

して利用可能となる。従ってこれら2つの計画のフィージビリティ調査は一つの多目的計画と考えて実施することが望ましいと云えよう。

Ⅲ. 3 段階的实施計画

夫々の計画の現況と今後実施されるべき事業とそれに要する時間を考慮に入れると、ソンドゥ多目的開発の実施計画は次の様になると思われる。

	F/S*	D/D*	建設	供用開始
ソンドゥ/ミリウ水力	1985	1987	1989~92	1993
カノー平野灌漑				
(i) 8.540ha	1986/87	1988/89	1991~1996	1993~1997
(ii) 7.560ha	(1986/87)	(1988/89)	(1992~1997)	(1994~1998)
(iii) 10.000ha	(1988/89)	(1991/92)	(1994~2000)	(1996~2000)
マグワグワダム水力	1988/89	1990/91	1992~1995	1996

* フィージビリティ調査

* 詳細設計

この実施計画では、次の点を考慮していることを追記する。即ち、灌漑計画の建設速度は、一般的に3次水路と耕地内施設の建設の速さに左右される。特に耕地内施設の整備には農民の直接協力や、場合によっては耕地の再配分などが必要となる。更にこの地域の農民は灌漑による農業については不馴れであり、水管理を習熟するには相当の期間を必要とするものと思われる。これらの点を考慮に入れると、3次水路及び耕地内施設の建設ペースは毎年2,000ha位が現実的であると思える。

TABLES

表-1 1970, 1979, 及び1983年時価格での部門別GDP

(Unit: 10^3 k t , % shares in parentheses)

Sector	1970	1979	1983
Agriculture, forestry and fishery	173.0 (33.1)	679.0 (34.4)	1,091.6 (33.2)
Mining and quarrying	2.4 (0.5)	5.0 (0.3)	6.2 (0.2)
Manufacturing	62.2 (11.9)	249.8 (12.6)	408.3 (12.4)
Electricity and water	12.0 (2.3)	42.3 (2.2)	76.8 (2.3)
Construction	62.4 (5.1)	117.5 (5.9)	180.2 (5.5)
Wholesale and retail trade, hotels and restaurants	55.8 (10.7)	209.2 (10.6)	346.3 (10.5)
Transport & communications	40.8 (7.8)	114.7 (5.8)	195.3 (5.9)
Government services	76.5 (14.7)	290.3 (14.7)	481.4 (14.6)
Other services	72.8 (13.9)	267.2 (13.5)	505.2 (15.4)
Total GDP at factor cost	521.9	1,975.0	3,291.2

Sources: Statistical Abstracts 1970, 1979 and 1983

表-2 電力系統内の既設発電施設 (1/2)

Plant	No. and Capacity of Generator (No. x MW)	Gross Head(m)/ Steam Pressure	Total installed Capacity (MW)	Effective Capacity (MW)	Annual average Energy		Year of Commissioning
					1979 - 1983 (GWh)	1983 (GWh)	
(A) Hydro Power Plants							
(I) Upper Tana							
1) Tana (KPC)	-	56.5-62.0	14.4	12.4	69.8	1953	
2) Wanji (KPC)	-	-	7.4	7.4	43.6	1952	
Sub-total (I)			21.8	19.8	113.4		
(II) Seven Forks							
3) Kindaruma (TRDC)	2 x 22	34.0	44.0	44.0	170.4	1968	
4) Kamburu (")	2 x 30.5	66.6-81.5	91.5	84.0	342.2	1974	
	1 x 30.5					1976	
5) Gitaru (")	2 x 72.5	142.0	145.0	145.0	638.8	1978	
6) Masinga (TARDA)	2 x 20	25.8-49.8	40.0	40.0	(59.7)	1981	
Sub-total (II)			320.5	313.0	(1,193.1)		
(III) Small Hydro							
7) Ndula	-	-	2.0	2.0		-	
8) Mesco	-	-	0.4	0.4		-	
9) Sagana Falls	-	-	1.5	1.5	22.4	-	
10) Selby Falls	-	-	0.3	0.3		-	
11) Gogo Falls,	2 x 1.0	-	2.0	2.0*		-	
Sub-total (III)			6.2	6.2	22.4		
Total Capacity of Hydro (I+II+III)					348.5	339.0	(1328.9)
(B) Thermal Power Plants							
(i) Oil-Fired Steam							
1) Mombasa-Kipevu	1 x 5	-	5	4		1958	
	"	-	5	4*		1958	
	1 x 12.5	-	12.5	10*	239.0	1961	
	"	-	12.5	10		1962	
	1 x 30	-	30	27		1973	
	1 x 33	-	33	30		1976	
Sub-total (I)			98.0	85	239.0		

表-2 電力系統内の既設発電施設 (2/2)

Plant	No. and Capacity of Generator (No. x MW)	Gross Head(m)/ Steam Pressure	Total installed Capacity (MW)	Effective Capacity (MW)	Annual average Energy		Year of Commissioning
					1979 - 1983 (GWh)	1972 - 1983 (GWh)	
(II) Gas-turbine							
2) Nairobi South	1 x 13.5	-	13.5	14	(13.0)	1972	
	2 x 2.2	-	4.4	8*	-	-	
3) Mombasa-Kipevu	1 x 12.2	-	12.2	22	(13.0)	1972	
Sub-total (II)			30.1				
(III) Diesel							
4) Nairobi South	-	-	-	8	-	before 1955	
5) Mombasa-Ruiru	-	-	20.1	2	(6.3)	"	
6) Mombasa-Mbaraki	-	-	-	2	-	"	
Sub-total (III)			20.1	12	(6.3)		
(IV) Geo-thermal							
7) Olkaria (KPC)	1 x 15	5 bars press.	15	15	(132.3)	1981	
	"	"	15	15	-	1982	
Sub-total (IV)			30.0	30.0	(132.3)		
Total Capacity of Thermal (I+II+III+IV)			178.2	149.0	(390.6)		
(C) Import from Uganda (UEB)			30.0	30.0	212.0	Since 1958	
Grand Total (A+B+C)			556.7	518.0	(1931.5)		

(Source: KP&L statistics & Turkwell Report by PCR)

Note: 1) Small isolated stations are not included herein.

2) UEB hydropower is considered to be non-firm power from 1988 onward.

