPANG PRAPATAN	(001) BANGKA	330	21.516	10,70	2.748	12.776	31.080	31.905	30.889
21	(71) JAKARTA SELATAN	(040) MAMPANG PRAPATAN	(002) PELA MAMPANG	162	27.551	17,01	10.356	49.368	46.992	43.300	38.708
22	(71) JAKARTA SELATAN	(040) MAMPANG PRAPATAN	(003) TEGAL PAKANG	106	19.606	35,70	33.685	11.942	30.377	30.377	29.575
23	(71) JAKARTA SELATAN	(040) MAMPANG PRAPATAN	(004) MAMPANG PRAPATAN	78	27.845	11,80	2.835	12.415	20.745	20.745	19.428
24	(71) JAKARTA SELATAN	(040) MAMPANG PRAPATAN	(005) KUNINGAN BARAT	98	18.766	18,20	10.897	58.074	21.579	13.904	10.173
25	(71) JAKARTA SELATAN	(041) PANCORAN	(002) RAWA JATI	67	16.479	1,25	750	11.766	11.766	11.404	10.863
26	(71) JAKARTA SELATAN	(041) PANCORAN	(001) DUREN TIGA	245	25.529	1,00	500	33.106	32.625	31.303	29.220
27	(71) JAKARTA SELATAN	(041) PANCORAN	(004) PANCORAN	94	22.493	2,45	867	21.349	22.118	22.309	21.893
28	(71) JAKARTA SELATAN	(041) PANCORAN	(005) CIKOLO	72	13.071	0,20	169	12.178	11.892	11.287	10.411
29	(71) JAKARTA SELATAN	(041) PANCORAN	(006) PANCORAN BARU	124	20.162	1,75	800	22.957	22.623	21.707	20.927
30	(71) JAKARTA SELATAN	(050) KEBAYORAN BARU	(001) GANDARIA UTARA	152	50.825	18,64	12.205	42.209	39.221	35.366	30.927
31	(71) JAKARTA SELATAN	(050) KEBAYORAN BARU	(002) CIPETE UTARA	193	35.915	6,12	1.940	36.983	36.831	34.567	31.462
32	(71) JAKARTA SELATAN	(050) KEBAYORAN BARU	(004) PETOGOGAN	86	18.440	14,23	16.554	5.358	11.441	9.716	8.002
33	(71) JAKARTA SELATAN	(050) KEBAYORAN BARU	(006) KRAMAT BELA	123	18.572	7,03	5.207	14.942	13.011	10.994	9.009
34	(71) JAKARTA SELATAN	(050) KEBAYORAN BARU	(007) GUNUNG	152	16.034	13,00	9.854	13.588	12.070	10.405	8.698
35	(71) JAKARTA SELATAN	(050) KEBAYORAN BARU	(009) RAWA BARAT	69	8.277	1,51	1.519	8.197	8.197	7.137	4.942
36	(71) JAKARTA SELATAN	(060) SETIA HUDI	(002) KUNINGAN TIMUR	172	35.510	5,25	2.444	38.709	47.167	53.536	58.786
37	(71) JAKARTA SELATAN	(060) SETIA HUDI	(003) KARET KUNINGAN	179	35.901	12,35	6.992	33.282	28.536	23.661	18.974
38	(71) JAKARTA SELATAN	(060) SETIA HUDI	(005) MENTENG ATAS	90	43.961	5,61	8.236	37.816	31.619	25.587	20.011
39	(71) JAKARTA SELATAN	(060) SETIA HUDI	(006) PASAR MANGGIS	78	25.954	13,57	17.409	24.715	21.617	18.286	14.900
40	(71) JAKARTA SELATAN	(060) SETIA HUDI	(007) GUNTUR	65	16.506	1,85	1.163	8.391	5.253	3.582	2.226
41	(71) JAKARTA SELATAN	(070) TEBET	(001) MENTENG DALAM	258	32.908	7,00	2.774	31.200	30.257	29.257	28.049
42	(71) JAKARTA SELATAN	(070) TEBET	(002) TEBET BARAT	172	35.510	7,20	4.194	24.974	22.382	19.525	16.568
43	(71) JAKARTA SELATAN	(070) TEBET	(003) TEBET TIMUR	130	28.018	6,40	2.699	27.263	19.934	17.300	14.756
44	(71) JAKARTA SELATAN	(070) TEBET	(004) KEBON DARU	130	42.193	3,30	2.763	38.258	36.333	33.153	29.426
45	(71) JAKARTA SELATAN	(070) TEBET	(005) BUKIT DURI	108	47.115	12,32	11.414	36.028	32.136	27.895	23.552
46	(71) JAKARTA SELATAN	(070) TEBET	(006) MANGGARAI SELATAN	51	34.633	1,94	981	24.546	21.348	18.073	14.882
47	(71) JAKARTA SELATAN	(070) TEBET	(007) MANGGARAI	95	40.647	26,83	9.511	30.976	27.900	24.461	20.860
48	(72) JAKARTA TIMUR	(010) PASAR REBO	(001) PEKAYON	314	28.538	2,10	448	31.067	36.594	39.227	40.901
49	(72) JAKARTA TIMUR	(010) PASAR REBO	(002) KALI SARI	289	18.917	0,10	0.039	23.707	29.979	36.841	41.966
50	(72) JAKARTA TIMUR	(010) PASAR REBO	(004) CIANTUNG	237	25.941	6,00	1.040	31.870	37.203	42.204	46.493
51	(72) JAKARTA TIMUR	(010) PASAR REBO	(005) GEDONG	265	22.932	0,25	0.094	31.240	35.465	36.767	37.018
52	(72) JAKARTA TIMUR	(011) CIRACAS	(002) KILAPA DUA WETAN	337	20.014	13,68	4.045	41.692	41.692	43.433	66.240
53	(72) JAKARTA TIMUR	(011) CIRACAS	(003) CIRACAS	395	33.771	2,75	0.579	54.524	61.225	66.532	69.932
54	(72) JAKARTA TIMUR	(011) CIRACAS	(004) SUSUKAN	209	29.500	4,60	1.360	29.043	29.955	29.899	28.866
55	(72) JAKARTA TIMUR	(011) CIRACAS	(005) RAMBUTAN	219	19.452	0,30	0.239	26.571	29.393	31.667	32.583
56	(72) JAKARTA TIMUR	(012) CIPAYUNG	(002) CIKIPAYUNG	363	7.809	1,00	200	20.949	28.133	36.651	46.300
57	(72) JAKARTA TIMUR	(020) KRAMAT JATI	(001) BATU AMPAR	255	28.697	1,40	0.599	41.600	48.607	54.880	59.843
58	(72) JAKARTA TIMUR	(020) KRAMAT JATI	(003) KAMPUNG TENGAH	203	24.856	5,05	2.494	22.391	22.391	22.391	44.760
59	(72) JAKARTA TIMUR	(020) KRAMAT JATI	(004) DUKUH	198	13.599	1,36	0.999	3.500	3.500	3.500	37.989
60	(72) JAKARTA TIMUR	(020) KRAMAT JATI	(005) KRAMAT JATI	152	27.625	15,38	10.254	31.028	30.584	29.135	28.893
61	(72) JAKARTA TIMUR	(020) KRAMAT JATI	(006) CILILITAN	180	37.847	13,32	7.409	37.880	37.388	35.569	32.722
62	(72) JAKARTA TIMUR	(020) KRAMAT JATI	(007) CAWANG	179	39.815	20,34	11.309	35.709	34.848	32.867	29.975
63	(72) JAKARTA TIMUR	(021) MAKASAR	(001) PINANG RANTI	189	11.416	1,56	0.836	15.423	17.211	18.601	19.465

List of Depressed Kelurahan in DKI Jakarta, 1993

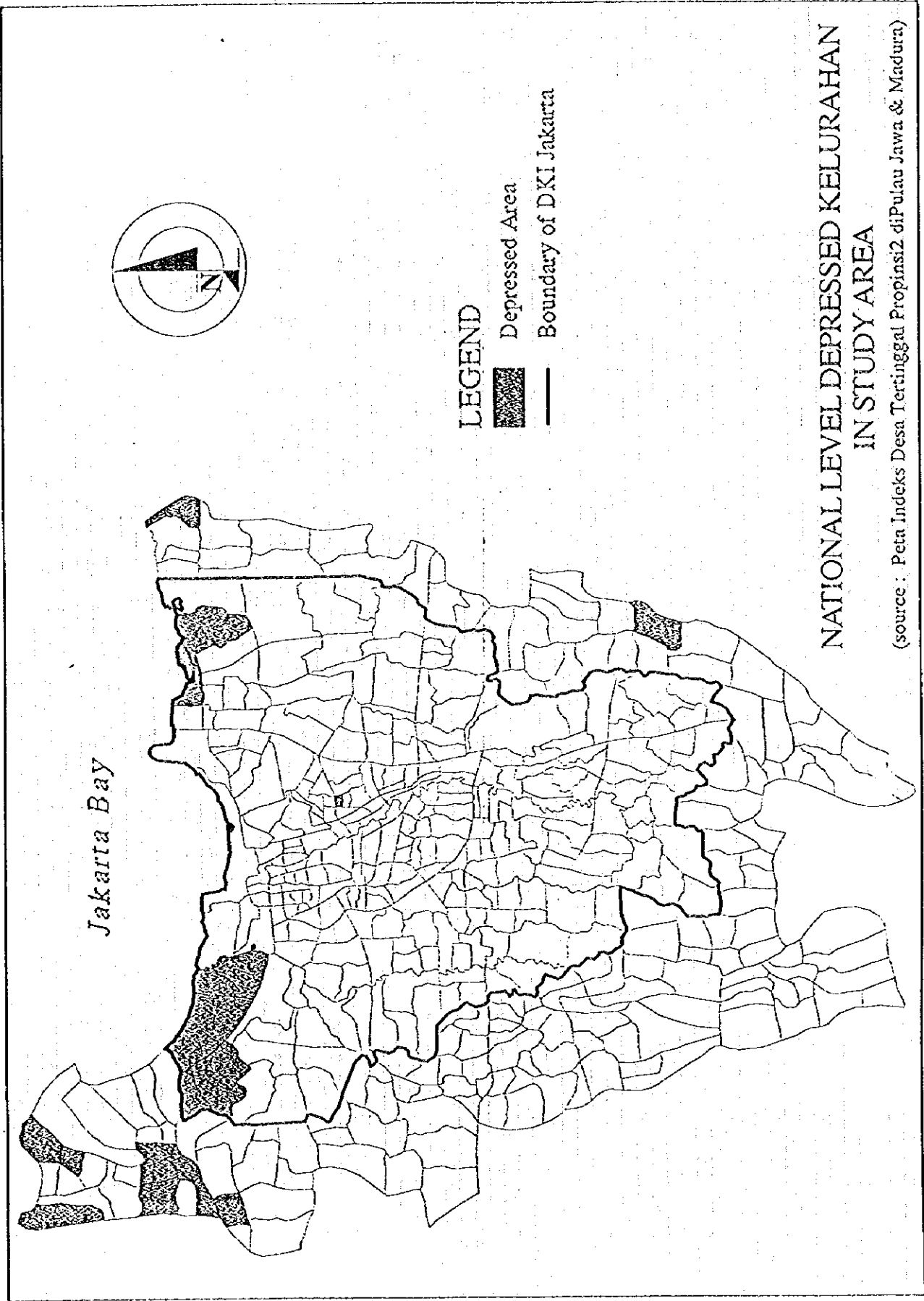
Kabupaten / Kecamatan	Kelurahan	Area (ha)	population 1993	depressed area	depressed population	population 1995	population 2000	population 2005	population 2010
64	(72) JAKARTA TIMUR	185	27.062	1.30	0.70%	30.001	35.377	35.649	34.782
65	(72) JAKARTA TIMUR	230	33.135	4.31	1.86%	39.820	40.418	39.724	37.801
66	(72) JAKARTA TIMUR	253	35.343	8.31	3.09%	41.162	42.808	43.278	38.571
67	(72) JAKARTA TIMUR	126	45.045	9.91	2.87%	35.335	32.275	28.652	24.702
68	(72) JAKARTA TIMUR	167	42.741	0.70	0.42%	36.613	34.118	30.900	27.184
69	(72) JAKARTA TIMUR	163	22.584	5.40	3.35%	33.473	34.433	34.331	33.111
70	(72) JAKARTA TIMUR	290	55.861	2.95	1.02%	65.604	68.004	68.004	68.473
71	(72) JAKARTA TIMUR	115	38.337	8.01	6.97%	52.607	52.376	51.079	48.186
72	(72) JAKARTA TIMUR	88	31.071	10.98	12.48%	22.368	20.740	18.690	16.960
73	(72) JAKARTA TIMUR	67	11.597	8.10	12.09%	11.987	11.115	10.016	8.768
74	(72) JAKARTA TIMUR	48	20.012	13.57	28.77%	10.553	24.779	21.549	19.244
75	(72) JAKARTA TIMUR	500	45.914	5.00	1.00%	210	86.092	103.039	119.721
76	(72) JAKARTA TIMUR	458	31.923	0.30	0.07%	68.930	68.930	83.060	101.842
77	(72) JAKARTA TIMUR	572	34.340	73.92	12.92%	52.291	70.576	92.477	112.566
78	(72) JAKARTA TIMUR	306	28.341	2.56	1.24%	37.480	37.480	43.490	48.625
79	(72) JAKARTA TIMUR	308	49.983	6.23	2.03%	4.032	83.124	93.166	98.933
80	(72) JAKARTA TIMUR	78	21.076	9.31	11.94%	12.314	15.891	14.217	12.391
81	(72) JAKARTA TIMUR	65	19.345	1.90	2.92%	16.837	16.837	14.329	11.880
82	(72) JAKARTA TIMUR	68	39.969	4.35	6.40%	5.500	26.694	23.409	19.999
83	(72) JAKARTA TIMUR	57	31.784	2.10	3.08%	23.489	20.921	18.164	15.565
84	(72) JAKARTA TIMUR	112	36.992	12.49	11.15%	34.200	31.547	28.365	24.846
85	(72) JAKARTA TIMUR	105	37.305	6.25	5.95%	29.446	27.434	24.915	22.044
86	(72) JAKARTA TIMUR	180	45.135	4.51	2.51%	3.880	39.223	36.990	32.683
87	(72) JAKARTA TIMUR	154	42.942	8.52	5.35%	40.016	38.386	36.240	33.132
88	(72) JAKARTA TIMUR	123	22.032	2.11	1.72%	936	26.911	27.655	27.664
89	(72) JAKARTA TIMUR	215	33.060	5.89	2.24%	4.570	41.285	43.008	42.171
90	(72) JAKARTA TIMUR	260	49.319	3.21	1.23%	1.809	44.350	41.239	37.322
91	(72) JAKARTA TIMUR	192	21.670	16.67	8.68%	36.896	36.296	35.303	33.425
92	(72) JAKARTA TIMUR	437	46.586	7.50	1.72%	2.060	50.987	49.026	46.186
93	(72) JAKARTA TIMUR	686	39.778	3.00	0.44%	908	91.680	118.514	145.946
94	(72) JAKARTA TIMUR	443	12.043	2.00	0.45%	769	22.717	22.717	32.910
95	(72) JAKARTA TIMUR	981	23.762	61.4	6.20%	6.892	48.508	43.171	104.020
96	(72) JAKARTA TIMUR	619	31.195	5.00	0.81%	522	61.332	69.967	77.611
97	(72) JAKARTA TIMUR	410	18.190	77.46	18.99%	11.526	36.204	42.347	48.163
98	(72) JAKARTA TIMUR	90	31.043	2.85	3.17%	2.847	29.958	26.414	19.381
99	(72) JAKARTA TIMUR	126	40.111	13.69	10.87%	10.570	37.749	32.013	26.613
100	(72) JAKARTA TIMUR	71	28.444	0.40	0.50%	452	24.966	21.552	15.656
101	(72) JAKARTA TIMUR	73	21.546	0.90	1.23%	70	14.513	11.695	7.167
102	(72) JAKARTA TIMUR	244	40.342	17.70	7.25%	13.858	34.359	27.569	17.088
103	(72) JAKARTA TIMUR	200	30.488	14.00	14.29%	8.722	16.830	13.775	11.053
104	(72) JAKARTA TIMUR	82	13.278	2.00	2.44%	1.167	12.082	10.699	7.922
105	(72) JAKARTA TIMUR	83	22.574	3.85	7.05%	4.955	7.994	9.943	5.791
106	(72) JAKARTA TIMUR	91	14.639	1.07	1.18%	1.046	9.154	7.559	6.130
107	(72) JAKARTA TIMUR	71	24.031	2.49	3.51%	1.170	22.785	19.485	13.483
108	(72) JAKARTA TIMUR	71	30.837	3.42	4.82%	1.983	25.652	23.062	17.636
109	(72) JAKARTA TIMUR	45	17.689	11.86	26.36%	6.238	35.269%	14.214	12.676
110	(72) JAKARTA TIMUR	81	6.589	6.50	8.02%	3.500	7.814	6.550	4.354
111	(72) JAKARTA TIMUR	64	29.116	5.15	8.05%	2.979	15.407	13.468	11.224
112	(72) JAKARTA TIMUR	125	23.808	2.90	2.32%	1.420	22.499	20.584	18.480
113	(72) JAKARTA TIMUR	222	28.839	10.00	4.50%	2.353	28.897	28.806	26.945
114	(72) JAKARTA TIMUR	122	36.901	7.62	6.29%	2.737	37.016	36.641	32.929
115	(72) JAKARTA TIMUR	119	37.476	1.00	0.26%	3.077	35.821	33.448	30.657
116	(72) JAKARTA TIMUR	27	18.263	11.77	39.23%	2.783	17.817	17.817	15.847
117	(72) JAKARTA TIMUR	62	35.573	6.47	23.80%	4.428	18.027	17.344	14.259
118	(72) JAKARTA TIMUR	60	37.288	2.96	2.99%	1.776	34.644	32.106	26.064
119	(72) JAKARTA TIMUR	53	27.775	3.26	6.15%	1.597	23.849	19.711	17.412
120	(72) JAKARTA TIMUR	99	37.288	2.96	2.99%	1.776	34.644	32.106	26.064
121	(72) JAKARTA TIMUR	82	32.596	1.46	1.78%	875	27.099	29.049	26.965
122	(72) JAKARTA TIMUR	54	34.652	13.80	18.30%	4.777	13.799	28.075	23.189
123	(72) JAKARTA TIMUR	53	27.660	11.80	11.97%	5.451	26.936	23.159	19.549
124	(72) JAKARTA TIMUR	53	22.956	2.93	5.33%	1.099	22.181	21.400	18.702
125	(72) JAKARTA TIMUR	168	22.099	7.20	4.29%	3.765	19.988	17.982	15.840
126	(72) JAKARTA TIMUR	55	29.099	12.43	22.60%	9.555	22.885	20.079	17.251

List of Depressed Kelurahan in DKI Jakarta, 1993

No	Kelurahan Kecamatan	Kelurahan	Area (ha)	population 1993	depressed area	depressed population	population 1995	population 2000	population 2005	population 2010
127	723 JAKARTA PUSAT	060 SAWAH BESAR	004	33.253	6,27	5.080	26.110	22.681	19.292	16.052
128	723 JAKARTA PUSAT	060 SAWAH BESAR	005	38.339	14,23	8.685	24.135	18.688	14.169	10.509
129	723 JAKARTA PUSAT	070 GAMBIR	001	21.546	10,00	3.400	17.140	15.314	12.864	10.604
130	723 JAKARTA PUSAT	070 GAMBIR	002	23.241	3,00	1.543	17.338	14.346	11.227	9.381
131	723 JAKARTA PUSAT	080 KEBON NELAPA	004	16.501	8,00	2.100	10.642	8.919	7.341	5.921
132	723 JAKARTA PUSAT	070 GAMBIR	003	22.150	5,25	1.035	16.728	14.020	11.544	9.327
133	723 JAKARTA PUSAT	070 GAMBIR	006	33.988	6,50	3.430	26.645	26.598	22.680	18.978
134	723 JAKARTA BARAT	010 KEBON JERUK	001	18.488	1,95	633	39.418	47.802	55.761	62.636
135	723 JAKARTA BARAT	010 KEBON JERUK	004	36.269	1,84	644	49.271	49.271	51.990	56.128
136	723 JAKARTA BARAT	010 KEBON JERUK	005	40.857	4,75	3.585	65.476	80.587	95.426	106.812
137	723 JAKARTA BARAT	011 KEMBARAN	007	26.383	10,06	2.025	20.253	17.909	16.007	14.273
138	723 JAKARTA BARAT	011 KEMBARAN	002	18.905	15,00	3.214	42.762	58.222	77.851	99.745
139	723 JAKARTA BARAT	011 KEMBARAN	003	16.456	42,25	3.764	23.259	31.151	40.279	50.333
140	723 JAKARTA BARAT	011 KEMBARAN	004	24.608	56,90	3.337	43.133	58.642	76.971	97.637
141	723 JAKARTA BARAT	011 KEMBARAN	005	12.664	17,30	4.799	66.504	86.007	107.383	129.571
142	723 JAKARTA BARAT	011 KEMBARAN	006	18.428	0,50	500	60.413	73.216	85.534	96.412
143	723 JAKARTA BARAT	020 CENGKARENG	002	20.880	15,00	3.216	63.071	85.751	112.390	142.123
144	723 JAKARTA BARAT	020 CENGKARENG	003	20.007	42,25	3.764	19.746	24.902	30.283	32.546
145	723 JAKARTA BARAT	020 CENGKARENG	004	46.691	56,90	3.337	197.461	249.072	302.853	355.299
146	723 JAKARTA BARAT	020 CENGKARENG	005	42.789	17,30	4.145	56.475	69.826	83.222	95.701
147	723 JAKARTA BARAT	020 CENGKARENG	006	40.609	0,50	500	60.413	73.216	85.534	96.412
148	723 JAKARTA BARAT	021 KALI DERES	001	24.534	26,80	5.177	35.352	75.134	98.176	124.025
149	723 JAKARTA BARAT	021 KALI DERES	002	29.546	6,50	2.712	55.327	75.583	93.428	111.770
150	723 JAKARTA BARAT	021 KALI DERES	003	18.089	0,25	0.044	59.023	75.583	93.428	111.770
151	723 JAKARTA BARAT	021 KALI DERES	004	32.550	42,24	4.662	72.413	94.603	119.366	145.607
152	723 JAKARTA BARAT	021 KALI DERES	005	16.353	7,15	2.669	22.627	22.460	27.659	30.632
153	723 JAKARTA BARAT	030 GROGOL PERTAMBURAN	002	44.299	11,30	6.016	39.990	37.914	34.697	30.632
154	723 JAKARTA BARAT	030 GROGOL PERTAMBURAN	004	40.758	5,70	3.968	37.545	37.068	35.289	32.420
155	723 JAKARTA BARAT	030 GROGOL PERTAMBURAN	005	28.520	62,17	10.814	45.989	41.425	44.786	44.137
156	723 JAKARTA BARAT	030 GROGOL PERTAMBURAN	007	28.355	4,00	3.776	49.879	45.870	40.766	34.883
157	723 JAKARTA BARAT	031 PALMERAH	001	52.092	35,80	8.643	75.886	82.004	85.357	85.674
158	723 JAKARTA BARAT	031 PALMERAH	002	18.886	16,24	3.359	20.486	19.733	18.308	16.380
159	723 JAKARTA BARAT	031 PALMERAH	003	32.779	33,78	16.327	31.476	29.571	26.758	23.349
160	723 JAKARTA BARAT	031 PALMERAH	006	26.649	30,08	14.612	54.836	55.197	53.971	50.832
161	723 JAKARTA BARAT	031 PALMERAH	007	23.888	15,32	3.385	39.299	37.494	35.011	32.791
162	723 JAKARTA BARAT	040 TAMBORA	001	28.268	5,59	1.547	27.494	25.948	23.631	20.791
163	723 JAKARTA BARAT	040 TAMBORA	002	19.570	1,62	1.534	17.816	17.239	16.098	14.521
164	723 JAKARTA BARAT	040 TAMBORA	003	34.350	8,18	3.865	36.589	36.589	35.471	34.283
165	723 JAKARTA BARAT	040 TAMBORA	004	24.853	13,31	3.289	20.221	17.793	15.109	12.394
166	723 JAKARTA BARAT	040 TAMBORA	005	28.523	15,40	6.092	33.929	30.156	25.865	21.431
167	723 JAKARTA BARAT	040 TAMBORA	006	27.930	1,95	1.827	23.999	22.763	20.835	18.422
168	723 JAKARTA BARAT	040 TAMBORA	007	15.151	4,36	1.733	17.027	11.022	10.324	8.858
169	723 JAKARTA BARAT	040 TAMBORA	008	25.632	11,27	8.273	20.789	17.661	15.731	13.651
170	723 JAKARTA BARAT	040 TAMBORA	009	32.694	25,76	10.425	31.899	35.592	33.423	30.805
171	723 JAKARTA BARAT	040 TAMBORA	010	30.403	19,59	5.213	26.050	24.219	21.728	18.832
172	723 JAKARTA BARAT	050 TAMAN SARI	001	22.989	9,22	6.428	27.966	22.566	21.351	19.544
173	723 JAKARTA BARAT	050 TAMAN SARI	002	22.159	4,12	2.570	17.368	15.731	13.784	11.651
174	723 JAKARTA BARAT	050 TAMAN SARI	003	19.416	2,10	1.046	19.060	18.632	17.575	16.013
175	723 JAKARTA BARAT	050 TAMAN SARI	004	25.109	0,96	933	20.279	19.142	17.435	15.319
176	723 JAKARTA BARAT	050 TAMAN SARI	005	10.935	0,55	1.459	620	8.276	7.850	6.999
177	723 JAKARTA BARAT	050 TAMAN SARI	006	12.330	5,08	3.452	9.747	8.409	6.999	5.628
178	723 JAKARTA BARAT	050 TAMAN SARI	007	20.040	3,18	1.489	14.848	14.299	13.287	11.926
179	723 JAKARTA BARAT	050 TAMAN SARI	008	17.454	13,87	3.690	12.162	10.718	8.966	7.246
180	723 JAKARTA UTARA	010 PENJARINGAN	001	3.177	3,51	1.057	11.725	16.573	22.764	30.338
181	723 JAKARTA UTARA	010 PENJARINGAN	002	9.904	26,50	6.424	28.572	38.172	49.625	62.596
182	723 JAKARTA UTARA	010 PENJARINGAN	003	32.985	27,32	7.868	14.859	16.573	18.271	22.673
183	723 JAKARTA UTARA	010 PENJARINGAN	005	63.639	112,77	19.419	108.186	116.154	121.185	122.673
184	723 JAKARTA UTARA	011 PADEMANGAN	001	40.857	3,44	1.049	43.261	44.353	44.771	43.855
185	723 JAKARTA UTARA	011 PADEMANGAN	002	59.937	30,21	11.896	76.893	76.893	76.114	75.447
186	723 JAKARTA UTARA	011 PADEMANGAN	003	20.179	6,91	3.031	26.451	26.451	26.451	26.451
187	723 JAKARTA UTARA	020 TANJUNG PRIOK	001	49.073	23,50	6.178	12.597	12.597	12.597	12.597
188	723 JAKARTA UTARA	020 TANJUNG PRIOK	002	50.224	64,90	6.992	24.148	24.148	24.148	24.148
189	723 JAKARTA UTARA	020 TANJUNG PRIOK	003	50.224	64,90	6.992	24.148	24.148	24.148	24.148

List of Depressed Kelurahan in DKI Jakarta, 1993

No	Kabupaten / Kotamadya	Kecamatan	Kelurahan	Area (ha)	population 1993	depressed area	depressed population	population 1995	population 2000	population 2005	population 2010
190	[75] JAKARTA UTARA	[029] TANJUNG PRIOK	[004] PAPANGGO	280	26,610	13,000	8,060	36,019	37,614	37,222	36,293
191	[75] JAKARTA UTARA	[029] TANJUNG PRIOK	[005] WAKAKAS	109	46,145	31,110	11,042	48,275	47,240	44,394	40,025
192	[75] JAKARTA UTARA	[029] TANJUNG PRIOK	[006] SUNGAI BAHU	236	30,993	17,050	10,992	32,019	30,866	28,575	25,379
193	[75] JAKARTA UTARA	[029] TANJUNG PRIOK	[007] TANJUNG PRIOK	559	28,038	22,260	9,066	41,554	41,902	40,576	37,697
194	[75] JAKARTA UTARA	[030] KOJA	[001] TUGU SELATAN	186	12,341	10,950	1,305	26,036	29,544	32,607	34,954
195	[75] JAKARTA UTARA	[030] KOJA	[002] KAWA BADAQ	325	61,463	77,310	13,699	70,059	69,807	67,652	63,680
196	[75] JAKARTA UTARA	[030] KOJA	[003] TUGU UTARA	237	41,789	22,000	13,455	77,872	91,971	105,648	117,873
197	[75] JAKARTA UTARA	[030] KOJA	[004] LAGOA	138	54,691	38,350	17,767	61,967	60,220	56,920	52,256
198	[75] JAKARTA UTARA	[030] KOJA	[005] KOJA SELATAN	83	30,863	27,730	9,543	33,623	37,212	40,056	41,878
199	[75] JAKARTA UTARA	[031] KELAPA GADING	[001] KELAPA GADING BARAT	433	17,698	2,860	3,241	26,314	31,854	37,454	42,715
200	[75] JAKARTA UTARA	[031] KELAPA GADING	[002] KELAPA GADING TIMUR	531	37,109	1,700	860	56,356	69,948	84,377	98,605
201	[75] JAKARTA UTARA	[031] KELAPA GADING	[003] PEGANGSAAN DUA	628	29,683	21,000	3,142	57,394	85,246	123,094	172,353
202	[75] JAKARTA UTARA	[040] CILINCING	[001] SUKA PURA	261	21,687	42,120	7,620	45,330	57,679	71,367	85,763
203	[75] JAKARTA UTARA	[040] CILINCING	[002] KOROTAN	1064	13,021	17,750	4,617	17,665	20,853	23,938	26,668
204	[75] JAKARTA UTARA	[040] CILINCING	[003] MARUNDA	792	7,477	27,500	2,426	9,926	12,504	15,318	18,225
205	[75] JAKARTA UTARA	[040] CILINCING	[004] CILINCING	831	22,360	10,100	3,156	33,075	38,850	46,374	49,225
206	[75] JAKARTA UTARA	[040] CILINCING	[005] SEMPER TIMUR	317	24,636	10,000	250	32,214	40,380	49,219	58,267
207	[75] JAKARTA UTARA	[006] CILINCING	[006] SEMPER BARAT	444	54,951	20,800	7,730	59,810	60,986	60,871	58,998
208	[75] JAKARTA UTARA	[040] CILINCING	[007] KALI BARU	247	45,565	35,190	10,379	59,810	63,251	65,044	64,962
209	[75] JAKARTA UTARA	[050] KEPULAUAN SERIBU	[001] PULAU TIDUNG	175	4,172	60,888	1,479	4,365	4,476	4,495	4,415
210	[75] JAKARTA UTARA	[050] KEPULAUAN SERIBU	[002] PULAU UNTUNG JAWA	215	1,312	10,050	271	1,184	1,208	1,207	1,180
211	[75] JAKARTA UTARA	[050] KEPULAUAN SERIBU	[003] PULAU PANGGANG	98	3,694	8,240	1,493	3,769	3,884	3,920	3,870
212	[75] JAKARTA UTARA	[050] KEPULAUAN SERIBU	[004] PULAU KELAPA	692	5,709	14,227	1,335	6,427	6,493	7,241	7,441