3) Annual average energy is worked out based on actual generation for 5 years.

Figures in parenthesis means data being not available for 5 years.

4) Asterisked figures mean the effective capacity after duly repair in due time.

表-3 ケニアにおける電力需要予測

Year	Demand (MW Sent Out)			Energy (GWh Sent Out)		
	Low	Median	High	Low	Median	High
1983	328	328*	328	1,984	1,984*	1,984
1984	341	341	341	2,060	2,060	2,060
1985	355	355	355	2,148	2,148	2,148
1986	371	371	371	2,240	2,240	2,240
1987	382	387	393	2,314	2,340	2,379
1988	395	406	420	2,392	2,457	2,542
1989	409	429	452	2,473	2,592	2,730
1990	424	454	487	2,564	2,747	2,945
1991	447	482	519	2,705	2,912	3,136
1992	472	511	553	2,853	3,087	3,340
1993	498	541	589	3,010	3,272	3,557
1994	525	574	627	3,176	3,489	3,789
1995	554	608	668	3,351	3,677	4,035
1996	584	645	711	3,535	3,898	4,297
1997	617	683	757	3,729	4,131	4,576
1998	650	724	807	3,934	4,379	4,874
1999	686	768	859	4,151	4,642	5,191
2000	724	814	915	4,379	4,920	5,528
2002		915			5,528	

Source: Generation and Economic Study for the Turkwell Gorge Project, Preece, Cardew and Rider, July 1984

* Actual values

表-4 ケニア西部における電力需要予測

	Year		
	1983 ^{*/}	1993	2000
Domestic & small commercial	48 GWh (19.0%)	127 GWh (26.5%)	2969 GWh (34.1%)
Public	8 (3.2%)	17 (3.5%)	35 (4.6%)
Industrial & large commercial	197 (77.9%)	335 (69.9%)	486 (61.5%)
Total	253 GWh	479 GWh	790 GWh
Maximum	41 MW	78 MW	129 MW
Turkwell forecasts ^{**/}		74 MW	123 MW

^{*/} Actual converted to value on sent-out basis

^{**/} "Sent-out" basis

表-5 計画の最適化

Work Item	Combination-A		Combination-B		Combination-C		Combination-D		Combination-E	
	Sondu /Miriu R-O-R	Maraboi R-O-R	Sondu /Miriu Reservoir	Nyamari- mba R-O-R	Magwagwa Reservoir	Sondu /Miriu R-O-R	Magwagwa Reservoir	Sondu /Miriu Reservoir	Magwagwa Reservoir	Maraboi Reservoir
1. Firm Discharge (m ³ /sec)	3.30	3.30	17.10	3.30	24.10	24.10	16.00	25.60	24.10	24.10
2. Plant Discharge (m ³ /sec)	29.60	29.60	28.40	29.60	72.30	39.90	48.00	42.70	72.30	39.90
3. Optimum Power Scale										
Installed Capacity (MW)	32.83	50.49	46.90	55.05	94.60	48.60	54.90	72.90	50.70	69.22
Firm Energy (GWh/yr)	32.01	49.23	246.30	53.68	276.20	237.48	160.20	383.30	147.90	364.05
Secondary (GWh/yr)	155.55	239.21	54.60	260.86	57.90	14.91	87.50	36.20	32.70	22.86
Dump Energy (GWh/yr)	14.45	22.22	-	24.23	-	46.08	-	-	-	70.63
4. Economic Scale on Power Sector										
Benefit (mil. US\$) *	79.23	121.85	174.40	132.87	351.19	305.85	386.00	450.60	300.93	345.18
Cost (mil. US\$) *	72.14	113.70	202.30	143.26	305.85	45.34	-64.60	8.63	44.25	44.25
B - C (mil. US\$) *	7.09	8.15	-27.90	-10.39	11.36	5.49	7.36	7.36	11.36	5.49
EIRR	10.95	10.70	8.69	9.28	8.69	8.69	8.69	8.69	8.69	8.69
Cost per Energy (US\$/kWh)	5.74	5.88	7.31	6.80	5.49	5.49	5.49	5.49	5.49	5.49
5. Economic Scale on Irrigation Sector										
Irrigation Area (ha)	15,610	15,610	25,610	15,610	25,610	25,610	25,610	25,610	25,610	25,610
Benefit (mil. US\$) *	94.16	94.16	121.88	94.16	121.88	121.88	121.88	121.88	121.88	121.88
Cost (mil. US\$) *	52.08	52.08	78.64	52.08	78.64	78.64	78.64	78.64	78.64	78.64
B - C (mil. US\$) *	42.08	42.08	43.24	42.08	43.24	43.24	43.24	43.24	43.24	43.24
6. Total Economic Scale										
Benefit (mil. US\$) *	173.39	216.01	296.28	227.03	473.07	384.49	507.88	529.24	379.57	467.06
Cost (mil. US\$) *	124.22	165.78	280.94	195.34	384.49	88.58	529.24	-21.36	379.57	87.49
B - C (mil. US\$) *	49.17	50.23	15.34	31.69	88.58	88.58	88.58	88.58	88.58	88.58

* Discounted value at 10 %

表-6 KP & L系統における最適設備拡大計画
(1986 - 2005)

Plant	Type	Capacity MW	Installation Year	Notes
Kiambere	Hydro	144	1988	Under Construction
Turkwell	Hydro	100	1992	Committed (the first date of 1993)
Sondu/Miriu 1	Hydro	48.6	1992	
Olkaria IV	Geothermal	30	1993	
Coal-1	Coal	60	1993	
Sondu/Miriu	Hydro	94.6	1996	
Eburru	Geothermal	15	1998	
Coal-2	Coal	120	1998	
Coal-3	Coal	60	2001	
Coal-4	Coal	60	2002	
Coal-5	Coal	120	2003	
Coal-6	Coal	60	2004	

表-7 建設費

Description	Foreign Currency (1,000 US\$)	Local Currency (1,000 KShs.)	Total (1,000 KShs.)
1. Preparatory works	4,005.0	14,631.6	74,706.6
2. Civil works	14,009.8	106,884.5	317,031.5
3. Metal works	8,338.0	11,815.4	136,885.4
4. Generating equipment & substation equipment	15,928.0	22,152.0	261,072.0
5. Transmission line	1,774.0	5,464.0	32,074.0
Total (1 - 5)	<u>44,054.8</u>	<u>160,947.5</u>	<u>821,769.5</u>
6. Land acquisition & compensation	-	194.1	194.1
7. Administration expenses	-	16,435.4	16,435.4
8. Engineering services	6,030.0	-	90,450.0
Total (1 - 8)	<u>50,084.8</u>	<u>177,577.0</u>	<u>928,849.0</u>
9. Physical contingency	3,706.5	15,786.2	71,383.7
10. Price escalation	10,144.4	123,510.7	275,676.7
Grand total	<u>63,935.7</u>	<u>316,873.9</u>	<u>1,275,909.4</u>

Note: A cost of US\$ 3 million (KShs 45 million) is necessary for detailed design and preparation of tender document on the pre-construction stage besides the above costs.

表一 8 年次資金計画

(Unit: F.C. 1000 US\$, L.C. 1000 KSh)

Description	1989		1990		1991		1992	
	F.C.	L.C.	F.C.	L.C.	F.C.	L.C.	F.C.	L.C.
1. Preparatory Works	4,005.0	14,631.6	4,005.0	14,631.6	-	-	-	-
2. Civil Works								
2.1 River Diversion	401.8	2,254.4	395.4	2,239.7	-	6.4	20.7	-
2.2 Waterway	10,995.1	86,590.7	2,946.0	23,861.9	6,068.8	46,507.8	1,282.8	10,102.0
2.3 Power Station	1,927.1	13,769.7	192.7	1,377.0	1,013.0	6,933.0	699.6	5,236.7
2.4 Outlet Channel	101.6	514.0	10.1	51.4	-	-	67.7	227.4
2.5 Road Construction	584.2	3,755.7	584.2	3,755.7	-	-	-	23.8
Sub-total (2)	14,009.8	106,884.5	4,128.4	31,279.7	7,081.8	53,440.8	2,056.5	15,586.8
3. Metal Works								
3.1 Weir Metal Work	758.5	1,211.4	118.4	-	209.6	476.5	430.5	734.9
3.2 Intake Metal Work	1,600.3	2,553.8	249.7	-	394.7	699.1	955.9	1,854.7
3.3 Penstock Metal Work	5,979.2	8,050.2	703.0	-	1,205.2	1,712.9	2,511.6	3,692.1
Sub-total (3)	8,338.0	11,815.4	1,071.1	-	1,809.5	2,888.5	3,898.0	6,281.7
4. Generating Equipment and Substation Equipment								
4.1 Generating Equipment	11,908.0	16,001.0	1,765.0	-	1,474.0	1,668.1	6,924.4	10,611.6
4.2 Substation Equipment	4,002.0	6,151.0	586.6	-	-	-	2,449.1	2,772.9
Sub-total (4)	15,928.0	22,152.0	2,351.6	-	1,474.0	1,668.1	9,373.5	13,383.6
5. Transmission Line	1,774.0	5,464.0	235.0	-	490.5	555.3	737.9	3,029.9
Total (1 - 5)	44,054.8	160,947.5	11,791.1	45,911.3	10,855.8	58,552.7	16,065.9	38,282.0
6. Land Acquisition and Compensation	-	194.1	-	194.1	-	-	-	-
7. Administration Expenses	-	16,435.4	-	4,455.6	-	4,427.8	-	5,585.4
8. Engineering Services	6,030.0	-	1,634.7	-	1,624.5	-	2,049.3	-
Total (1 - 8)	50,084.8	177,577.0	13,425.8	50,561.0	12,480.3	62,980.5	18,115.2	43,867.4
9. Physical Contingency	3,706.5	15,786.2	1,159.7	5,056.1	1,059.3	6,042.5	1,111.1	3,252.0
10. Price Escalation	10,144.4	123,510.7	2,077.0	26,423.7	2,392.4	41,959.1	4,076.0	35,462.1
Grand Total	63,935.7	316,873.9	16,662.5	82,040.8	15,932.0	110,982.1	23,302.3	82,581.5

Note: A cost of US\$ 3 million (KShs 45 million) is necessary for detailed design and preparation of tender document on the pre-construction stage besides the above costs in 1987.

表-9 財務收支

(Unit: 10³ KShs)

No.	Year	Local Cost Finance	Interest during Construction	O&M Costs	Loan Repayment	Gross Revenue	Annual Balance	Accumulated Surplus
1.	1987	0	-1,800				-1,800	-1,800
2.	88	0	-1,800				-1,800	-3,600
3.	89	-82,040	-21,795				-103,835	-107,435
4.	90	-110,980	-39,114				-150,094	-257,529
5.	91	-82,580	-67,077				-149,657	-407,186
6.	92	-41,270	-76,723				-117,993	-525,179
7.	93			-18,03	-62,956	142,633	61,646	-463,533
8.	94			-18,03	-62,956	142,633	61,646	-401,887
9.	95			-18,03	-62,956	142,633	61,646	-340,241
10.	96			-18,03	-62,956	142,633	61,646	-278,595
11.	97			-18,03	-62,956	142,633	61,646	-216,949
12.	98			-18,03	-62,956	142,633	61,646	-155,303
13.	99			-18,03	-62,956	142,633	61,646	-93,657
14.	2000			-18,03	-62,956	142,633	61,646	-32,011
15.	01			-18,03	-62,956	142,633	61,646	29,635
16.	02			-18,03	-62,956	142,633	61,646	91,281
17.	03			-18,03	-62,956	142,633	61,646	152,927
18.	04			-18,03	-62,956	142,633	61,646	214,573
19.	05			-18,03	-62,956	142,633	61,646	276,219
20.	06			-18,03	-62,956	142,633	61,646	337,865
21.	07			-18,03	-62,956	142,633	61,646	399,511
22.	08			-18,03	-62,956	142,633	61,646	461,157
23.	09			-18,03	-62,956	142,633	61,646	522,803
24.	10			-18,03	-62,956	142,633	61,646	584,449
25.	11			-18,03	-62,956	142,633	61,646	646,095
26.	12			-18,03	-62,956	142,633	61,646	707,741
27.	13			-18,03	-62,956	142,633	61,646	769,387
28.	14			-18,03	-62,956	142,633	61,646	831,033
29.	15			-18,03	-62,956	142,633	61,646	892,679
30.	16			-18,03	-62,956	142,633	61,646	954,325
21.	17			-18,03	-62,956	142,633	61,646	1,015,971
32.	18			-18,03	-62,956	142,633	61,646	1,077,617