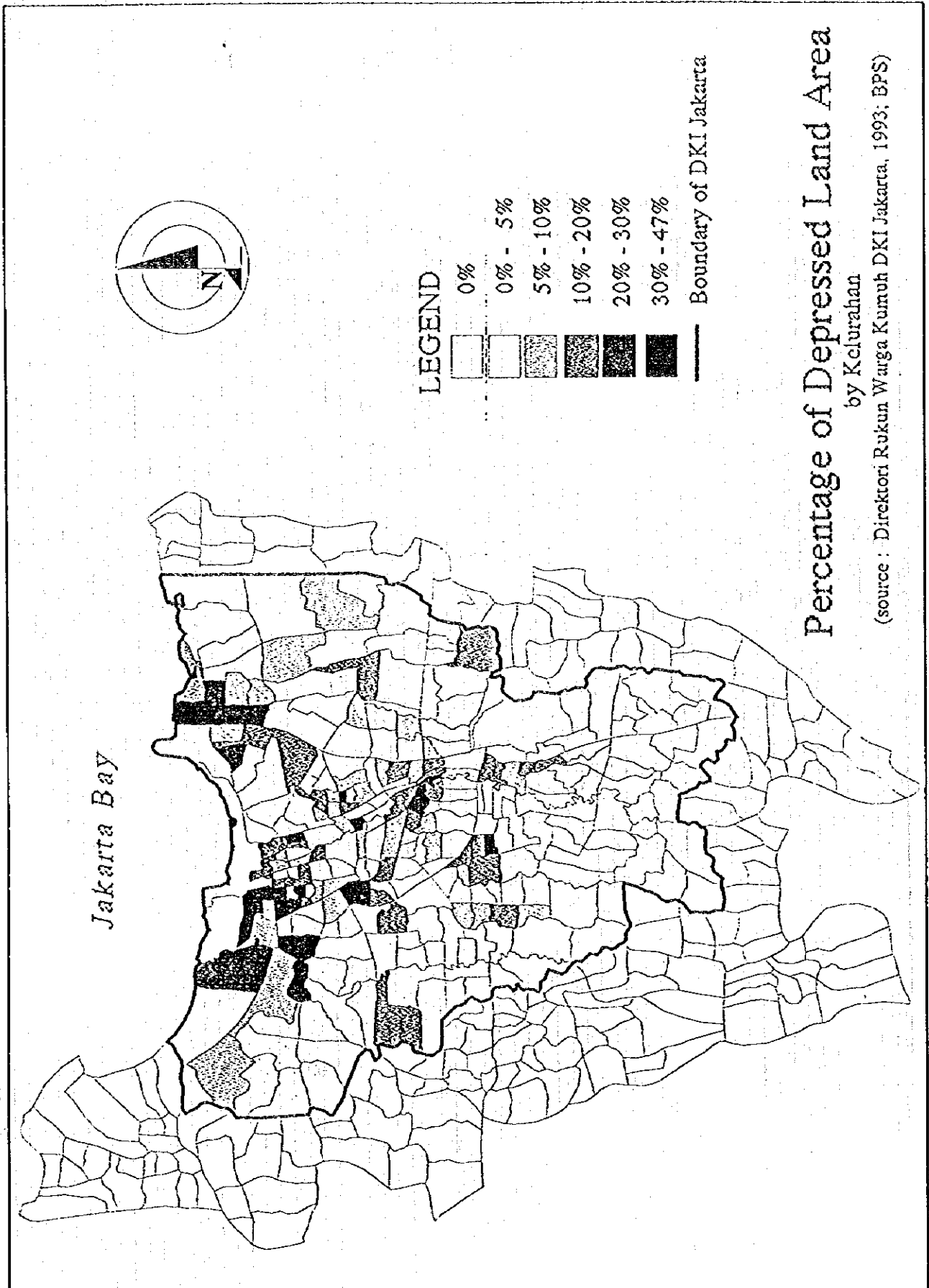
LEGEND

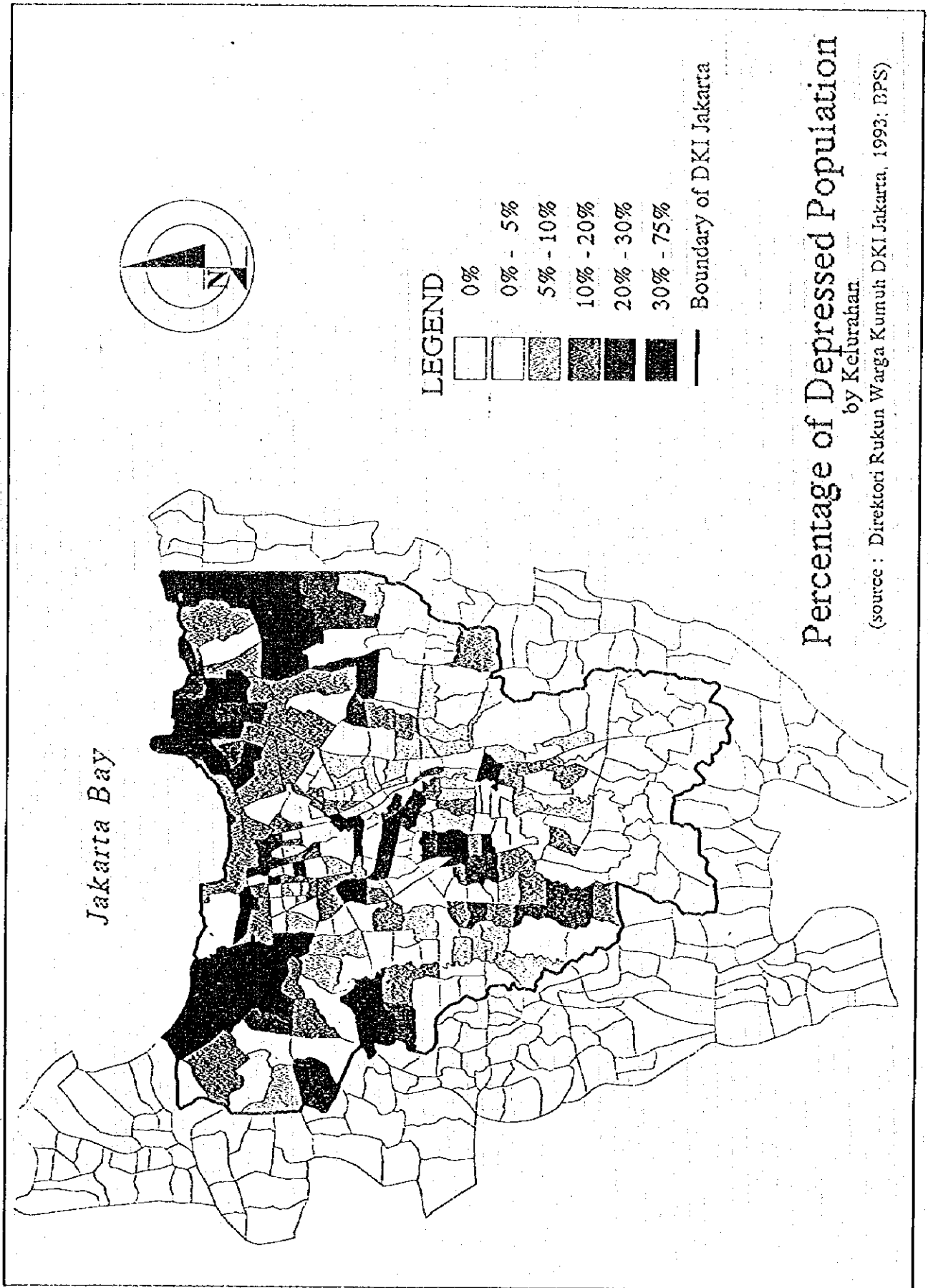
Depressed Area

Boundary of DKI Jakarta

NATIONAL LEVEL DEPRESSED KELURAHAN
IN STUDY AREA

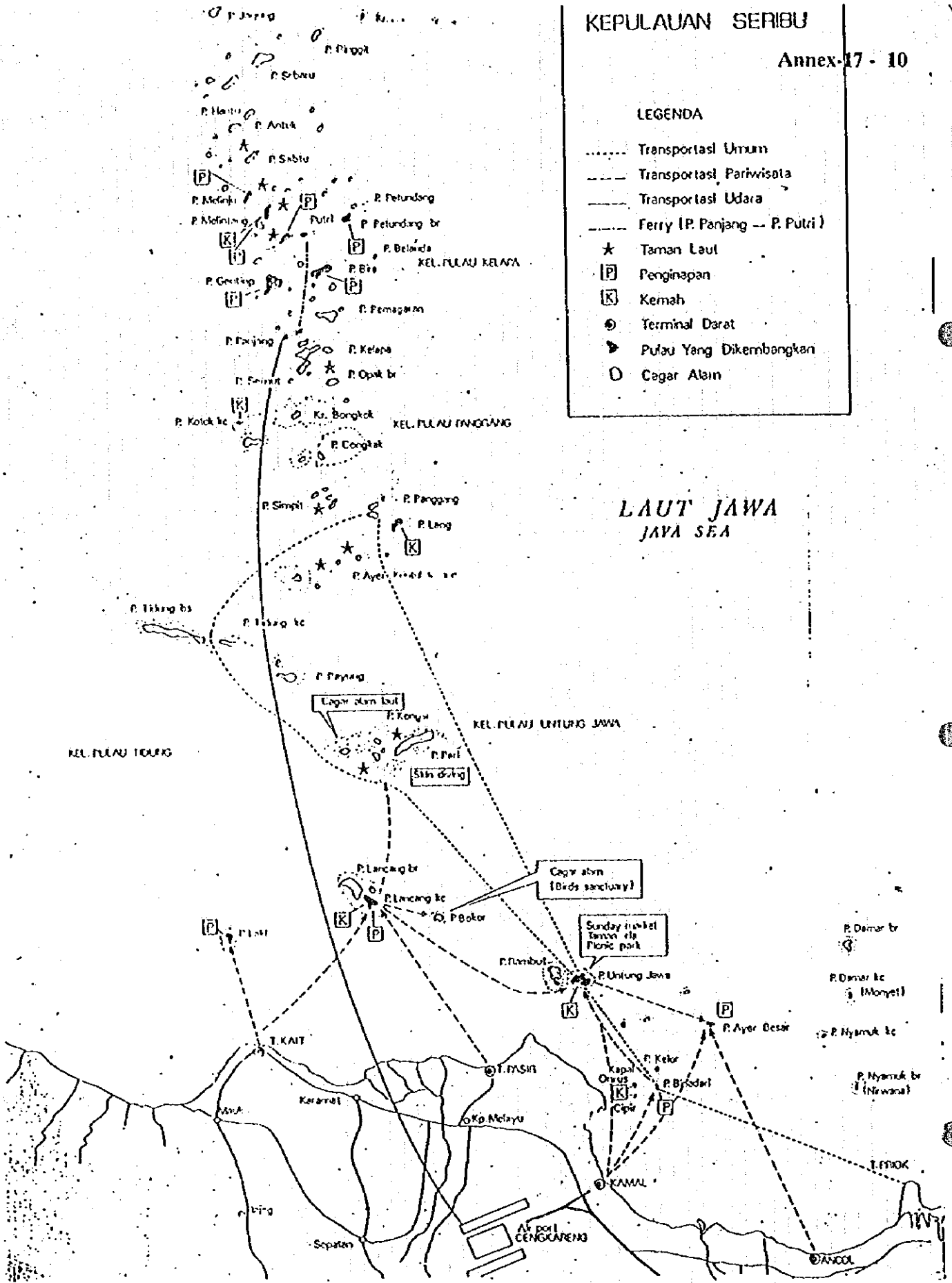
(source : Peta Indeks Desa Tertinggal Propinsi2 diPulau Jawa & Madura)





LEGENDA

- Transportasi Umum
- Transportasi Pariwisata
- Transportasi Udara
- Ferry (P. Panjang -- P. Putri)
- ★ Taman Laut
- [P] Penginapan
- [K] Kemah
- ⊙ Terminal Darat
- ▶ Pulau Yang Dikembangkan
- Cagar Alam



ANNEX-21

**EXISTING WATER SUPPLY
CONDITION,
JAKARTA WATER SUPPLY
SYSTEM**



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**1. MAJOR SCOPE OF EACH PROJECT PROPOSED IN 1985
MASTER PLAN**

MAJOR SCOPE OR EACH PROJECT PROPOSED IN 1985 MASTER PLAN

(I) Second Stage Project

The Second Stage Project was proposed to meet water demand in the year of 1995. Total population in DKI Jakarta was forecasted about 9.95 million and served population would be 65.52 million. Under the Second Stage Project, production capacity was scheduled to be increased 11 m³/sec and total production would reach 23.3 m³/sec. The Second Stage Project was scheduled to be implemented in 3 steps such as Immediate Program, First Phase Project of the Second Stage Project, and Second Phase Project of the Second Stage Project. The scope of each program and phase is as follows.

1) Immediate Program

Duration : 1987 - 1988

Scope

- construction of new water treatment plant, capacity 2.0 m³/sec (Buaran I)
- rehabilitation works at Pejompongan I
- reduction of unaccounted-for water
- raw water supply improvements by piping from West Tarum Canal to Pejompongan and Pulogadung Water Treatment Plant
- expansion of distribution system

2) First Phase Project

Duration : 1989 - 1990

Scope

WTC System

- expansion of Buaran I Water Treatment Plant , additional capacity 3.0 m³/sec (Buaran II)
- construction of treated water transmission pipeline of which diameter is 1,500 mm - 1,600 mm to Distribution Center No. 1

Cisadane System

- raw water intake on Cisadane river at Serpong
- raw water transmission pipeline of which diameter is 1,500 mm
- construction of new water treatment plant with capacity of 3.0 m³/sec at Lebakbulus (Lebakbulus Water Treatment Plant)
- construction of treated water transmission pipeline of which diameter is 1,200 mm

Distribution System

- establishment of 6 supply zones
- construction of distribution centers for Zones 3 and 4 (R1 and R5)
- installation of distribution trunk mains, length about 200 km
- water meters and service connections
- workshop, meter testing facility, storage

3) Second Phase Project

Duration : 1991 - 1995

Scope

- raw water intake on new Tarum Jaya Canal
- construction of new water treatment plant with capacity of 5.0 m³/sec at Cakung (Cakung Water Treatment Plant)
- construction of treated water transmission pipeline of which diameter is 1,000 to 1,650 mm

Distribution System

- construction of distribution centers for Zones 5 and 6 (R2 and R3)
- installation of distribution trunk mains, length about 190 km
- water meters and service connections

(2) Third Stage Project

The Third Stage Project was proposed to meet water demand in the year of 2005. Total population in DKI Jakarta was forecasted about 12.0 million and served population would be 8.78 million. Under the Third Stage Project, production capacity was scheduled to increase 13 m³/sec and total production would reach 36.3 m³/sec. The Third Stage Project was scheduled to be implemented in 2 steps namely First Phase Project of the Third Stage Project, and Second Phase Project of the Third Stage Project. The scope of the Third Stage Project are as follows.

Duration : 1996 - 2005

Scope

- expansion of Lebakbulus Treatment Plant, 10.0 m³/sec
- expansion of Cakung Treatment Plant, 3.0 m³/sec
- installation of treated water transmission pipe, 45 km
- establishment of 9 zone supply system
- construction of distribution center for Zone 4 (R4)
- installation of secondary and tertiary mains

(3) Progress of the projects recommended in the 1985 Master Plan**1) Buaran I Project**

Under the Immediate Program of the Second Stage Project, Buaran I Project was completed in 1992. Scope of this project included construction of Buaran I Water Treatment Plant, 2,000 l/sec, and installation of treated water transmission pipeline. This project was financed by OECF.

2) Buaran II Project

Under the First Phase of the Second Stage Project, Buaran II Project was completed in 1995. Scope of this project included construction of Buaran II Water Treatment Plant, 3,000 l/sec construction of distribution center R1 and installation of treated water transmission pipeline. This project was financed by OECF.

3) Raw Water Transmission Pipeline

Installation of raw water transmission pipelines from WTC to Pejompongan Water Treatment Plant and also to Pulogadung Water Treatment Plant was planned in the Master Plan in 1985 to switch water source for these two treatment plant from the existing canal nearby to WTC because water quality of the existing canal became unsuitable as a raw water for drinking water.

Projects for installation of raw water transmission pipeline have been executed by POJ and transmission pipeline from WTC to Pulogadung Water Treatment Plant was completed in 1994. Transmission to Pejompongan Water Treatment Plant is ongoing and is scheduled to be completed in 1996.

4) Cisadane-Serpong Project

In the Mater Plan in 1985, construction of new water treatment plant at Lebakbulus, inside Jakarta City, and installation of raw water transmission main from the Cisadane River to the Lebakbulus Water Treatment Plant were recommended. However, the location of the treatment plant was alternated from original Lebakbulus to Serpong in Kotamadya Tangerang, outside Jakarta City, beside the Cisadane River because of difficulties of land acquisition for the treatment plant inside Jakarta City.

Therefore, project for construction of the treatment plant was executed by the PDAM Tangerang instead of PAM JAYA and the installation of raw water transmission from the Cisadane River to the treatment plant was canceled.

Although the construction of the treatment plant was completed in 1995, the plant has not been operated because treated water transmission from the plant to distribution center has not been completed. Installation of the transmission has been executed by the PDAM Tangerang until the boundary between Kotamadya Tangerang and Jakarta City and is scheduled to be completed in 1996.

Installation of the treated water transmission inside Jakarta City and construction of Distribution Center R5 have been executed by PAM JAYA as a part of PJSIP I, described below, and the construction works will also be completed in 1996.

5) PAM JAYA System Improvement Project Phase I (PJSIP I)

PJSIP I is a program to improve PAM JAYA system from the aspects of not only technical but also institutional based on the recommendations described in the Master Plan in 1985. This project has been separated into two by area, Zones 1, 2, 4 and 5 are financed by the World Bank and Zones 3 and 6 are financed by OECF. In addition, the works have been divided into two phases, namely PJSIP I and II, the first of which is in progress now and is scheduled to be completed in 1996.

The PJSIP I contains rehabilitation works of the PAM JAYA distribution system, infill/extension of the secondary and tertiary distribution network, institutional strengthening, primary distribution facilities for Zones 4 and 5, and primary distribution facilities for Zones 1, 2, 3 and 6.

2. EXISTING TREATMENT FACILITIES

LIST OF EXISTING WATER TREATMENT PLANT FACILITIES

RECORD OF PRODUCTION IN 1994, PEJOMPOGAN I WATER TREATMENT PLANT

RECORD OF PRODUCTION IN 1994, PEJOMPOGAN II WATER TREATMENT
PLANT

RECORD OF PRODUCTION IN 1994, PULOGADUNG WATER TREATMENT PLANT

RECORD OF PRODUCTION IN 1994, BUARAN I WATER TREATMENT PLANT

RECORD OF PRODUCTION IN 1994, CILANDAK WATER TREATMENT PLANT

LIST OF EXISTING WATER TREATMENT PLANT FACILITIES

Name of TP FACILITIES	Pejompongan I.			Pejompongan II.			Pologadung		
	TYPE	Qty(Nos)	CAPACITY / DIMENSION	TYPE	Qty(Nos)	CAPACITY / DIMENSION	TYPE	Qty (Nos)	CAPACITY / DIMENSION
I. INTAKE FACILITIES -									
1. Intake Weir	-	2	l=9.15 m, w=2.5 m	-	-	-	-	-	-
2. Intake Bay	-	4	-	-	-	-	-	-	-
3. Screen	Coarse screen (mechanic) Fine screen (mechanic)	6 6	- -	Coarse screen Fine screen	2 2	- -	Coarse screen Fine screen	2 2	- -
4. Grit Chamber	Pre-sedimentation basin	1	l= 57.2m; w= 14m; h= 7m	Vertical centrifugal	6	1100 l/s x h 17m x 240kw	Horizontal Centrifugal	2	35m x 12m x 2.75 m
5. Raw Water Pump	Vertical axial	6	500 l/s x h 17m x 132kw	Pipeline	3 lines	dia. 900 mm	-	6	1050 l/s x h 15m x 215kw
6. Raw Water Transmission	Pipeline	3 lines	dia. 900 x 920 m	-	-	-	-	-	-
II. TREATMENT FACILITIES									
1. Presettling Basin	-	-	-	Horizontal flow	2	l= 50.5m; w= 9.0m; d= 3.4m water level = 2.75 m	-	-	-
2. Receiving Well	-	-	-	-	-	-	Circular	1	dia. 7.3 m; depth = 6 m R/T : 1 minute
3. Mixing Chamber	Ventury basin	1	-	Agitator	2	CAP. : 4180 l/sec	Water fall	2	CAP. : 6 m x 2 m x 5.5 m R/T : 30 seconds
4. Flocculation Basin	-	-	-	-	-	-	Vertical flocculator	8	R/T : 20 minutes
5. Sedimentation Basin	Accelerator	6	Area : 356 m2/UNIT R/T :	Pulsator	4	Area : 1220 m2/UNIT	Horizontal flow	8	Area : 1500 m2/UNIT R/T : 2.8 hours
6. Rapid Sand Filter	Aquazur filter	48	Area : 36 m2/UNIT	Aquazur filter	34	Area : 72 m2/UNIT	Decling rate	40	Area : 72 m2/UNIT 120 m/day
7. Chemical Application	Alum, Lime, Chlorine, Activated carbon, Hypochloritic soda	-	-	Alum, Lime, Carbon, Magna flocc	-	-	Alum, Lime, Chlorine	-	-
III. WASTEWATER / SLUDGE TREATMENT									
1. Waste Water Basin	-	-	-	-	-	-	-	-	-
2. Sludge Basin	-	-	-	-	-	-	-	-	-
3. Disposal	To Krakur river	-	-	To Krakur river	-	-	DISTRIBUTION	-	-
IV. TRANSMISSION / DISTRIBUTION FACILITY									
1. Clear Water Reservoir	Ground reservoir	4	Cap : 8000 m3/unit	Ground reservoir	1	Cap : 34140 m3	Ground reservoir	3	Cap : 19000 m3
2. Pump	Horizontal axial flow	3	1000 l/s x h 42m x 525kw	Vertical centrifugal	4	1500 l/s x h 48m x 915kw	Horizontal centrifugal	7	1000 l/s x h 50m x 630kw
3. Transmission / Distribution Main	2 lines 1 line	3	100 l/s x h 80m x 110.5kw dia. 900 mm dia. 400 mm	-	4	750 l/s x h 48m x 480kw	-	2	500 l/s x h 50m x 355kw
4. Surge Control	-	-	-	-	-	-	-	-	-

* Facilities in the Plant's premises only U/R : Upflow Rate F/R : Filtration Rate R/T : Retention Time

LIST OF EXISTING WATER TREATMENT PLANT FACILITIES

FACILITIES	Buaran I		Buaran II			
	TYPE	Qty (Nos)	CAPACITY / DIMENSION	TYPE	Qty (Nos)	CAPACITY / DIMENSION
I. INTAKE FACILITIES *						
1. Intake Weir	-	-	-	-	-	-
2. Intake Bay	-	-	-	-	-	-
3. Screen	Fine screen (bar)	1	-	Fine screen (bar)	1	-
	Coarse screen (bar)	1	-	Coarse screen (bar)	1	-
4. Grit Chamber	-	-	-	-	-	-
5. Raw Water Pump	-	-	-	-	-	-
6. Raw Water Transmission	DCIP	1 line	dia.1600mm	DCIP	1 line	dia.1800mm
II. TREATMENT FACILITIES						
1. Presettling Basin	-	-	-	-	-	-
2. Receiving Well	-	-	-	-	-	-
3. Mixing Chamber	Single unit 2 stage mixing	1 (2 basins)	CAP. : 86.0 m ³ + 54.8 m ³ RT : 26.3 sec + 16.6 sec	Single unit 2 stage mixing	1 (2 basins)	CAP. : 86.0 m ³ + 54.8 m ³ RT : 26.3 sec + 16.6 sec
4. Flocculation Basin	-	-	-	-	-	-
5. Sedimentation Basin	Pulsating type clarifier	4	Area : 835.8 m ² /UNIT UR : 2.96 m/h	Pulsating type clarifier	4	Area : 835.8 m ² /UNIT UR : 2.96 m/h
6. Rapid Sand Filter	Aquazur V	16	Area : 84 m ² /UNIT E/R : 177 m ³ /day	Aquazur V	16	Area : 84 m ² /UNIT E/R : 177 m ³ /day
7. Chemical Application	Alum, Polymer, Lime, Activated Carbon, Chlorine	-	-	Alum, Polymer, Lime, Activated Carbon, Chlorine	-	-
III. WASTEWATER / SLUDGE TREATMENT						
1. Waste Water Basin	-	1	1,500 m ³ total	-	1	1,500 m ³ total
2. Sludge Basin	-	2	600 m ³ total RT : 3 hrs	-	2	600 m ³ total RT : 3 hrs
3. Disposal	To Kramat river	-	-	To Kramat river	-	-
IV. TRANSMISSION / DISTRIBUTION FACILITY						
1. Clear Water Reservoir	Ground reservoir	2	Cap : 14,300 m ³	Ground reservoir	2	Cap : 13,400 m ³ total
2. Pump	Horizontal centrifugal w/flywheel	4	800 l/s x h 54m x 620kw	Horizontal centrifugal w/flywheel	6	60 m ³ /min x h 40m (60 m ³ /min x h 25m)
3. Transmission / Distribution Main	DCIP	1 line	dia. 1200 mm	DCIP	1 line	dia. 1500 mm x 2.6 km
4. Surge Control	-	-	-	Prestress Concrete Tower	3	dia. 1650 mm x 11.4 km

* Facilities in the Plant's premises only UR : Upflow Rate E/R : Filtration Rate RT : Retention Time

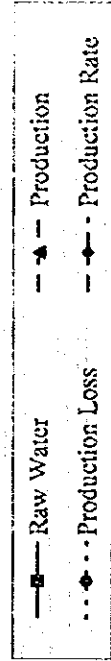
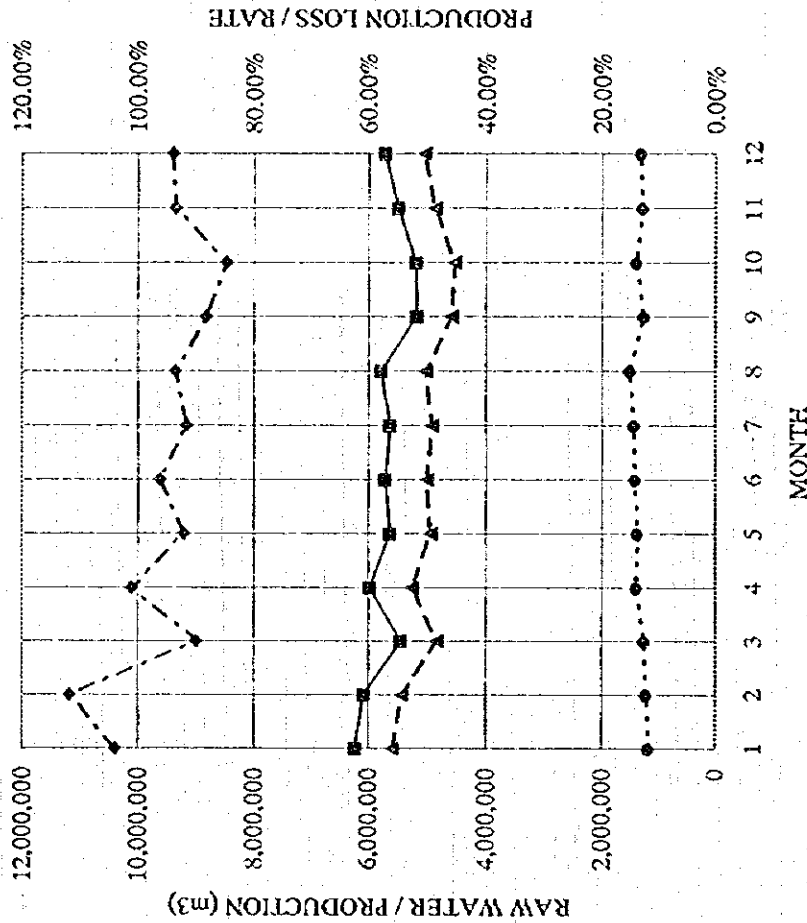
**RECORD OF PRODUCTION IN 1994
PEJOMPONGAN I WATER TREATMENT PLANT**