表一10 灌溉施設概要

(1) Main & Secondary irrigation canals and structures

Description	Main canal	Secondary canal
Canal length (km)	24.3	65.9
Trunout (nos.)	30	122
Check	8	110
Culvert	14	152
Drop	3	650
Siphon/Aqueduct	10	1
Others	29	42

(2) Tertiary and on-farm development

Description	Irrigation	Drainage
Tertiary Canal (km)	180	180
Division box (nos.)	6,300	-
Culvert (nos.)	900	900
Distribution canal (km)	400	-
Field drain (km)	-	400

表--11 灌溉計画事業費

Description	F/C	L/C	Total
	(1,000 US\$)	(1,000 KShs)	(1,000 KShs)
1. Preparatory works	2,035	10,222	40,747
2. Main irrigation system	5,331	34,461	114,426
3. Secondary irrigation system	3,906	19,652	78,242
4. Tertiary and on-farm development	8,044	35,761	156,421
5. Land levelling	1,942	6,718	35,848
6. Office and quarters	1,125	5,625	22,500
Sub-total (item 1 to 6)	22,383	112,439	448,184
7. Land acquisition	-	8,494	8,494
8. O&M equipment	852	666	13,446
9. Administration expenses	-	31,373	31,373
10. Engineering services	5,976	-	89,640
11. Price escalation	8,507	164,171	291,776
Sub-total (item 1 to 11)	37,718	317,143	882,913
12. Physical contingency	3,772	31,714	88,294
Total:	41,490	348,857	971,207