	Raw Water Production (m ³)		Production Loss (A-B)/B	Production Capacity C	Production Rate B/C
	A	B			
1 January	6,229,570	5,566,316	11.92%	5,356,800	103.91%
2 February	6,080,118	5,407,430	12.44%	4,838,400	111.76%
3 March	5,427,799	4,816,886	12.68%	5,356,800	89.92%
4 April	5,974,681	5,236,186	14.10%	5,184,000	101.01%
5 May	5,610,992	4,928,342	13.85%	5,356,800	92.00%
6 June	5,695,078	4,984,589	14.25%	5,184,000	96.15%
7 July	5,616,774	4,905,274	14.50%	5,356,800	91.57%
8 August	5,771,840	5,008,781	15.23%	5,356,800	93.50%
9 September	5,161,356	4,576,350	12.78%	5,184,000	88.28%
10 October	5,171,551	4,531,180	14.13%	5,356,800	84.59%
11 November	5,475,650	4,846,321	12.99%	5,184,000	93.49%
12 December	5,703,882	5,031,014	13.37%	5,356,800	93.92%
Total	67,919,291	59,838,669	13.50%	63,072,000	94.87%

Data Source : Laporan Kegiatan Instalasi,
Instalasi Produksi Pejompongan I Tahun 1994

Production Capacity = 172,800 m³/day

	(m ³)
Max. Production	5,566,316
Min. Production	4,531,180
Ave. Production	4,986,556



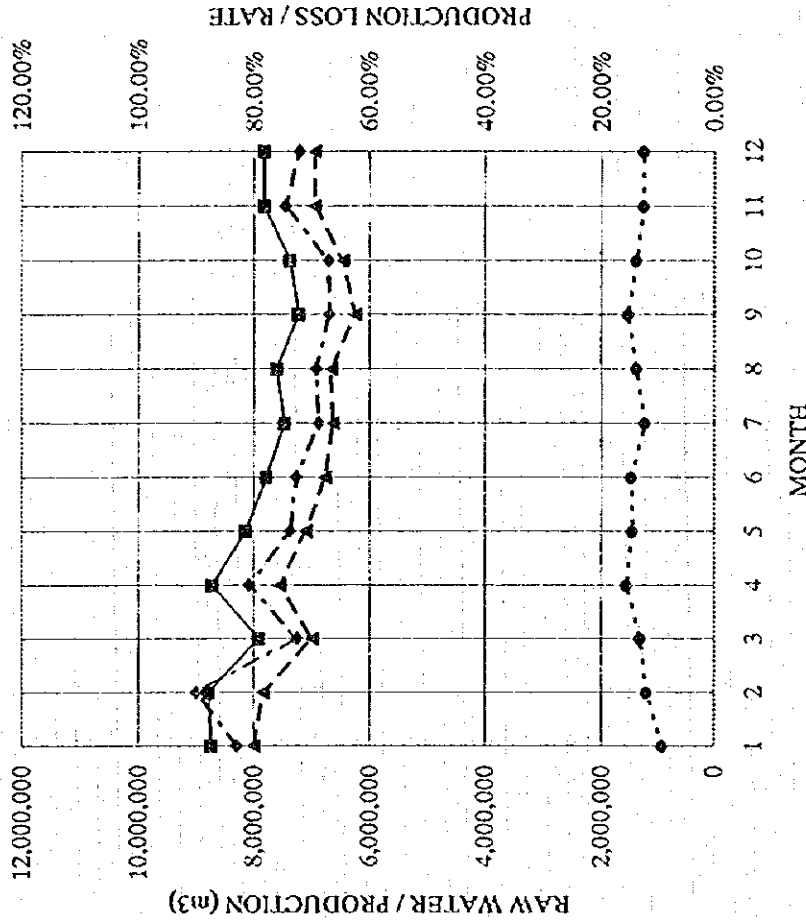
**RECORD OF PRODUCTION IN 1994
PEJOMPONGAN II WATER TREATMENT PLANT**

	Raw Water (m3)		Production (m3)	Production Loss (A-B)/B	Production Capacity C	Production Rate B/C
	A	B				
1 January	8,734,968	7,999,991	9,19%	9,642,240	82.97%	
2 February	8,782,200	7,835,700	12.08%	8,709,120	89.97%	
3 March	7,909,146	6,985,400	13.22%	9,642,240	72.45%	
4 April	8,719,470	7,538,620	15.66%	9,331,200	80.79%	
5 May	8,137,536	7,097,310	14.66%	9,642,240	73.61%	
6 June	7,771,110	6,767,010	14.84%	9,331,200	72.52%	
7 July	7,453,561	6,631,670	12.39%	9,642,240	68.78%	
8 August	7,589,506	6,664,220	13.88%	9,642,240	69.11%	
9 September	7,209,603	6,247,350	15.40%	9,331,200	66.95%	
10 October	7,357,872	6,462,280	13.86%	9,642,240	67.02%	
11 November	7,820,100	6,945,657	12.59%	9,331,200	74.43%	
12 December	7,820,100	6,945,657	12.59%	9,642,240	72.03%	
Total	95,305,172	84,120,865	13.30%	113,529,600	74.10%	

Data Source : Laporan Bulanan Januari - November 1994, Instalasi Produksi II
Note : Data of December is not available, therefore, referred to data of November.

Production Capacity = 311,040 m³/day

	(m3)
Max. Production	7,999,991
Min. Production	6,247,350
Ave. Production	7,010,072
	1.00



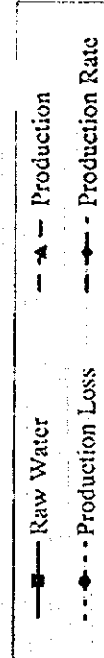
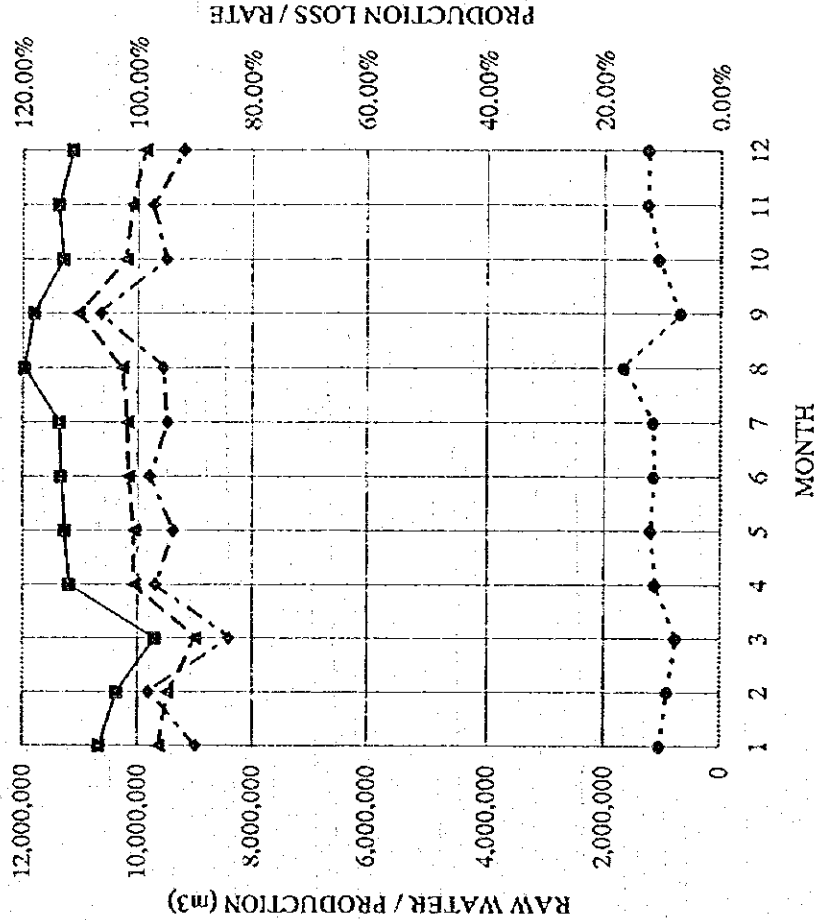
**RECORD OF PRODUCTION IN 1994
PULOGADUNG WATER TREATMENT PLANT**

	Raw Water (m ³)		Production (m ³) B	Production Loss (A-B)/B	Production Capacity C	Production Rate B/C
	A					
1 January	10,658,456	9,652,194	10,713,600	10.43%	10,713,600	90.09%
2 February	10,360,278	9,496,187	9,676,800	9.10%	10,713,600	98.13%
3 March	9,712,091	9,025,037	10,713,600	7.61%	10,713,600	84.24%
4 April	11,182,009	10,057,867	10,368,000	11.18%	10,368,000	97.01%
5 May	11,260,590	10,061,248	10,713,600	11.92%	10,713,600	93.91%
6 June	11,318,062	10,153,610	10,368,000	11.47%	10,368,000	97.93%
7 July	11,353,133	10,173,441	10,713,600	11.60%	10,713,600	94.96%
8 August	11,965,860	10,262,985	10,713,600	16.59%	10,713,600	95.79%
9 September	11,793,914	11,030,250	10,368,000	6.92%	10,368,000	106.39%
10 October	11,288,730	10,202,760	10,713,600	10.64%	10,713,600	95.23%
11 November	11,362,324	10,100,033	10,368,000	12.50%	10,368,000	97.42%
12 December	11,122,108	9,883,455	10,713,600	12.53%	10,713,600	92.25%
Total	133,377,555	120,099,067	126,144,000	11.06%	126,144,000	95.21%

Data Source : Laporan Tahunan Kegiatan Instalasi Air Bersih Tahun 1994,
Instalasi Produksi IV Pulo Gadung

Production Capacity = 345,600 m³/day

	(m ³)
Max. Production	11,030,250
Min. Production	9,025,037
Ave. Production	10,008,256



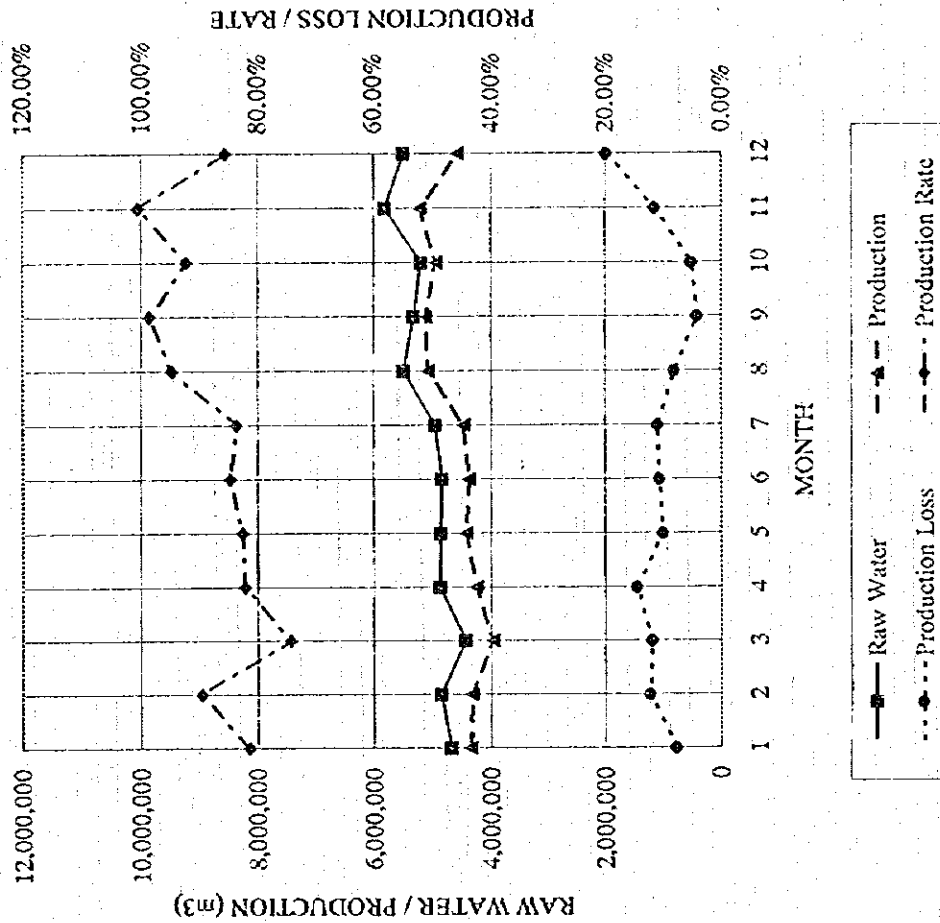
**RECORD OF PRODUCTION IN 1994
BUARAN I WATER TREATMENT PLANT**

	Raw Water (m ³)		Production (m ³)	Production Loss (A-B)/B	Production Capacity C	Production Rate B/C
	A	B				
1 January	4,683,730	4,354,660	5,356,800	7.56%	5,356,800	81.29%
2 February	4,852,190	4,329,563	4,838,400	12.07%	4,838,400	89.48%
3 March	4,440,770	3,974,988	5,356,800	11.72%	5,356,800	74.20%
4 April	4,872,990	4,257,728	5,184,000	14.45%	5,184,000	82.13%
5 May	4,857,180	4,422,012	5,356,800	9.84%	5,356,800	82.55%
6 June	4,842,640	4,384,413	5,184,000	10.45%	5,184,000	84.58%
7 July	4,959,280	4,477,376	5,356,800	10.76%	5,356,800	85.58%
8 August	5,482,500	5,077,945	5,356,800	7.97%	5,356,800	94.79%
9 September	5,319,820	5,112,300	5,184,000	4.06%	5,184,000	98.62%
10 October	5,188,680	4,944,360	5,356,800	4.94%	5,356,800	92.30%
11 November	5,803,030	5,210,090	5,184,000	11.38%	5,184,000	100.50%
12 December	5,485,970	4,580,217	5,356,800	19.78%	5,356,800	85.50%
Total	60,788,780	55,125,653	63,072,000	10.27%	63,072,000	87.40%

Data Source : Laporan Tahun 1994, Instalasi Produksi Buaran

Production Capacity = 172,800 m³/day

	(m ³)
Max. Production	5,210,090
Min. Production	3,974,988
Ave. Production	4,593,804



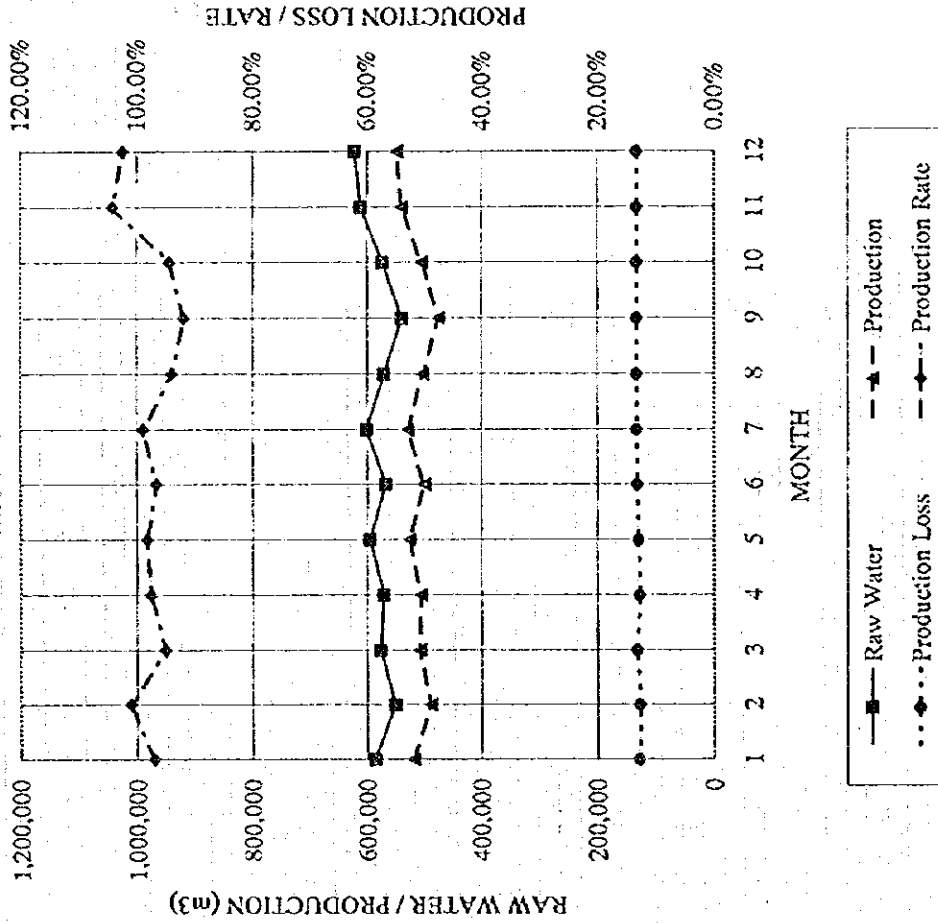
**RECORD OF PRODUCTION IN 1994
CILANDAK WATER TREATMENT PLANT**

	Raw Water (m3)		Production (m3)	Production Loss (A-B)/B	Production Capacity C	Production Rate B/C
	A	B				
1 January	585,953	519,466	535,680	12.80%	535,680	96.97%
2 February	551,223	488,892	483,840	12.75%	483,840	101.04%
3 March	576,279	508,872	535,680	13.25%	535,680	95.00%
4 April	570,575	505,866	518,400	12.79%	518,400	97.58%
5 May	594,598	526,182	535,680	13.00%	535,680	98.23%
6 June	567,214	500,881	518,400	13.24%	518,400	96.62%
7 July	600,393	529,813	535,680	13.32%	535,680	98.90%
8 August	570,222	503,284	535,680	13.30%	535,680	93.95%
9 September	539,178	475,883	518,400	13.30%	518,400	91.80%
10 October	572,819	505,577	535,680	13.30%	535,680	94.38%
11 November	611,408	539,634	518,400	13.30%	518,400	104.10%
12 December	621,765	548,774	535,680	13.30%	535,680	102.44%
Total	6,961,627	6,153,124	6,307,200	13.14%	6,307,200	97.56%

Data Source : Laporan Tahunan 1994, Instalasi Produksi III Cilandak

Production Capacity = 17.280 m3/day

	(m3)
Max. Production	548,774
Min. Production	475,883
Ave. Production	512,760
	1.00



3. LIST OF DISTRIBUTION AND BOOSTER PUMPS

LIST OF EXISTING DISTRIBUTION PUMPS

LIST OF EXISTING BOOSTER PUMP STATIONS

LIST OF EXISTING DISTRIBUTION PUMPS

TREATMENT PLANT / DISTRIBUTION CENTER	PUMP HEAD (m)	PUMP CAPACITY (include Standby) (l/sec)	ZONE TO DISTRIBUTE
Pejompongan I	33.1	4,000	Zone 1
Pejompongan I	49.4	300	Zone 1
Pejompongan II	47.7	9,000	Zone 1
Pulogadung	54.9	8,000	Zone 2
DC-R1	56.0	6,000	Zone 3
DC-R5	45.0	2,730	Zone 5
Cilandak	45.0	620	Zone 5
Buaran	54.0	4,000	Zone 6

Source: PAM JAYA

LIST OF EXISTING BOOSTER PUMP STATIONS

Name of Station	WPI	Capacity of Reservoir (m ³)	Booster Pump		Year of Operation
			Nos.	Capacity	
I. Jakarta Utara					
1 Digul *	Pulogadung	60	3	45 l/s x 36 m	1971
2 Gedong Panjang	Buaran I, Pejompongan	469	3	55.5 l/s x 32 m	1989
			7	66.7 l/s x 36 m	1989
3 Sindang *	Pulogadung	600	1	50 l/s x 35 m	1988
			2	66.7 l/s x 39 m	1988
4 Sungai Bambu	Pulogadung	595	4	66.7 l/s x 36 m	1974
			6	100 l/s x 60 m	1988
5 Taman Buaya	Pejompongan II	1,250	5	150 l/s x 36 m	1992
			5	67 l/s x 36 m	1989
II. Jakarta Timur					
6 Klender	Pulogadung	900	3	70 l/s x 70 m	1974
			3	30.6 l/s x 50 m	1979
			4	30.6 l/s x 50 m	1986
7 Gudang Air Kampung Rambutan	Ciburial	17,850	-	-	1922
III. Jakarta Selatan					
8 Bukit Duri *	-	64	-	-	1969
IV. Jakarta Barat					
9 Tambora	Pejompongan II	500	3	45 l/s x 40 m	1988
10 Cengkareng (PDAM Tangerang)	-	1,000	1	108 l/s x 38m	1995
V. Jakarta Pusat					
11 Rawasari	Pulogadung	2,520	1	138.9 l/s x 55 m	1976
			2	47.2 l/s x 55 m	1976
			7	77 l/s x 55 m	1976
12 Sumur Batu	Pulogadung	5,400	6	261 l/s x 50 m	1984
			4	103 l/s x 69 m	1991
			11	200 l/s x 53 m	1991

Data Source: PAM JAYA

* : Abandoned, not operated

4. HOUSE CONNECTION

CATEGORY OF CUSTOMER

NUMBER OF CONNECTION BY DIAMETER

STANDARD INSTALLATION DRAWING OF HOUSE CONNECTION (1), PAM JAYA

STANDARD INSTALLATION DRAWING OF HOUSE CONNECTION (2), PAM JAYA

STANDARD INSTALLATION DRAWING OF HOUSE CONNECTION (3), PAM JAYA

STANDARD METER INSTALLATION DRAWING, PAM JAYA

RECORD OF PROCUREMENT OF PIPE MATERIAL FOR HOUSE CONNECTION

STATUS OF METER REPLACEMENT

CATEGORY OF CUSTOMER

Code	Category	M/P Category	
1	SOSIAL	SOCIAL	
	A. SOCIAL UMUM	A. PUBLIC SOCIAL	
1A	Asrama Badan Sosial	Dormitory for social boards	Commercial & Services
1B	Rumah Yatim Piatu	Dormitory for orphan	Commercial & Services
1C	Tempat Ibadah	House of worship	Commercial & Services
	B. SOCIAL KHUSUS	B. SPECIAL SOCIAL	
1D	Rumah Sakit Pemerintah	Government hospital	Commercial & Services
2	NON NIAGA	NON COMMERCIAL	
	A. RUMAH TANGGA	A. HOUSEHOLD	
2A1	Rumah Tangga Sangat Sederhana	Very simple household	Domestic
2A2	Rumah Tangga Sederhana	Simple household	Domestic
2A3	Rumah Tangga Menengah	Middle-class household	Domestic
2A4	Rumah Tangga Mewah	Luxurious household	Domestic
2B	Kedutaan/Konsulat	Embassy/Consulate	Domestic
	B. INSTANSI PEMERINTAH	B. GOVERNMENT INSTITUTE	
2C	Kantor Inst. Pemerintah	Government's office	Commercial & Services
2D	Kantor Perwakilan Asing	Foreign agency's office	Commercial & Services
2E	Lembaga Swasta Non Komersial	Non commercial of private organization	Commercial & Services
2F	Inst. Perguruan Kursus	School/Nondegree course	Commercial & Services
2G	Instansi/ABRI	Institution/Indonesian armed forces	Commercial & Services
3	NIAGA	COMMERCIAL	
	NIAGA KECIL(A)	SMALL COMMERCIAL(A)	
3A	Kios/Warung	Kiosk/Small shop	Commercial & Services
3B	Bengkel Kecil	Small workshop	Commercial & Services
3C	Usaha Kecil	Small venture	Commercial & Services
3D	Usaha Kecil Dalam, Rumah Tangga/Losmen	Home industry/Cheap hotel	Commercial & Services
3E	Tempat Pangkas Rambut	Barber	Commercial & Services
3F	Penjahit/Taylor	Seamstress/Taylor	Commercial & Services
	NIAGA KECIL(B)	SMALL COMMERCIAL(B)	
3G	Rumah Makan/Restoran Kecil	Small restaurant	Commercial & Services
3H	RS Swasta/Poliklinik/Laboratorium	Private hospital/Polyclinic/Laboratorium	Commercial & Services
3I	Praktek Dokter	Clinic	Commercial & Services
3J	Kantor Pengacara	Lawyer's office	Commercial & Services
3K	Hotel Melati(Non Bintang)	Non-star hotel	Commercial & Services
	NIAGA BESAR(A)	BIG COMMERCIAL(A)	
3L	Hotel Berbintang 1, 2, 3 dan Motel	1, 2, 3-stars hotel and Motel	Commercial & Services
3M	Steambath/Salon	Steambath/Salon	Commercial & Services
3N	Night Club/Bar	Night club/Bar	Commercial & Services
3O	Bank	Bank	Commercial & Services
3P	Service Station(Bengkel Besar)	Service station(Big workshop)	Commercial & Services
3Q	Pers. Perdagangan Niaga	Trading company	Commercial & Services
	NIAGA BESAR(B)	BIG COMMERCIAL(B)	
3R	Hotel Berbintang 4, 5	4, 5-stars hotel	Commercial & Services
3S	Cedung Bertingkat Tinggi & Kondominium	High-rising building & Condominium	Commercial & Services
4	INDUSTRI	INDUSTRY	
	INDUSTRI KECIL	SMALL INDUSTRY	
	INDUSTRI BUSAR	BIG INDUSTRY	
4A	Pabrik Es	Ice block factory	Industrial
4B	Pabrik Makanan/Minuman	Food & Beverage factory	Industrial
4C	Pabrik Kimia/Obat Kosmetik	Chemicals/Drugs/Cosmetics factory	Industrial
4D	Pabrik Kimia/Obat Kosmetik	Chemicals/Drugs/Cosmetics factory	Industrial
4E	Pabrik/Gudang Perindustrian	Factory/Storehouse of industry	Industrial
4F	Pabrik Tekstil	Textile factory	Industrial
4G	Pergudangan Industri Lainnya	Warehouse/Other industries	Industrial
5	KHUSUS	SPECIAL	
5A	Hidran & Ledeng Umum	Hydrant & Public taps	Hydrant & Public taps
5B	Stasiun Air & Mobil Tangki	Water station & Water tank-car	Hydrant & Public taps
5C	Tongkang Air	Water tanker	Special
5D	BPP Tanjung Priok	BPP Tanjung Priok	Special
5E	BPP Ancol	BPP Ancol	Special
	RUMAH SUSUN	FLAT	
5F1	R Susun Sederhana	Very simple flat	Domestic
5F2	R Susun Sederhana	Simple flat	Domestic
5F3	R Susun Menengah	Middle-class flat	Domestic
5F4	R Susun Mewah	Luxurious flat	Domestic

*BPP - Board of port management

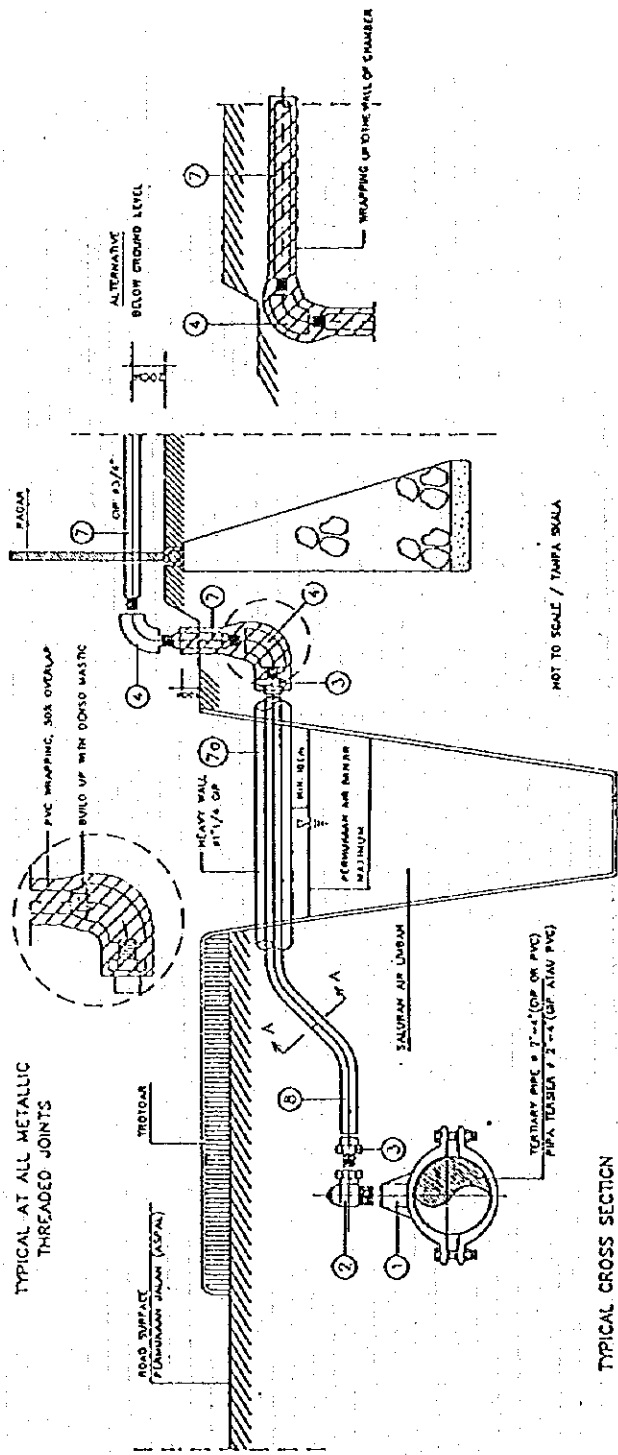
NUMBER OF CONNECTION BY DIAMETER

DIAMETER OF CONC. (inch)	NUMBER OF CONNECTION (nos.)	TOTAL WATER CONSUMPTION (m ³ /month)	UNIT WATER CONSUMPTION (m ³ /month/conc.)	METER RENT FEE (Rp./month)	UNIT METER RENT FEE (Rp./month/meter)
0.5	349,035	8,973,251	26	349,037,500	1,000
0.8	1,018	92,699	91	2,036,000	2,000
1.0	2,471	845,365	342	6,177,000	2,500
1.5	160	68,350	427	800,000	5,000
2.0	934	839,538	899	8,864,500	9,491
3.0	334	669,939	2,006	4,008,000	12,000
4.0	208	1,086,779	5,225	3,536,000	17,000
6.0	49	709,048	14,470	980,000	20,000
8.0	14	560,623	40,045	350,000	25,000
10.0	6	256,869	42,812	180,000	30,000
12.0	2	138,545	69,273	93,000	46,500
16.0	1	35,862	35,862	110,000	110,000
TOTAL/AVG.	354,232	14,276,868	40	376,172,000	1,062

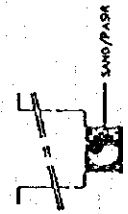
DATA SOURCE :

PAM JAYA

DATA AS OF SEPTEMBER 1995



NO.	ACCESSORIES PERLENGKAPAN	DIAMETER	MATERIAL BAHAN	AMOUNT JUMLAH
1	CLAMP SADDLE/PLED/SADOL	2" x 1/4" - 2" x 3/4" - 2" x 1" - 2" x 1 1/4"	GI / PVC	1
2	TENON	3/4"	BRONZE/PERUNDU	1
3	MECHANICAL JOINT/MALE	3/4"	HOPE	2
4	TUBING/PIPE/TI	3/4"	GI	1
5	PIPE CAP (STANDARD USE)	3/4"	GI	2 M
6	PIPE CAP (STANDARD USE)	1 1/4"	GI	VARIABLE
8	PIPE HOPE	3/4"	HOPE	4 M
9	SOCKET	3/4"	HOPE	-
-	DOKSO MASTIC AND WRAPPING TAPE			AS REQUIRED



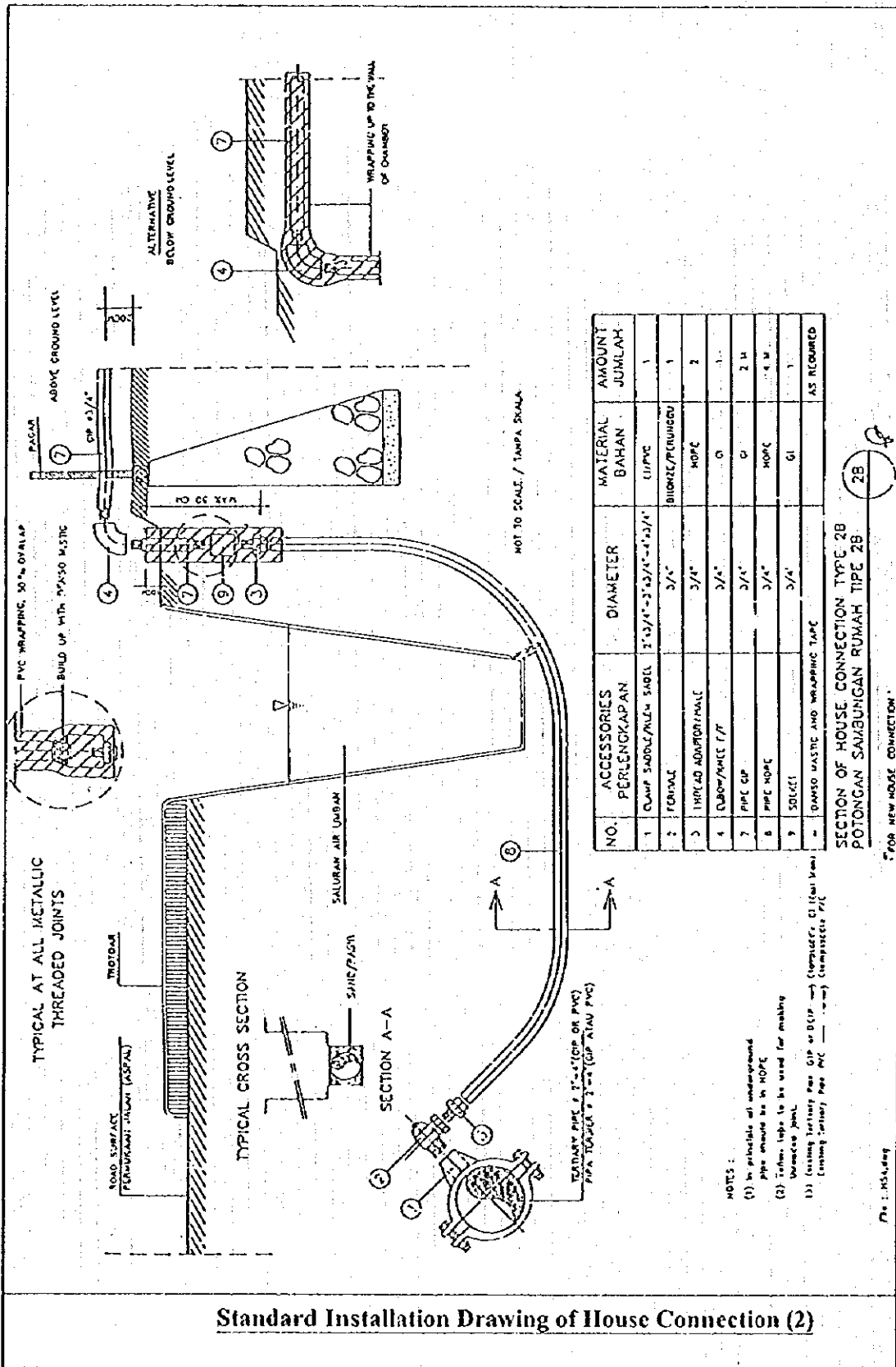
SECTION A-A

NOTES:
 (1) Tenon type to be used for existing depressed joint.
 (2) Existing tertiary pipe 6" or 8" or 10" or 12" or 14" or 16" or 18" or 20" or 22" or 24" or 26" or 28" or 30" or 32" or 34" or 36" or 38" or 40" or 42" or 44" or 46" or 48" or 50" or 52" or 54" or 56" or 58" or 60" or 62" or 64" or 66" or 68" or 70" or 72" or 74" or 76" or 78" or 80" or 82" or 84" or 86" or 88" or 90" or 92" or 94" or 96" or 98" or 100" or 102" or 104" or 106" or 108" or 110" or 112" or 114" or 116" or 118" or 120" or 122" or 124" or 126" or 128" or 130" or 132" or 134" or 136" or 138" or 140" or 142" or 144" or 146" or 148" or 150" or 152" or 154" or 156" or 158" or 160" or 162" or 164" or 166" or 168" or 170" or 172" or 174" or 176" or 178" or 180" or 182" or 184" or 186" or 188" or 190" or 192" or 194" or 196" or 198" or 200" or 202" or 204" or 206" or 208" or 210" or 212" or 214" or 216" or 218" or 220" or 222" or 224" or 226" or 228" or 230" or 232" or 234" or 236" or 238" or 240" or 242" or 244" or 246" or 248" or 250" or 252" or 254" or 256" or 258" or 260" or 262" or 264" or 266" or 268" or 270" or 272" or 274" or 276" or 278" or 280" or 282" or 284" or 286" or 288" or 290" or 292" or 294" or 296" or 298" or 300" or 302" or 304" or 306" or 308" or 310" or 312" or 314" or 316" or 318" or 320" or 322" or 324" or 326" or 328" or 330" or 332" or 334" or 336" or 338" or 340" or 342" or 344" or 346" or 348" or 350" or 352" or 354" or 356" or 358" or 360" or 362" or 364" or 366" or 368" or 370" or 372" or 374" or 376" or 378" or 380" or 382" or 384" or 386" or 388" or 390" or 392" or 394" or 396" or 398" or 400" or 402" or 404" or 406" or 408" or 410" or 412" or 414" or 416" or 418" or 420" or 422" or 424" or 426" or 428" or 430" or 432" or 434" or 436" or 438" or 440" or 442" or 444" or 446" or 448" or 450" or 452" or 454" or 456" or 458" or 460" or 462" or 464" or 466" or 468" or 470" or 472" or 474" or 476" or 478" or 480" or 482" or 484" or 486" or 488" or 490" or 492" or 494" or 496" or 498" or 500" or 502" or 504" or 506" or 508" or 510" or 512" or 514" or 516" or 518" or 520" or 522" or 524" or 526" or 528" or 530" or 532" or 534" or 536" or 538" or 540" or 542" or 544" or 546" or 548" or 550" or 552" or 554" or 556" or 558" or 560" or 562" or 564" or 566" or 568" or 570" or 572" or 574" or 576" or 578" or 580" or 582" or 584" or 586" or 588" or 590" or 592" or 594" or 596" or 598" or 600" or 602" or 604" or 606" or 608" or 610" or 612" or 614" or 616" or 618" or 620" or 622" or 624" or 626" or 628" or 630" or 632" or 634" or 636" or 638" or 640" or 642" or 644" or 646" or 648" or 650" or 652" or 654" or 656" or 658" or 660" or 662" or 664" or 666" or 668" or 670" or 672" or 674" or 676" or 678" or 680" or 682" or 684" or 686" or 688" or 690" or 692" or 694" or 696" or 698" or 700" or 702" or 704" or 706" or 708" or 710" or 712" or 714" or 716" or 718" or 720" or 722" or 724" or 726" or 728" or 730" or 732" or 734" or 736" or 738" or 740" or 742" or 744" or 746" or 748" or 750" or 752" or 754" or 756" or 758" or 760" or 762" or 764" or 766" or 768" or 770" or 772" or 774" or 776" or 778" or 780" or 782" or 784" or 786" or 788" or 790" or 792" or 794" or 796" or 798" or 800" or 802" or 804" or 806" or 808" or 810" or 812" or 814" or 816" or 818" or 820" or 822" or 824" or 826" or 828" or 830" or 832" or 834" or 836" or 838" or 840" or 842" or 844" or 846" or 848" or 850" or 852" or 854" or 856" or 858" or 860" or 862" or 864" or 866" or 868" or 870" or 872" or 874" or 876" or 878" or 880" or 882" or 884" or 886" or 888" or 890" or 892" or 894" or 896" or 898" or 900" or 902" or 904" or 906" or 908" or 910" or 912" or 914" or 916" or 918" or 920" or 922" or 924" or 926" or 928" or 930" or 932" or 934" or 936" or 938" or 940" or 942" or 944" or 946" or 948" or 950" or 952" or 954" or 956" or 958" or 960" or 962" or 964" or 966" or 968" or 970" or 972" or 974" or 976" or 978" or 980" or 982" or 984" or 986" or 988" or 990" or 992" or 994" or 996" or 998" or 1000"