FIGURES

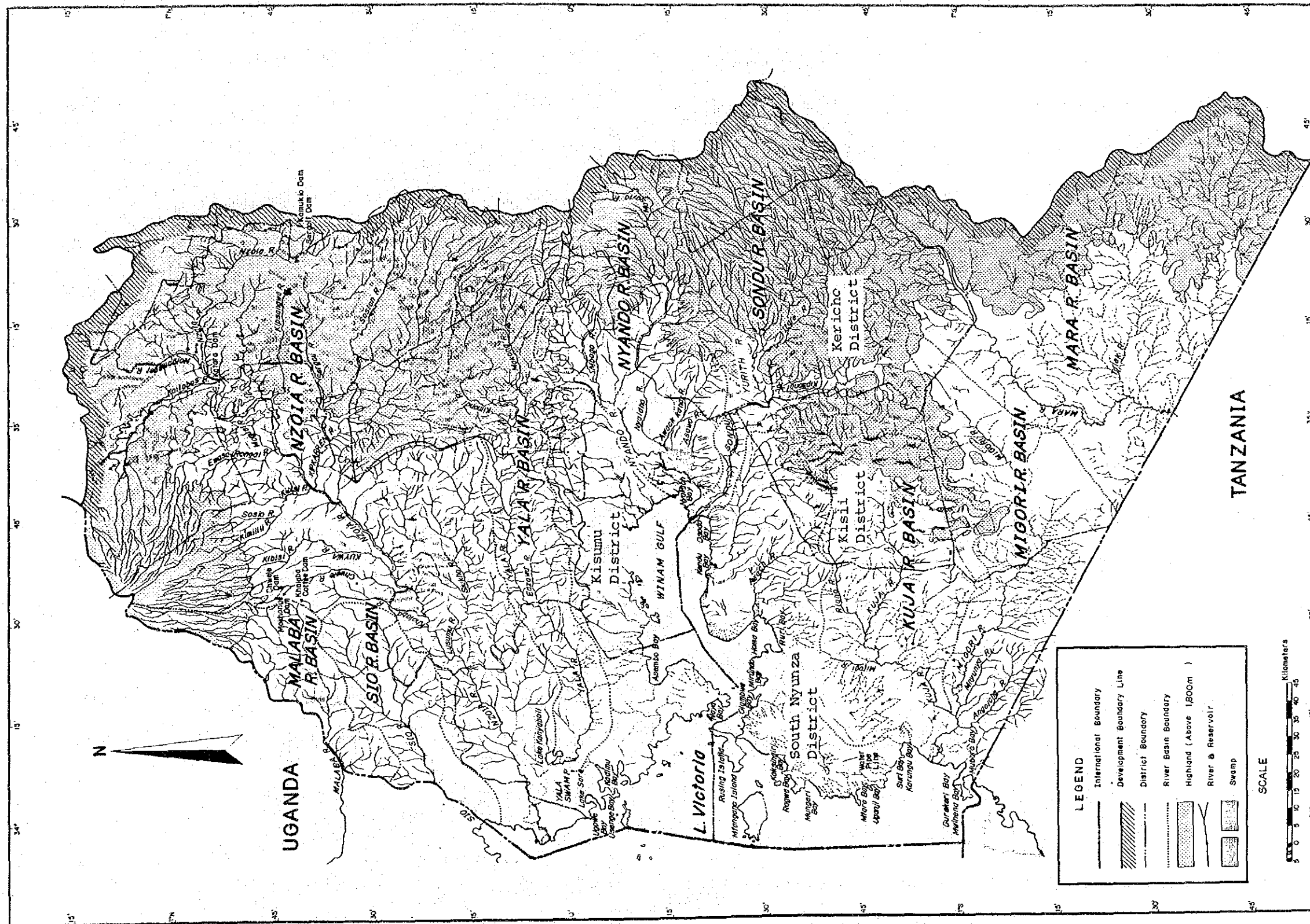


図-1
行政区分及び河川流域区分図

REPUBLIC OF KENYA
SONDU RIVER
MULTIPURPOSE DEVELOPMENT PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY

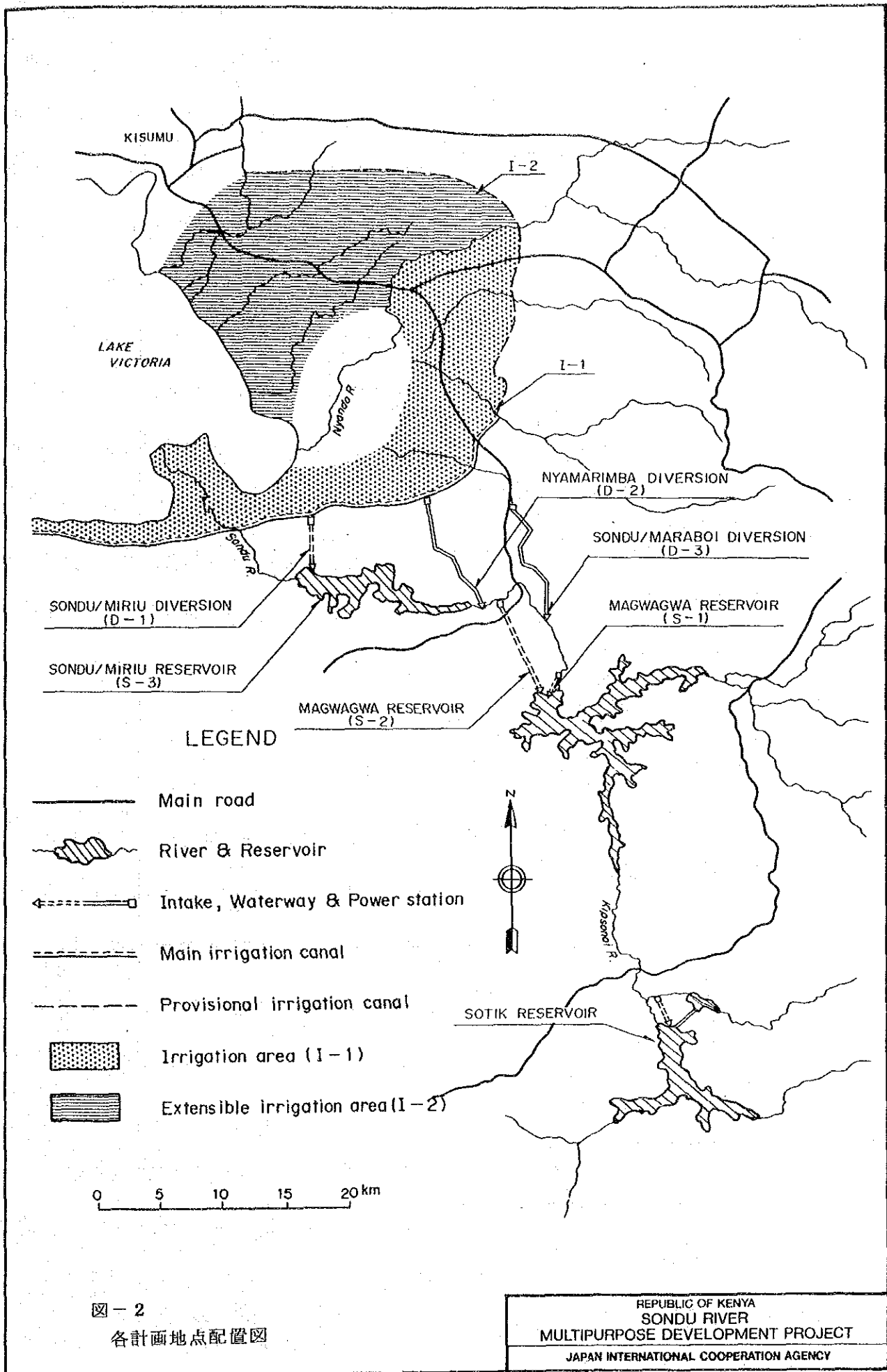


図-2
各計画地点配置図

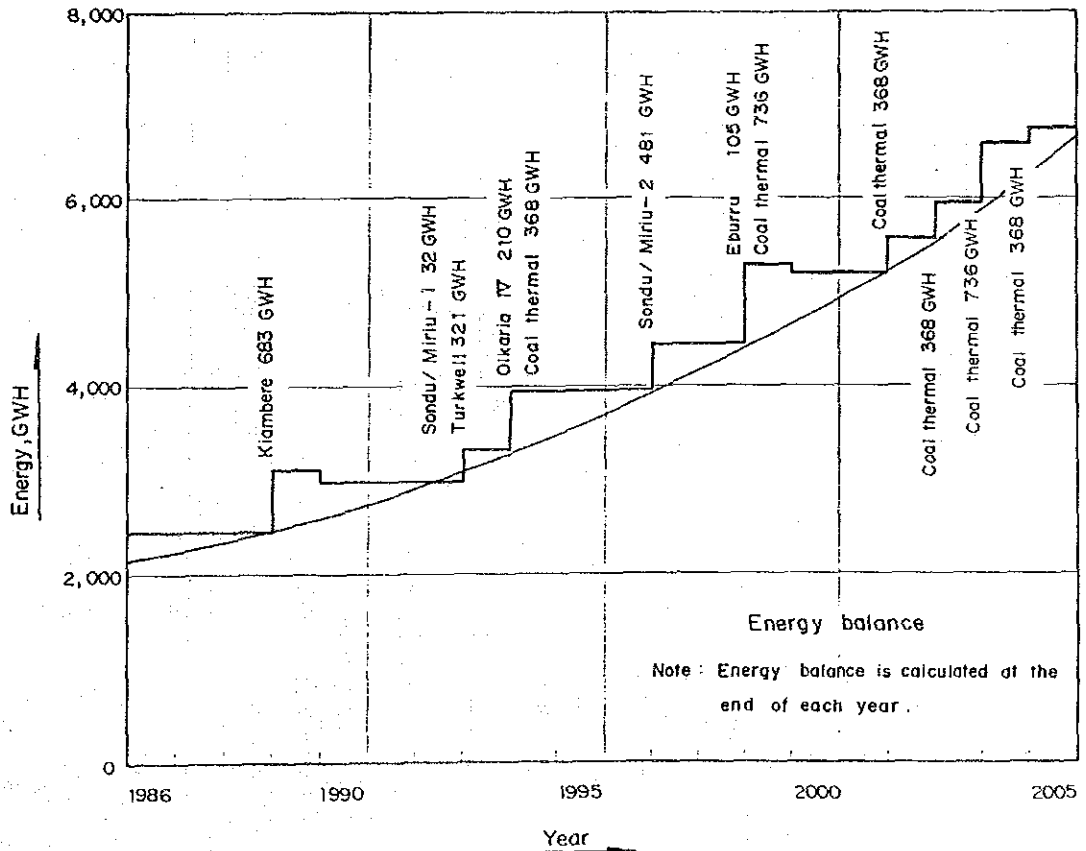
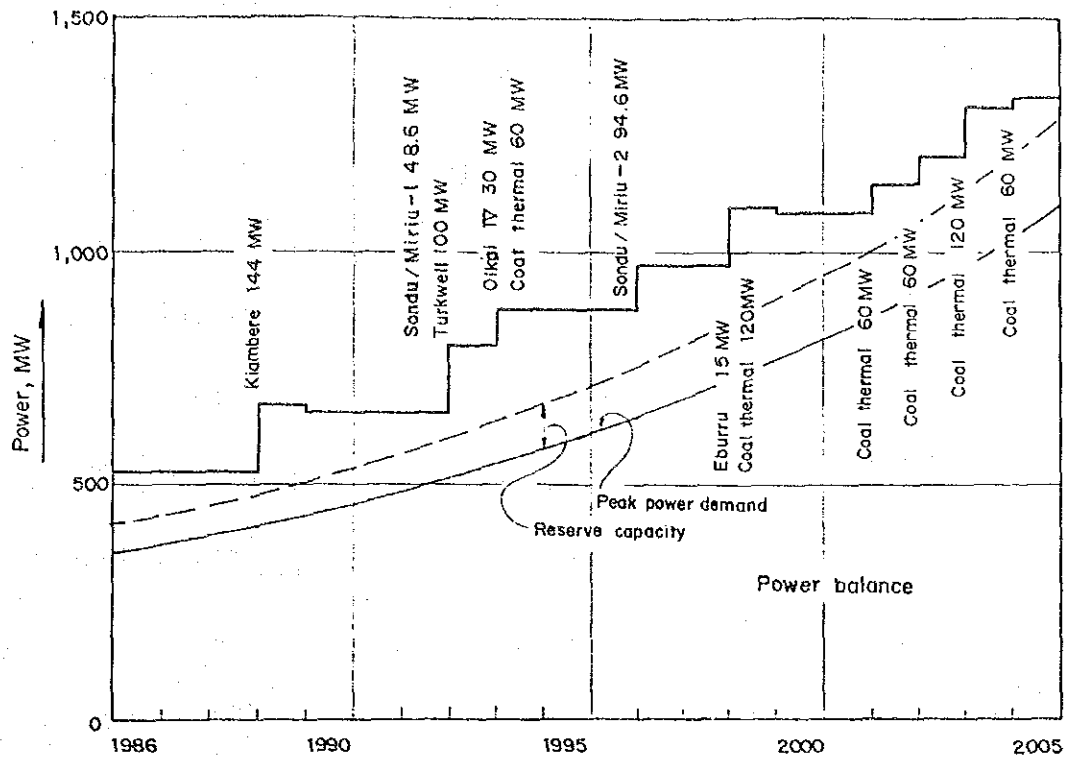


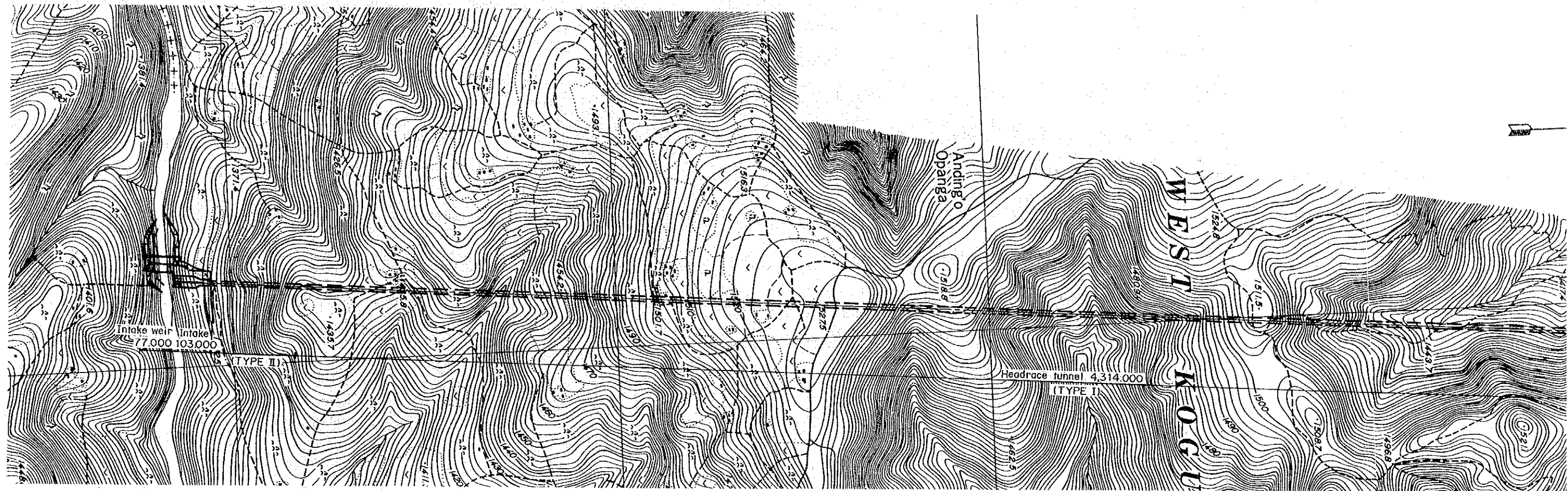
図-3
 KP & L 電力供給系統需要に対する
 ピーク出力及び電力量収支

	Year										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<u>Sondu/Miriu Diversion</u> (first stage)											
Finance & tendering											
Detailed design											
Construction											
<u>Magwagwa reservoir</u> (second stage)											
Feasibility study											
Finance & tendering											
Detailed design											
Construction											