SECTION OF HOUSE CONNECTION TYPE 3
 POTONGAN SAMBUNGAN RUMAH TYPE 3

3

Standard Installation Drawing of House Connection (I)

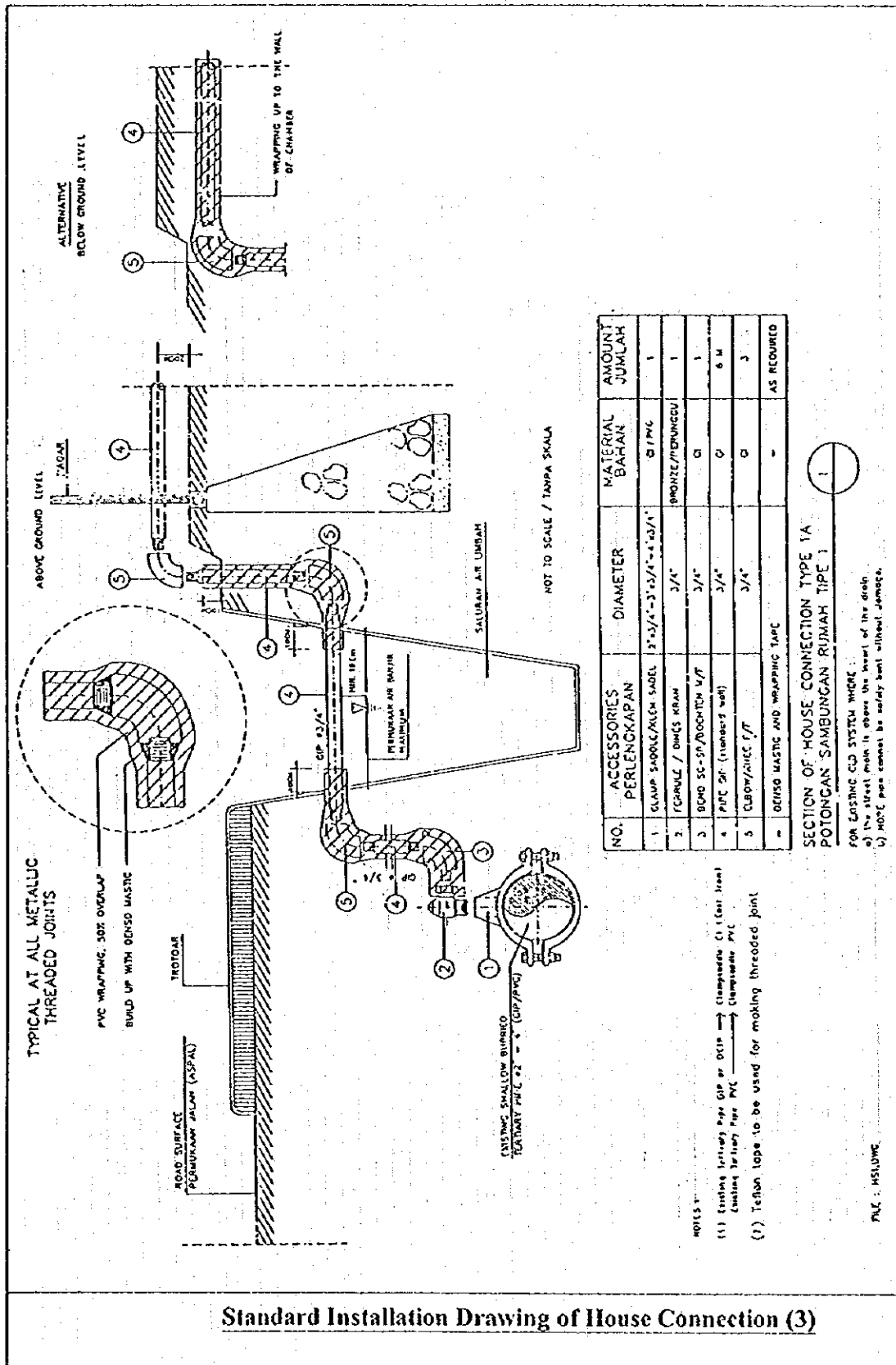


NO.	ACCESSORIES PERLENGKAPAN	DIAMETER	MATERIAL BAHAN	AMOUNT JUMLAH
1	CLAMP SADDLE/ALUM SADDLE	3/4" - 1 1/4" - 2"	LI/PVC	1
2	FEMALE	3/4"	BILONIZ/PENUNGERU	1
3	THREADED ADAPTOR/MALC	3/4"	HOPE	2
4	ELBOW/MALC T/T	3/4"	G	1
5	PIPE CAP	3/4"	G	2 H
6	PIPE HOPE	3/4"	HOPE	4 M
7	SOCKET	3/4"	GI	1
8	GLASSO WASTE AND WRAPPING TAPE			AS REQUIRED

- NOTES :
- (1) In principle all underground pipe should be in HOPE
 - (2) Trench depth to be used for making connection joint
 - (3) Existing Tertiary Pipe GIP or BIP (Composite of 110mm from Existing Tertiary Pipe PVC — 110mm Composite PVC)

28

Standard Installation Drawing of House Connection (2)



Standard Installation Drawing of House Connection (3)

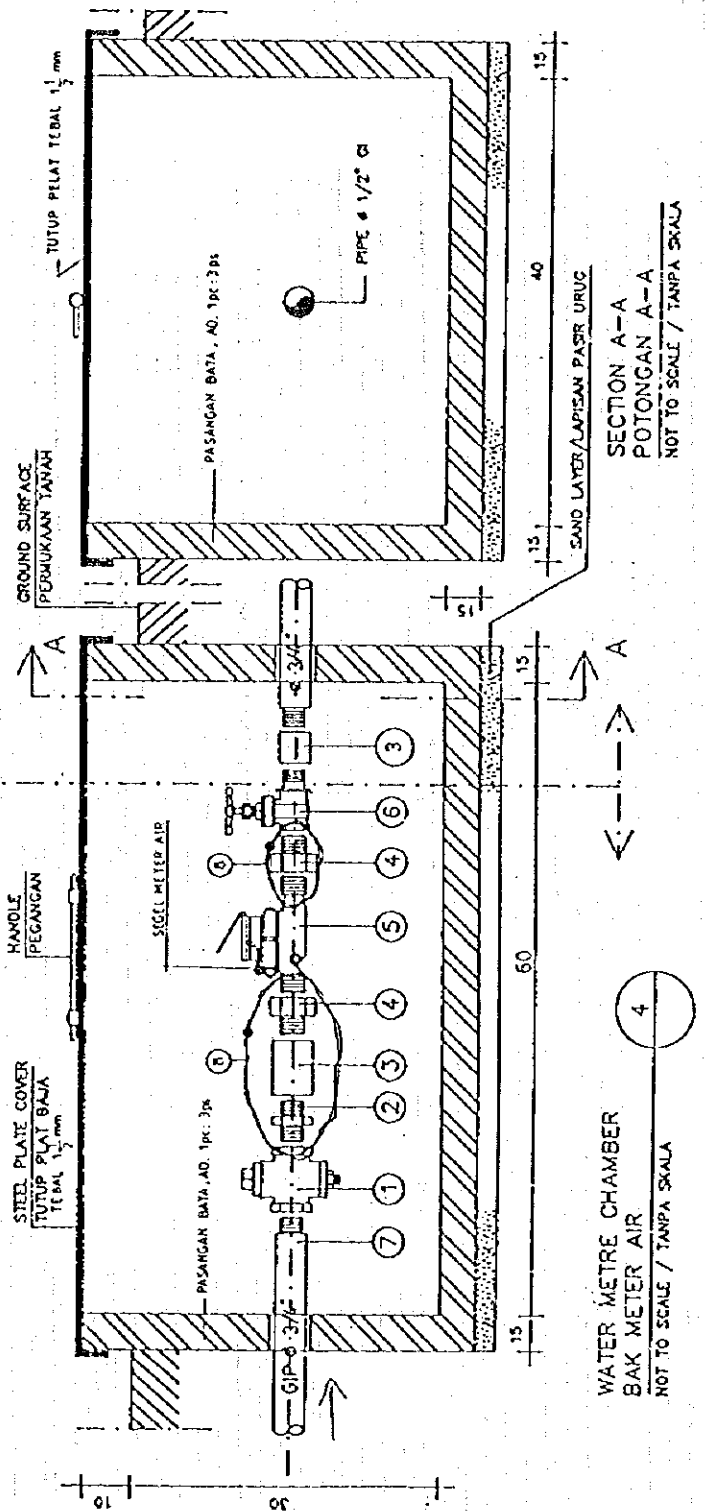
ACCESSORIES OF WATER METRE CHAMBER
PERLENGKAPAN DIDALAM BAK METER AIR

NO.	ACCESSORIES PERLENGKAPAN	DIAMETER	MATERIAL BAHAN	AMOUNT JUMLAH
1	STOP COCK/PLUG KRAN	3/4"	BRONZE/PERUNGGU	1
2	DOUBLE NIPPLE/DOBDEL NIPPEL	3/4"	G	1
3	SOCKET-SOCKET	3/4"x3/4"	G	2
4	COUPLING/KOPUNG M/F	3/4"	BRONZE/PERUNGGU	2
5	WATER METER/METER AIR M/M	3/4"	BRONZE/PERUNGGU	1
6	NON-RETURN GATE VALVE	3/4"	BRONZE/PERUNGGU	1
7	PIPE/PIPA	3/4"	G	-
8	○ KAWAT SEGEL	-	-	2

* NON-RETURN GATE VALVE INI
DI GANTI DENGAN KEEPER-TABOK[®]
DAN GATE VALVE KACA DIPERINTAH
DIREKSI

REHAB-HOUSE CONNECTION
PERBAIKAN SANGBUNGAN RUMAH

CONSUMER
KONSUMEN



WATER METRE CHAMBER
BAK METER AIR
NOT TO SCALE / TANPA SKALA

SECTION A-A
POTONGAN A-A
NOT TO SCALE / TANPA SKALA

Standard Meter Installation Drawing

**RECORD OF PROCUREMENT OF
PIPE MATERIAL FOR HOUSE CONNECTION**

	YEAR 1994		YEAR 1995	
	PROCURED (Jan. - Dec.) 12 MONTHS (m)	MONTHLY PROCURED (m)	PROCURED (Jan. - Sep.) 9 MONTHS (m)	MONTHLY PROCURED (m)
GIP	133,273	11,106	45,791	5,087
PE PIPE	64,503	5,375	80,085	8,898

Source : Logistic section of PAM JAYA

STATUS OF METER REPLACEMENT

AREA	1994												1995												TOTAL AVERAGE
	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	AUG	TOTAL						
CENTRAL JAKARTA																									
REMAIN NOT REPLACED IN LAST MONTH	351	287	166	130	87	109	74	125	133	101	85	41	51	49	116	138	120	2,163							
NEWLY FOUND REPLACEMENT REQUIRED	720	662	723	735	743	651	737	738	691	712	649	614	508	789	666	467	852	11,667							
TOTAL OF REPLACEMENT REQUIRED	987	1,071	949	889	865	830	811	863	824	813	734	655	559	838	782	605	972	13,820							
REPLACED	636	784	783	759	778	721	686	686	730	723	728	693	604	510	722	644	485	794	11,830						
REMAIN NOT-REPLACED	351	287	166	130	87	109	74	125	133	101	85	41	51	49	116	138	120	1,990							
NORTH JAKARTA																									
REMAIN NOT REPLACED IN LAST MONTH	486	458	229	441	68	31	20	17	18	11	5	0	0	0	0	23	0	1,893							
NEWLY FOUND REPLACEMENT REQUIRED	577	777	889	544	617	615	594	560	477	430	430	390	381	203	330	411	731	8,956							
TOTAL OF REPLACEMENT REQUIRED	1,347	1,063	1,235	1,118	985	685	646	614	577	495	441	435	387	203	410	434	731	10,849							
REPLACED	861	605	1,096	677	917	654	626	597	559	484	456	435	384	387	123	387	434	9,351							
REMAIN NOT-REPLACED	486	458	229	441	68	31	20	17	18	11	5	0	0	0	80	23	0	1,498							
WEST JAKARTA																									
REMAIN NOT REPLACED IN LAST MONTH	279	248	289	299	153	108	97	48	55	105	20	31	16	17	29	18	14	1,826							
NEWLY FOUND REPLACEMENT REQUIRED	308	563	548	519	503	562	362	396	379	308	375	339	318	412	360	625	540	7,417							
TOTAL OF REPLACEMENT REQUIRED	748	587	811	837	818	656	670	459	444	433	395	370	334	429	389	643	554	9,243							
REPLACED	469	339	522	538	665	548	573	411	389	393	364	354	317	400	371	629	541	7,683							
REMAIN NOT-REPLACED	279	248	289	299	153	108	97	48	55	105	20	31	16	17	29	18	14	1,560							
SOUTH JAKARTA																									
REMAIN NOT REPLACED IN LAST MONTH	49	41	15	8	5	6	7	1	28	38	61	28	28	40	77	79	113	43	639						
NEWLY FOUND REPLACEMENT REQUIRED	102	146	152	131	153	135	126	145	129	111	90	90	136	158	141	165	46	83	2,149						
TOTAL OF REPLACEMENT REQUIRED	196	151	187	167	139	138	141	133	146	157	149	151	164	198	218	244	159	126	2,788						
REPLACED	147	110	172	159	134	132	134	132	118	119	88	123	124	121	139	131	116	106	2,178						
REMAIN NOT-REPLACED	49	41	15	8	5	6	7	1	28	38	61	28	28	40	77	79	113	43	610						
EAST JAKARTA																									
REMAIN NOT REPLACED IN LAST MONTH	108	100	94	108	18	16	16	5	4	2	9	0	0	0	0	0	0	0	475						
NEWLY FOUND REPLACEMENT REQUIRED	269	366	291	272	342	353	338	338	212	241	249	223	162	185	97	54	240	4,232							
TOTAL OF REPLACEMENT REQUIRED	449	377	466	385	380	369	354	343	216	243	258	223	166	185	88	54	240	4,707							
REPLACED	341	277	372	277	362	348	353	349	214	234	258	219	166	194	88	54	237	4,337							
REMAIN NOT-REPLACED	108	100	94	108	18	16	16	5	4	2	9	0	0	0	0	0	0	3	370						
TOTAL OF JAKARTA																									
REMAIN NOT REPLACED IN LAST MONTH	1,273	1,134	793	986	331	270	214	196	238	257	180	100	117	143	295	292	177	6,996							
NEWLY FOUND REPLACEMENT REQUIRED	1,976	2,514	2,603	2,201	2,338	2,316	2,157	1,888	1,802	1,603	1,793	1,702	1,527	1,730	1,618	1,603	2,446	34,441							
TOTAL OF REPLACEMENT REQUIRED	3,727	3,249	3,648	3,396	3,187	2,689	2,586	2,371	2,375	2,126	2,059	1,973	1,802	1,644	1,873	1,913	1,895	2,623	41,407						
REPLACED	2,454	2,115	2,855	2,410	2,856	2,419	2,372	2,175	2,135	1,879	1,873	1,685	1,501	1,578	1,621	1,718	2,318	35,379							
REMAIN NOT-REPLACED	1,273	1,134	793	986	331	270	214	196	238	257	180	100	117	143	295	292	177	305	6,028						

Source : PAM JAYA

5. REVIEW OF ON GOING PJSIP PROJECT

DEFINITION AND COMPONENT OF UFW

OBJECTIVES

ENTIRE SCHEME AND SHARING OF ZONES BETWEEN IBRD AND OECF

IMPLEMENTATION ORGANIZATION

ELEMENT OF EACH PJSIP

PROGRESS OF EACH PJSIP

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<i>1.2 Definition of UFW Components.....</i>	<i>1</i>
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REVIEW OF ON GOING PJSIP PROJECT

1. DEFINITION AND COMPONENT OF UFW

1.1 Definition of the Unaccounted For Water (UFW)

UFW is defined as :

The difference between "Net Production" (the volume of water delivered into a network) and "consumption" (the volume of water that can be accounted for by legitimate consumption, whether metered or not)

$$\text{UFW} = \text{Delivered Water} - \text{Accounted Water}$$

1.2 Definition of UFW Components

UFW calculated from the difference between production and consumption falls into two categories :

- Water consumed but not recorded by consumer's meters or otherwise accounted for by government or other public use. This is referred to as a "non-physical" loss (NPL) and is reflected in lost revenue. It includes water consumed through illegal connections.
- Water lost through leakage, also referred to as "physical" loss (PL). This is a resource loss and is reflected in the cost of production.

2. OBJECTIVES

The PAM Jaya System Improvement Project (PJSIP) aims at rehabilitating the existing systems, extending the distribution system and strengthening the management, operation, maintenance and financial system of PAM Jaya for reduction of UFW.

3. ENTIRE SCHEME AND SHARING OF ZONES BETWEEN IBRD AND OECS

3.1 Entire Scheme

Within the framework of the Second Stage expansion program of Jakarta Water Supply System, the entire scheme for improvement and extension of PAM Jaya is staged into two phases.

Phase-1 is envisaged to start in 1990 and to be completed in 1996 subject to the commencement time, and Phase-2 to start in 1995 and to be completed in 2000. Figure-3.1 shows the Implementation Schedule for Major Projects.

The following subsections briefly describe each of project components. Refer to Table 3.1 through Table 3.3 for details of physical components.

3.1.1 Rehabilitation

In view of maintenance of secondary and tertiary distribution mains, the current service area of PAM is sub-divided into approximately 200 elementary zones, all of which will be rehabilitated within the two-phased scheme; i.e. 90 elementary zones for Phase-1 and 110 elementary zones for Phase-2. Each of Supply Zones 1 through 6 holds one to 42 elementary zones proportionate to the number of present service connections within the supply zones.

3.1.2 Infill/Rehabilitation

Physical components of infill/extension are allocated into Supply Zones in proportion to the numbers of new connections, which reflect the demand increases by Supply Zones.

3.1.3 Primary Distribution Facilities and Mains

The primary distribution mains to be augmented are 200 Km in total length and 300 mm to 1,500 mm in size. The primary distribution facilities are Distribution Centers R5 and R4 to be constructed in Phase-1 and Phase-2 respectively.

Fig. 3.1 IMPLEMENTATION SCHEDULE FOR MAJOR PROJECTS

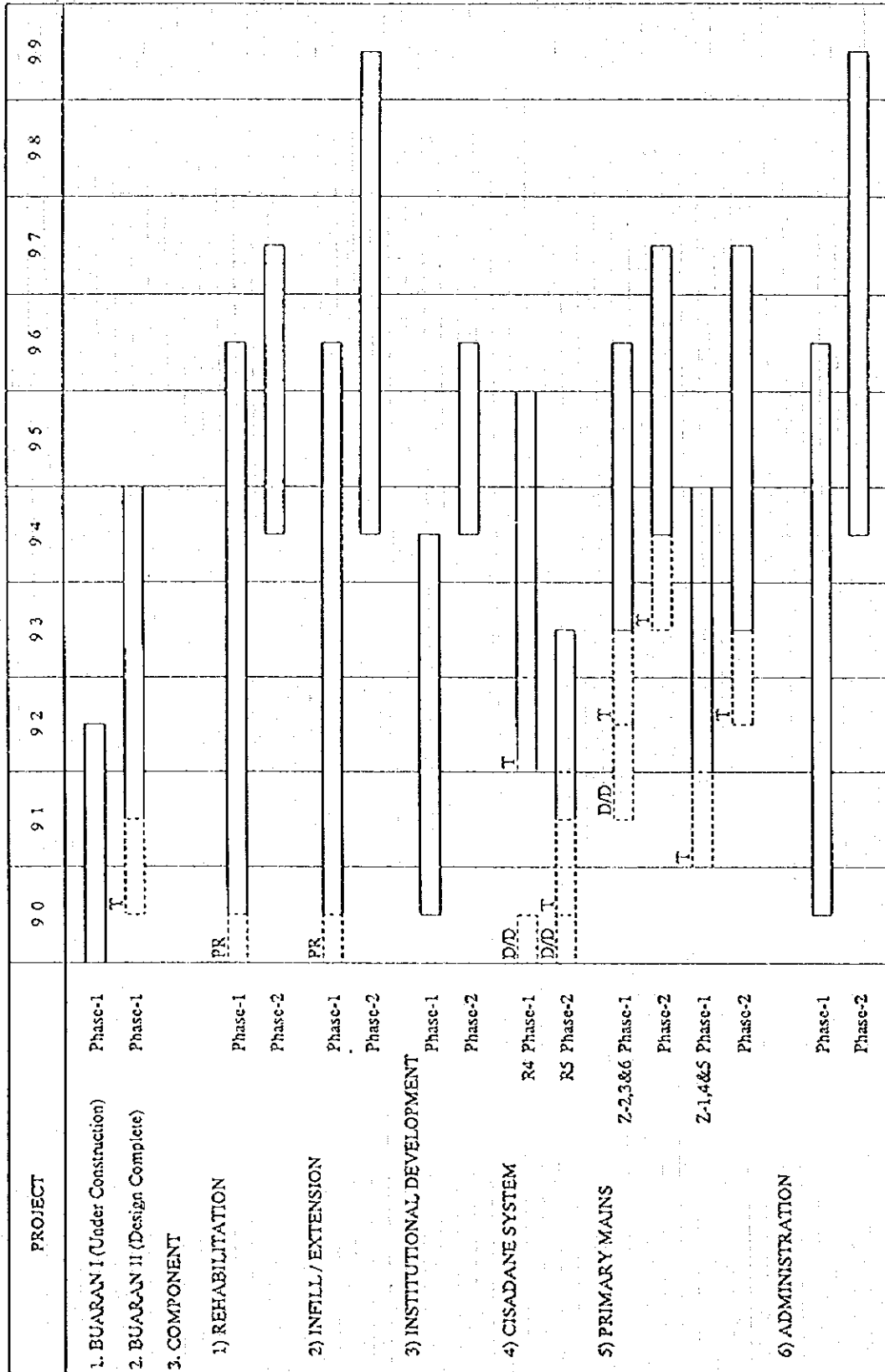


Table-3.1 MAJOR PHYSICAL COMPONENTS (PHASE-1)

WORK ITEMS	ZONE1	ZONE2	ZONE3	ZONE4	ZONE5	ZONE6	TOTAL
A. Rehabilitation *1							
No. of Elementary Zones	42	18	13	1	6	10	90
B. Infill / Extension of Service							
Mains and New Connections							
(1) District Meters (pc)	63	84	45	28	50	53	323
(2) Secondary Mains (km)	40	53	28	17	31	33	202
(3) Tertiary Mains (km)	194	257	136	84	153	162	986
(4) New Connections (conn)	33,700	44,700	23,700	14,600	26,500	28,100	171,300
C. Primary Distribution Mains (km)							
ND 1,500					0.5		0.5
ND 1,350					3.4		3.4
ND 1,000						2.4	2.4
ND 900			1.2		2.7		3.9
ND 800			2.5	6.9	2.0	2.7	14.1
ND 600		2.2	1.3	4.9	7.5	2.1	18.0
ND 500				2.6			2.6
ND 400	3.3		3.8	5.7	3.9	2.1	18.8
ND 300	16.7	9.5	7.8	2.2	7.0	2.0	45.2
Total	20.0	11.7	16.6	22.3	27.0	11.3	108.9
D. West Tarum Canal System							
D.1. Buaran I Project (OECF Loan IP-290; Implementation Stage)							
(1) Buaran I Water Treatment Plant (2,000 l/sec)							
(2) D1,200 Through 900 Water Distribution Mains of 15 km							
D.2. Buaran II Project (OECF Loan IP-306; Ready for Implementation)							
(1) Buaran II Water Treatment Plant (3,000 l/sec)							
(2) D1,650 / 1,500 Treated Water Transmission Main of 15 km							
(3) R-1 Distribution Center							
(4) D1,800 / 1,650 / 900 Primary Distribution Mains of 8.5 km							
E. Cisadane System (IBRD Financing; Currently Design Stage)							
(1) D 1,500 / 1,200 / 1,000 Treated Water Trans. Mains							
(2) R-5 Distribution Center							
(3) Primary Distribution Mains in Zones 4 & 5							
(4) Secondary Distribution Mains in Zones 4&5							

Notes : *1 Each elementary zone comprises 1,000 connections or 20km service mains. For details of rehabilitation refer to attached table.

Table-3.2 MAJOR PHYSICAL COMPONENTS (PHASE-2)

WORK ITEMS	ZONE	ZONE	ZONE	ZONE	ZONE	ZONE	TOTAL
	1	2	3	4	5	6	
A. Rehabilitation *1							
No. of Elementary Zones	52	22	15	1	8	12	110
B. Infill / Extension of Service							
Mains and New Connections							
(1) District Meters (pc)	68	62	21	51	50	62	314
(2) Secondary Mains (km)	46	42	14	34	33	42	211
(3) Tertiary Mains (km)	339	306	102	252	245	309	1,553
(4) New Connections (conn)	40,800	36,900	12,300	30,300	29,500	37,200	187,000
C. Primary Distribution Mains (km)							
ND 1,500				1.9			1.9
ND 1,350			0.8				0.8
ND 1,200				2.2			2.2
ND 900	3.0		4.0	2.0	1.9		10.9
ND 800	4.7	3.2		2.0	1.4		11.3
ND 600	1.7			0.4	3.3	0.3	5.7
ND 500	3.1		1.8	3.1		2.3	10.3
ND 400	1.3	3.7				5.1	10.1
ND 300	1.7	4.2	5.1	5.6	10.6	10.3	37.5
Total	15.5	11.1	11.7	17.2	17.2	18.0	90.7

Table-3.3 MAJOR PHYSICAL COMPONENTS (OVERALL)

WORK ITEMS	ZON E1	ZON E2	ZON E3	ZON E4	ZONE 5	ZON E6	TOTAL
A. Rehabilitation *1							
No. of Elementary Zones	94	40	28	2	14	22	200
B. Infill / Extension of Service							
Mains and New Connections							
(1) District Meters (pc)	129	152	81	65	206	129	762
(2) Secondary Mains (km)	84	99	52	42	133	84	494
(3) Tertiary Mains (km)	519	598	308	266	810	519	3,020
(4) New Connections (conn)	72,840	85,520	44,820	36,500	115,480	72,840	428,000
C. Primary Distribution Mains							
ND 1,500				1.9	0.5		2.4
ND 1,350			0.8		3.4		4.2
ND 1,200				2.2			2.2
ND 1,000						2.4	2.4
ND 900	3.0		5.2	2.0	4.6		14.8
ND 800	4.7	3.2	2.5	8.9	3.4	2.7	25.4
ND 600	1.7	2.2	1.3	5.3	10.8	2.4	23.7
ND 500	3.1		1.8	5.7		2.3	12.9
ND 400	4.6	3.7	3.8	5.7	3.9	7.2	28.9
Total	17.1	9.1	15.4	31.7	26.6	17.0	116.9

3.1.4 Institutional Development

The entire scheme of the Institutional Development consists of the following component :

- (a) Technical Assistance for Operation and Maintenance
- (b) Technical Assistance for Project Management
- (c) Technical Assistance for Management Improvement
- (d) Technical Assistance for Accounting System
- (e) Technical Assistance for Personnel Management
- (f) Training
- (g) Computerization
- (h) Consumer Survey

3.2 Sharing of Zones between IBRD and OECF

Based on the JICA Master Plan in 1985, water supply areas in DKI Jakarta is divided into six supply zones.

According the above zoning, GOI proposed that IBRD finance included zones 1, 2, 4 (part), 5 (part), and proposed that OECF finance covers remaining zones 3 & 6.

For historical and other reasons the strategy developed in Supply Zones 1 and 2 differs from that developed in Supply Zones 3 and 6. In the former supply zones, EZ's are operated in "open" mode with no continuous monitoring undertaken. "Open" mode entails running the EZ normally with boundary valves open and only creating the EZ temporarily for UFW measurement by closing boundary valves for a short period. In Supply Zones 3 and 6, EZ's are operated in "closed" mode with District Meters(DM) used continuously to monitor zonal flow. EZ's in Supply Zones 4 and 5 have been designed to operate in "closed" mode, but if the number of consumers requiring a supply in these newly served areas exceeds design criteria then some EZ's may be operated in "open" mode.

The main differences in these strategies are summarized below:

Supply Zone 1 and 2

EZ's normally operated in "open" mode and only converted to "closed" mode temporarily for UFW and step test.

DM's sized for "closed" mode so have to be by-pass when EZ in "open" mode (continuous monitoring not feasible).

Few waste meter (WM) installation. Most UFW and step tests performed with DM.

Supply Zones 3 and 6

EZ's permanently operated in "closed" mode.

DM' in continuous use to monitor zonal inflows and assess UFW.

WM's installed on by-passes for step testing.

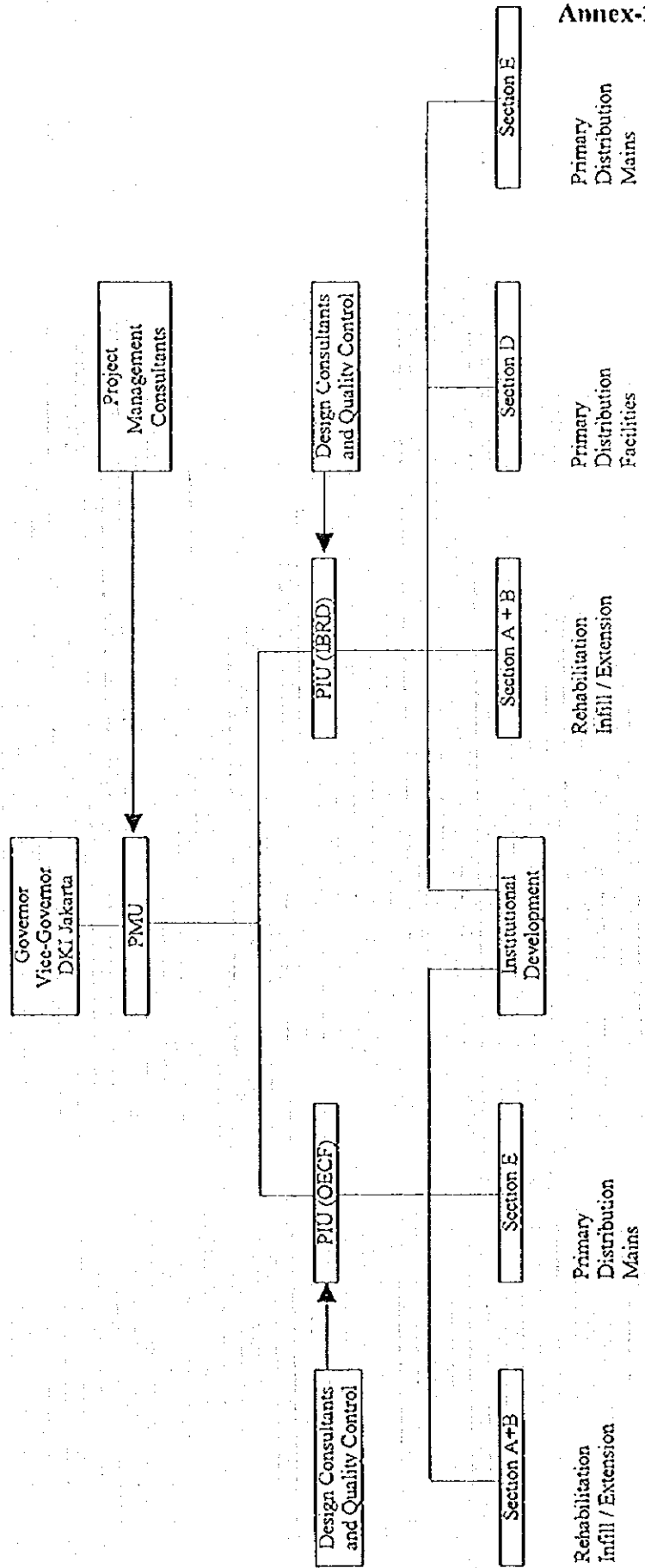
4. IMPLEMENTATION ORGANIZATION

Implementation organization was established. Cipta Karya is a guiding agency which has water supply sector responsibility and PAM Jaya is the executing agency under the supervision of DKI Jakarta which will implement and control this project during design, construction and operation.

Project Management Unit (PMU) for the project is headed by DKI Jakarta Staff and Project Implementation Unit (PIU) is headed by PAM Jaya staff. Cipta Karya provided staff and support as required to assist the PMU and PIU.

Organization Chart for Implementation is shown on **Figure-4.1**.

Fig. 4.1 ORGANIZATION CHART FOR IMPLEMENTATION



5. ELEMENT OF EACH PJSIP

5.1 PJSIP (IBRD)

5.1.1 Element

The PJSIP financed IBRD includes the following elements :

Rehabilitation of the PAM Jaya distribution system through a repair/replacement program aimed at a reduction of Unaccounted For Water (UFW) from the current level of about 50 % at the present to 40 % by 1995 and 30 % by 2000;

- Infill/Extension for the secondary and tertiary distribution network (including parts of the primary network) based on agreed criteria, to achieve a target of 34,000 new connections per year with a corresponding increase in revenues;
- Institutional Strengthening of PAM Jaya in sound public utility practices;
- Primary Distribution Facilities for Zones,1,2,4 and5, considerable network development.

5.1.2 Component

PJSIP (IBRD) consists on Component A, B, and C as follows :

Component A : Rehabilitation and Replacement Program includes the following items :

- Setting up a district metering and wastage control system;
- Carrying out a rehabilitation and replacement program for customer meters and connections, and for the service network;
- Rehabilitation the accessories of the primary network;
- Rehabilitation and replacing the meters of large consumers.

Component B : Service Network Extension of :

- New secondary network
- New tertiary network
- New connection

Component C : Institutional Development, includes the following items :

- General organization
- Technical management
- Personnel policy
- Training program
- Technical assistance and supporting actions

5.1.3 The Pilot Project

All the above mentioned programs related to the rehabilitation and wastage control are first to be implemented in a pilot wastage control project. This pilot project is expected to provide experience to the PAM Jaya and enable it to establish a continuous wastage control program. The Pilot Project is composed of typical areas selected to be well representative of the PAM Jaya distribution system.

The objectives of the Pilot Project are as follows :

- Test the proposed methodology and improve it as required for the 6-years program.
- Test the equipment proposed for the leak detection campaign.
- Train PAM Jaya personnel in their future tasks and enable them to establish a continuous wastage control program.
- Determine return of investment ratios during the 6-years program to enable PAM staff to select the most economical solutions for repair/replacement.
- Test the proposed Community Participation Program.
- Test the proposed improvements in PAM organization and management for UFW control.
- Finally, adjust the 6-years program accordingly.

A target level of 30 % UFW or less has been set for each elementary zone (EZ) under PISIP 1. Upon achievement of this target, the EZ is handed over to PAM Jaya rayon staff for routine operation and maintenance, including further UFW reduction and its maintenance at the lowest economically justifiable level. The target level of 30 % UFW was determined from UFW reduction achievements in the three pilot zones of Pluit, Tanjung Duren and Gelora Senayan.

Figure-5.1 shows General Program of Wastage Control Program.

5.2 PJSIP (OECF)

5.2.1 PJSIP Zone 3 & 6

(1) Scope of Work

The scope of PJSIP Zones 3&6 ,Phase I includes design and construction supervision as follows:

1) Extension and Rehabilitation of Primary Network

The scope of extension work for the primary network is to install primary mains for reinforcing the present capacity to meet the requirement of demand in the year 2000. The network analysis was made for entire service area for respective supply zones, and the design was applied for the area covering the Phase I Project. The scope for rehabilitation covers the whole present service area including mainly valve replacement of primary mains and secondary branch valves. In addition, two pipe bridges are included for rehabilitation.

The following works are the present scope of rehabilitation.

Extension	Zone 3	Dia.300-1200mm	L = 15.7km
	Zone 6	Dia.3..-500mm	L = 9.7km
	Total		L = 25.4km
Rehabilitation :	Valve rehabilitation		N = 120pls
	Pipe bridge		N= 2pls

2) Infil/Ext. of Service Network

The scope of work for infill/ext of service network is to reinforce and re-structure the existing network which is suitable for future maintenance and operation. Based on the above re-structured network, the rehabilitation work will be followed. The service area enclosed by the primary mains (so called as the Primary Cell or PC) is divided into suitable size of zones. Such zone is named as the Elementary Zone or EZ which will cover 1000 - 2000 service connections.

The works for infill/ext include installation of secondary mains (Dia.250-150mm) and tertiary mains (Dia.100-50mm) for reinforcing of the existing network or extension for increasing demand, and installation of valves on the existing mains and re-connection or disconnection between existing mains for re-structuring.

The works under the present scope cover 37 EZ's or 10 PCs in the Zone 3 and 7 EZ's or 2 PCs in the zone 6. The works for major items include the followings:

Installation of service mains;	
secondary mains	43.1 km
tertiary mains	51.8 km
Total	94.9 km
Installation of valves;(include new mains)	2,709 pls
Connection with existing mains	1,966 pls
Installation of service connections	6,210 nos

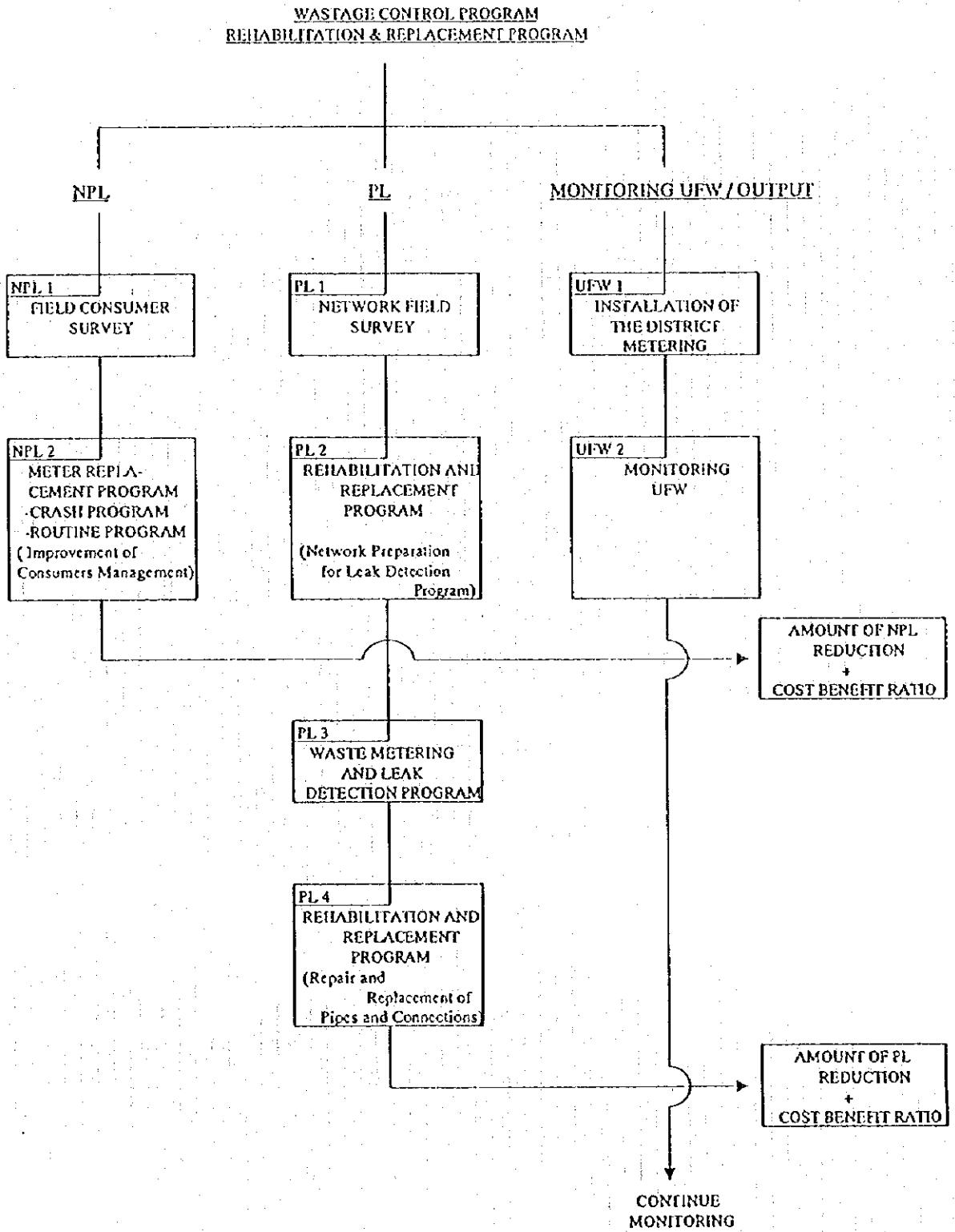
3) Rehabilitation of Service Network

Following to the infill/ext work, the rehabilitation work will be carried out with UFW Task Force and Contractors. The UFW Task Force will be organized mainly by staffs from PAM Jaya's Cabang and Rayon.

Each EZ is to be isolated from other EZ's by installing boundary valves . While a flow meter is installed at the convenient location to measure the inflow into the respective EZ. The Unaccounted -For-Water ratio will be defined the balance between inflow and the total consumption in the EZ.

The rehabilitation work is composed of two major component, i.e., meter rehabilitation and network rehabilitation. The meter rehabilitation reduces Non-physical losses derived from defect meters, unmetered connection, illegal connection, etc. The network rehabilitation reduces physical losses derived from leak on the service mains, service connection and tapping points especially.

Figure-5.1 GENERAL PROGRAM



Firstly the defect customer's meters will be replaced based on the past information and field surveys together with defect fittings.

Following the meter rehabilitation, the network rehabilitation will be conducted based on the assumption that the meter consumption will be correct after meter rehabilitation. The balance between inflow measured through the district meter and a total consumption will be leakage in the network. The target of UFW ratio is 30 %, and when the above balance is more than target the detailed survey to find leaks will be carried out for repair for leaks from the tapping points since they will be the major causes of UFW. To find leaks effectively, the EZ will be further divided into smaller zones named Waste Meter District or WMD which will be composed of 300 - 500 service connections. The higher leakage areas will be define through waste metering applying step test.

The UFW ratio will be measured after rehabilitation work is finished to confirm the target. The scope of UFW Task Force will be survey and measurement, detection of leaks and repair of them and replacement of defect water meters, while the contractor's assignment will be the replacement works of service mains.

The works estimated for the rehabilitation are as follows:

Replacement works;	Service mains	126 km
	Service connections	8,000 nos*
	Water meters and fittings	25,000 sets
Repair Works;	Service mains	1,700 pls
	Service connections	3,400 pls

* include replacement related to the replacement of service mains

4) Extension of Service Network

The scope of work for extension of service network is to infill service mains in the selected area against prospected increase of demand up to the year 2000.

The service area is divided into EZ's in each PC as the same as the infill / ext. The works under the present scope cover 24 EZ's or 4 PCs including major work items as follows:

Installation of service mains;	
secondary mains	78.7 km
tertiary mains	196.7 km
total	275.4 km
Installation valves;(include existing mains)	1,373 pls
Connection with existing mains;	1,007 pls
Installation of service connection;	14,500 nos

Figure-5.2 shows General Sequence of Pipework Rehabilitation, and Figure-5.3 shows General Work Sequence of Meter & Fitting Rehabilitation.

Figure-5.2 DISTRICT - ZONE6 - PCI - EZI - PIPEWORK REHABILITATION GENERAL SEQUENCE

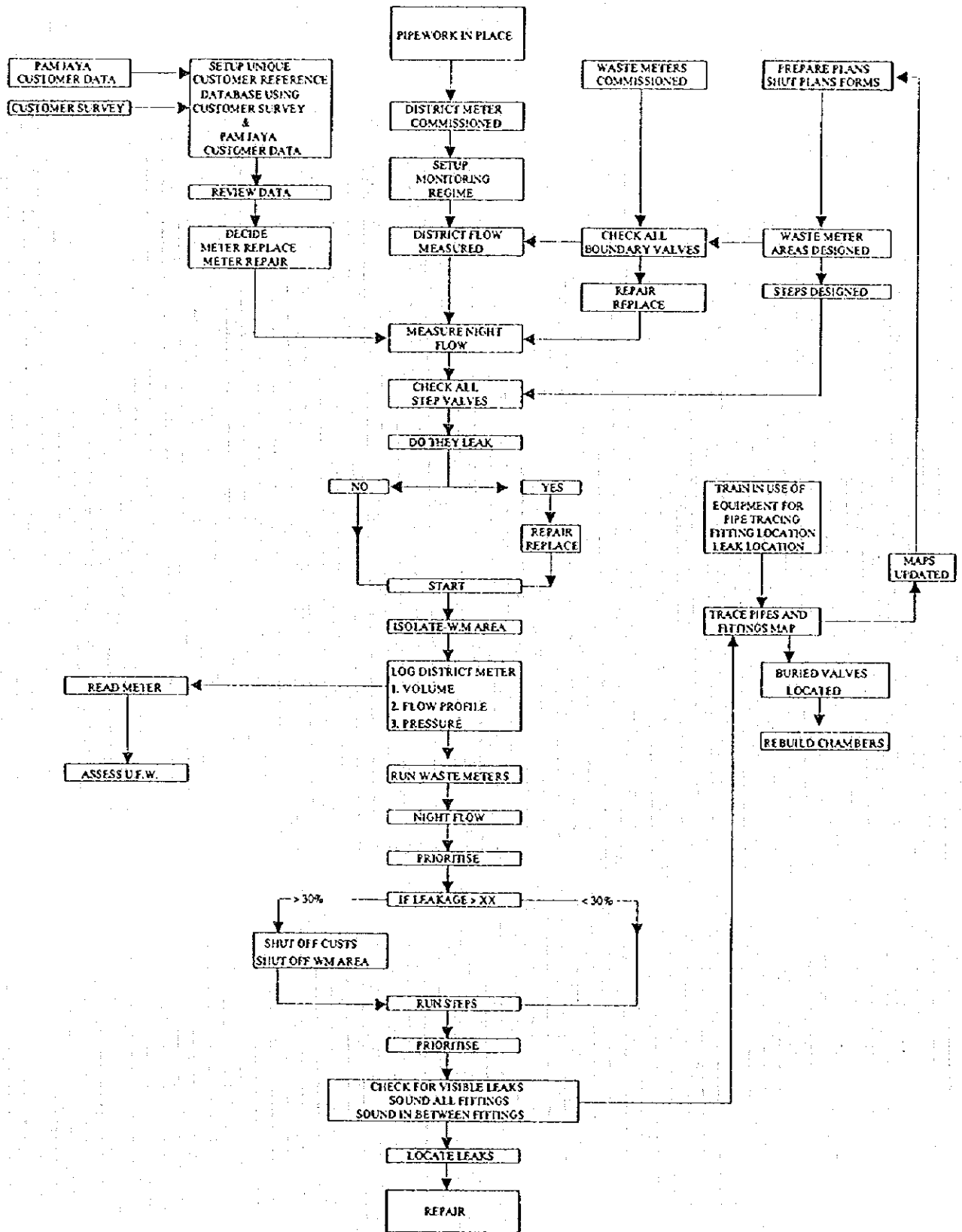
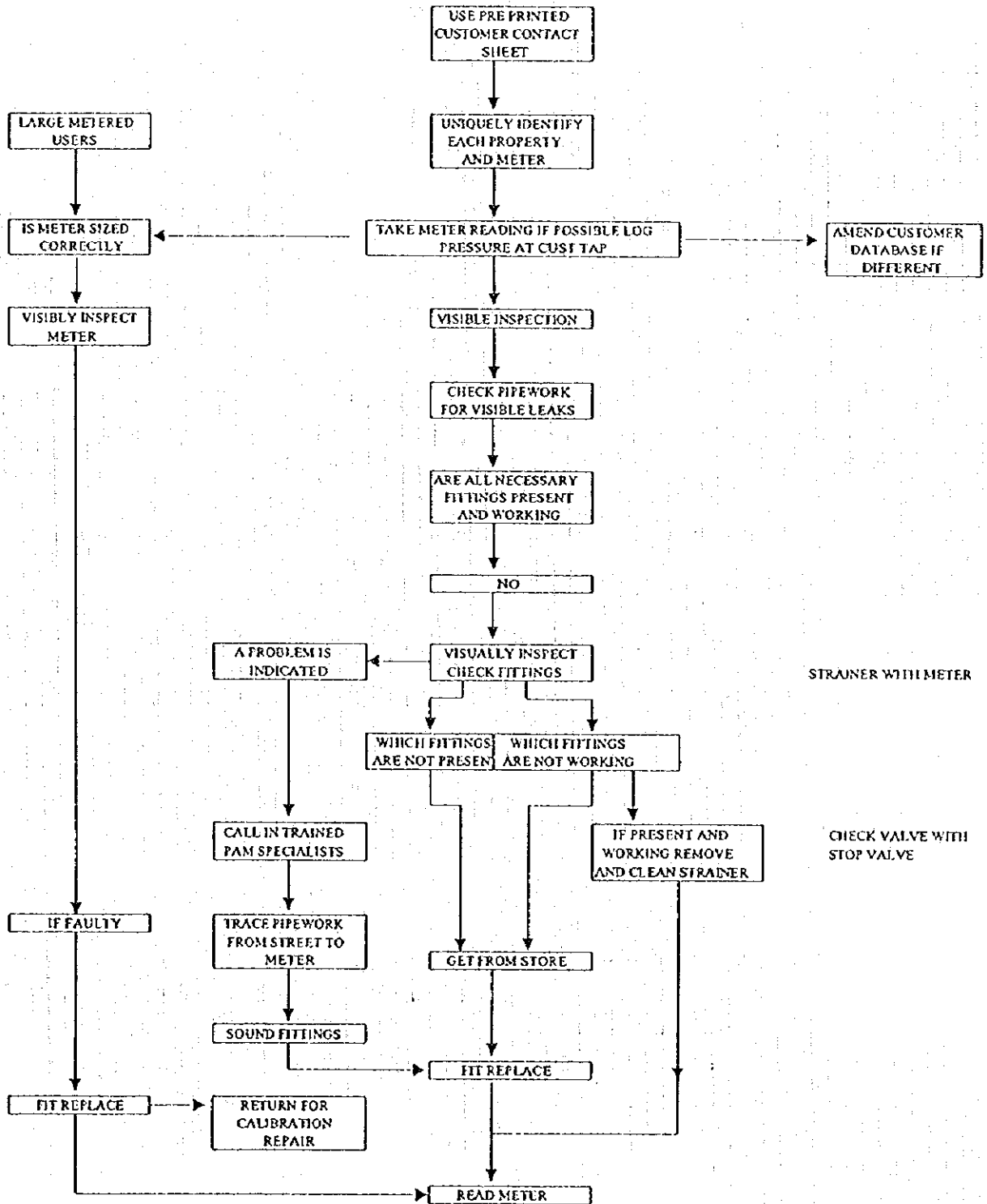


Figure-5.3

METER & FITTING REHABILITATION
GENERAL WORK SEQUENCE



5.2.2 Technical Assistance on Institutional Development

The technical assistance has three parts, Operation and Maintenance, Management Improvement, and Computerization of Network Database.

(1) Operation and Maintenance

Considering the seriousness of raw water pollution, continuous monitoring of both raw water and treated water qualities needed urgently. Also improvement of plant operation by upgrading the plant operators is necessary to optimize water treatment against the present raw water using present system.

For the training of relative matters, the Water Supply and Environmental Training Center being built by the JICA grant program will be utilized.

The training will include the following curricula :

- 1) Laboratory Staff
 - Routine laboratory testing of water quality at various stages of the treatment process;
 - Laboratory testing for various pollutants and toxic matters;
 - Making diagnosis on the water quality to improve the operation technique of water treatment;
 - Keeping records of testing, reporting on water quality problems and improvement plant;
 - Provision of laboratory equipment.

- 2) Treatment Plant Supervisors and Operators
 - Fundamental knowledge of coordinating production and distribution
 - Understanding of the role of each unit process of treatment and consequential effect of drinking water production;
 - Understanding of the functions of mechanical and electrical equipment for the water treatment process;
 - Practical operation of mechanical and electrical equipment for the unit and overall process and record keeping of the operation;
 - Monitoring of mechanical and electrical equipment for finding abnormalities and reporting on them, as preventive maintenance practices,
 - Regular meetings attended by the plant supervisor, foreman of unit process operation to assess the plant performance for economizing chemicals, fuel,

power and in-plant water consumption, as well as checking inventories of spare parts, and

- Regular meetings attended by the laboratory staff, plant supervisor, foreman of unit process operation to exchange information on water quality control.

(2) Management Improvement

Fixed Assets Control and Inventory Control are most urgently needed to strengthen the PAM Jaya's financial foundation.

1) Fixed Assets Control

- Improvement of the accuracy of book records by reconciling them with physical assets;
- Definition and unification of operational procedures preparing universal procedural manual, and
- Assistance in the implementation of the new procedures.

2) Inventory Control

- Definition of the target and point of control for the inventory control;
- Specification of necessary management information to achieve the target and satisfy the point of control;
- Formulation of working system to prepare the management information;
- Adjustment of the present system, and
- Review of the water meter control system.

(3) Operation and Management Information System

- Definition of function and tasks assigned to each operation and management unit;
- Specification of needed information to carry out the function of tasks, and
- Adjustment of the present information system.

(3) Computerization of Network Database

- Preliminary study on a computerized network database, including phased implementation to identify possible problems of the current mapping system and available information, for introduction of a computerized system;
- Coordinate with DKI Geographical Information System (GIS) including exchange of information;

- Study the application of GIS to PAM Jaya mapping system and identify the necessary works to be developed by PAM Jaya, and
- Recommend PAM Jaya on necessary revisions of GIS in view of application to PAM Jaya mapping system.

6. PROGRESS OF EACH PJSIP

6.1 PJSIP (IBRD)

At the end of January 1995, 35 EZ's had been handed over to PAM Jaya by the PJSIP Consultants. The average level of UFW of the 35 EZ's at hand over was about 24 % of inflow. Further survey and UFW checking work have been undertaken successfully in 14 of 20 EZ's handed over in Pulogadung. Details of UFW at hand over shows that total UFW increased in the 14 EZ's slightly, but due to a large increase in total consumption, the actual level of UFW as a percent inflow reduced from approximately 24 % to about 19 %.

Although the first EZ was handed over to PAM Jaya in early 1993, a specific budget for routine UFW control has not yet been determined or allocated. As interim measure in Pulogadung, however, the technical budget has recently been increased for fund this work.

An annual checking rate of 40 EZ's is required to check each of the 20 EZ's handed over in Pulogadung rayon at interval of about six months as recommended under PJSIP. During the whole of 1994, only 9 EZ's in Pulogadung were checked. In the Kramat Block, 15 EZ's have already been handed over to PAM Jaya, but no checking has been done so far. While it is acknowledged that the rayon staff are still "on a learning curve", it is recommended that far more emphasis and support should be given to this work from the top level of management in PAM Jaya down-wards to intensify the effort expended.

Pilot Wastage Control Project of PJSIP, total UFW losses were estimated at 76%, 69% and 20% of inflow respectively for the areas of Pluit, Tanjung Duren and Gelora Senayan before any remedial work was carried out. After leakage control work, estimates were made of the proportions of losses attributable to non-physical losses and physical losses. The result are shown in Table-6.1.

TABLE-6.1 RESULT OF 1988 PILOT WASTAGE CONTROL PROJECT OF PJSIP

PILOT ZONES	INITIAL UFW LEVEL (% OF INFLOW)			FINAL UFW LEVEL (% OF FLOW)
	NPL	PL	TOTAL	
Pluit	9	67	76	30
Tanjung Duren	9	60	69	33.8
Gelora Senayan	14.5	5.5	20	5.5

An assessment of the achievements and recent and forecast impacts on UFW of the combined efforts of PJSIP and PAM Jaya on the World Bank assisted component of PJSIP has been made in June 1995. The assessment also included a review of the PJSIP approach to UFW control, together with recommendations for important changes including ;

- future strategies for a UFW action plan involving a modified approach based on "closed"(EZ's). This change had also been recommended in the earlier JWSSP Master Plan Review Report and is already used in the OECF assisted component of PJSIP.
- a methodology for carrying out UFW tests on a routine basis in EZ's originally designed for the PJSIP project on a "closed" basis (the method for assessing UFW at the time of hand-over of EZ's to PAM Jaya is not suitable as a routine procedure);
- management and administrative/institutional actions for improved control of physical and non-physical losses.

6.1.1 Summary of Progress

The progress of Zone 1,2 and Zone 4,5 at the end of September 1995 are as follows:

Zone 1,2

The service network laying work	56%
House Connections	
Rehabilitation/transfer	39%
New	61%
Primary Network (>300mm)	
Rehabilitation	17%
Extension	63%
Large meters (2"-300mm)	
Rehabilitation	69%
Design	
Final Engineering Design	100%
Tendering/Evaluation	94%
Implementation	
Supply	70%
Laying	61%
UFW Reduction<30%	31%
Network Database	
Master File(Primary)	100%
Master File(Second.,Tert.)	92%
Up-Dating As-Built	26%
Network Modeling	
Hydraulic Design	100%
Primary Network Calibration	100%
Environment & Traffic Calibration	
Under process during implementation	

Zone 4,5

Service Network(50-250mm)	59%
Primary Network(>300mm)	66%
Distribution Center R5	
M/E Equipment	91%
Civil	86%
Design	
Final Engineering Design	100%
Tendering/Evaluation	100%
Implementation	

Supply	
Laying	
UFW Reduction < 30%	Non applicable
Network Database	
Master File	100%
Up-Dating As-Built	0%
Network Modeling	100%

6.2 PJSIP (OECF)

6.2.1 Work Schedule

The original schedule of PJSIP Zone 3 & 6, Phase I is for 46 months period starting from April 1992 for the study of prioritization for Phase I Work and detailed design up to February 1996 for completion of the rehabilitation of service network.

The above mentioned original schedule is, however to be revised for extension at about 18 months from the present status of the Project as described in the following.

6.2.2 Project Status

(1) Packing Plan

The detailed packing plan was made for the implementation of the project. As the results, the total number of packages was determined at 32 as shown:

Primary Network;	
Procurement	2 packages
Construction	3 packages
Service Network;	
Procurement	
pipe material	3 packages for infill/ext
	2 packages for rehabilitation
water meters	
and fittings	2 packages for infill/ext and rehab.
vehicles	2 packages
equipment	4 packages
Construction	14 packages

infill/ext	7 packages
extension	3 packages
rehabilitation	4 packages

(2) **Present Status**

Design Work ; all design work except rehabilitation have been completed
 Tendering ; 28 tenders out of 32 were carried out and 26 tenders were contracted.
 Construction ; out of 26 contract packages, 8 packages (all procurement packages) have been completed, while all of 13 contracted packages are under construction.

Overall progress at the middle of October 1995 is estimated at 56.6 % &, as follows:

Procurement Packages	77.6 %
Construction Packages	24.7 %
Overall Progress	56.6 %

It is noted that the commencement of rehabilitation packages requires the establishment of UFW Task Force which is presently under the consideration by the Project Office. This establishment shall be required in an early occasion. On the other hand the construction work in respective packages shall be accelerated, since present progress for the most of packages are behind schedule from the original schedule in the contracts.

Regarding the rehabilitation work for service network, it is estimated that the works will require about 22 months at the shortest time after commencement of the work, i.e., after contract signing and establishment of UFW Task Force.