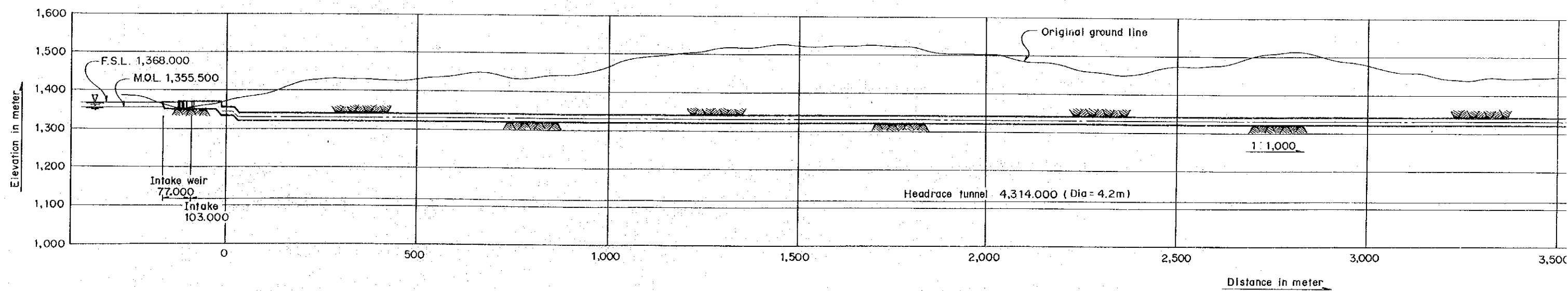
図-4

ソンドゥ/ミリウ開発の実施計画案

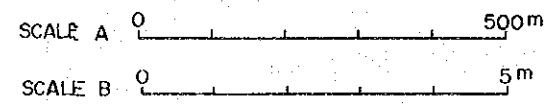
REPUBLIC OF KENYA
SONDU RIVER
MULTIPURPOSE DEVELOPMENT PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY



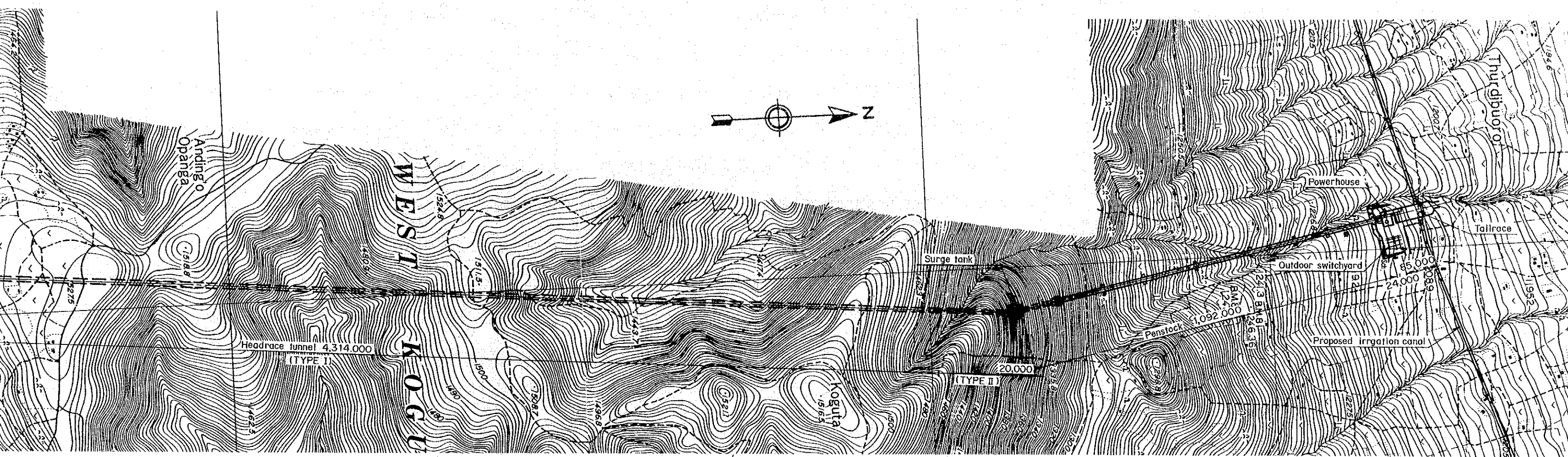
PLAN SCALE A



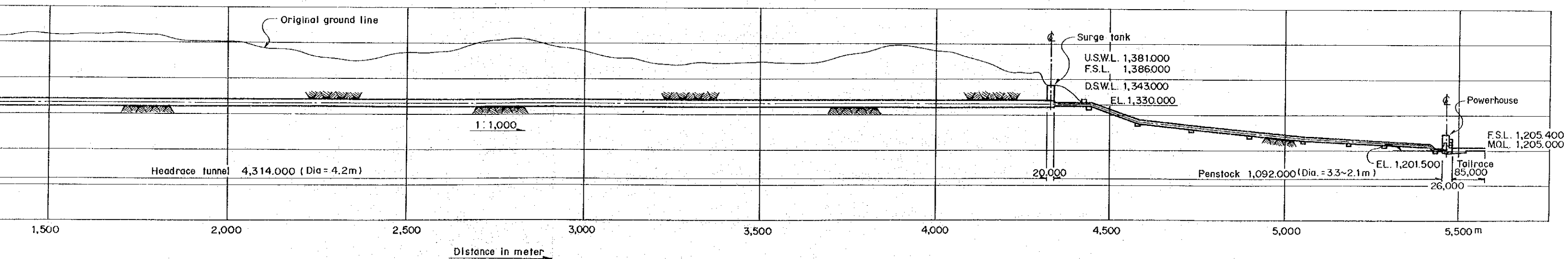
Distance in meter



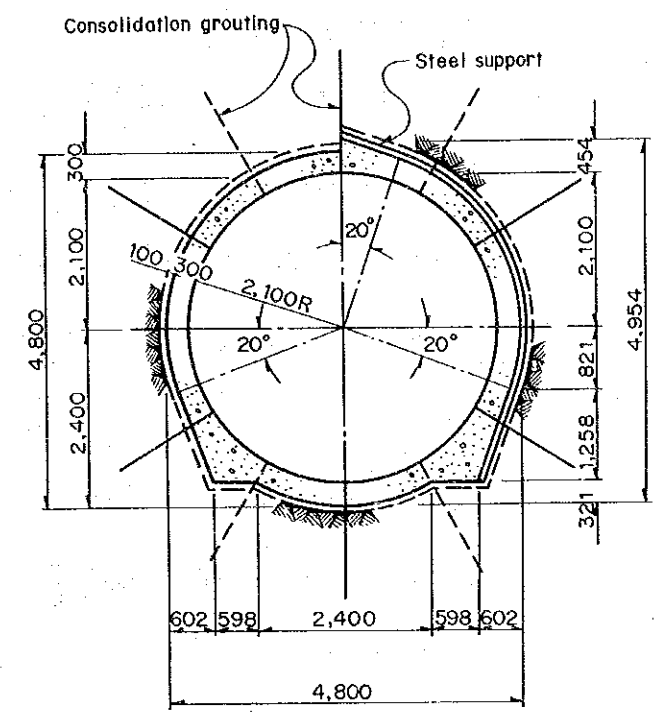
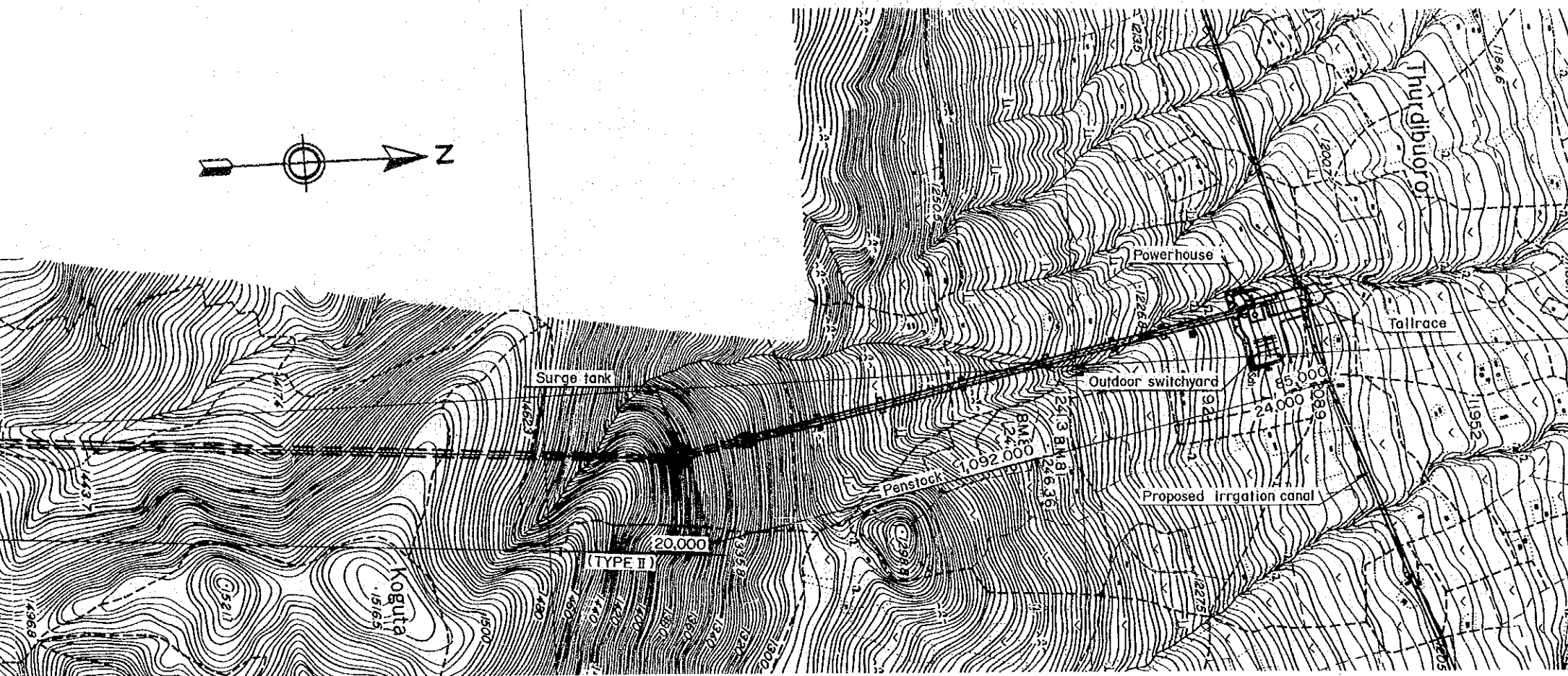
PROFILE SCALE A



PLAN SCALE A



PROFILE SCALE A



TYPE I TYPE II
TYPICAL SECTION OF HEADRACE TUNNEL SCALE B

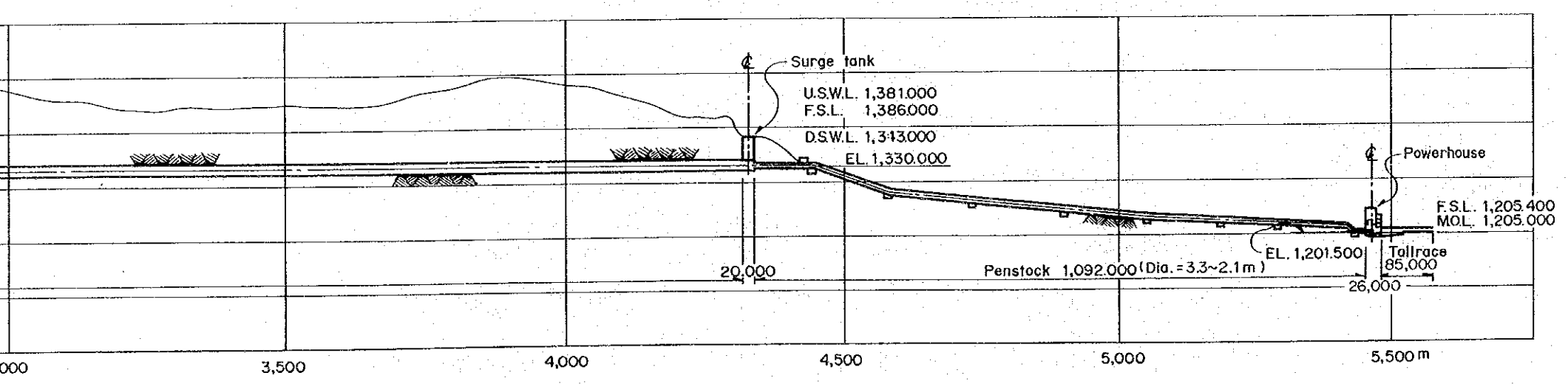
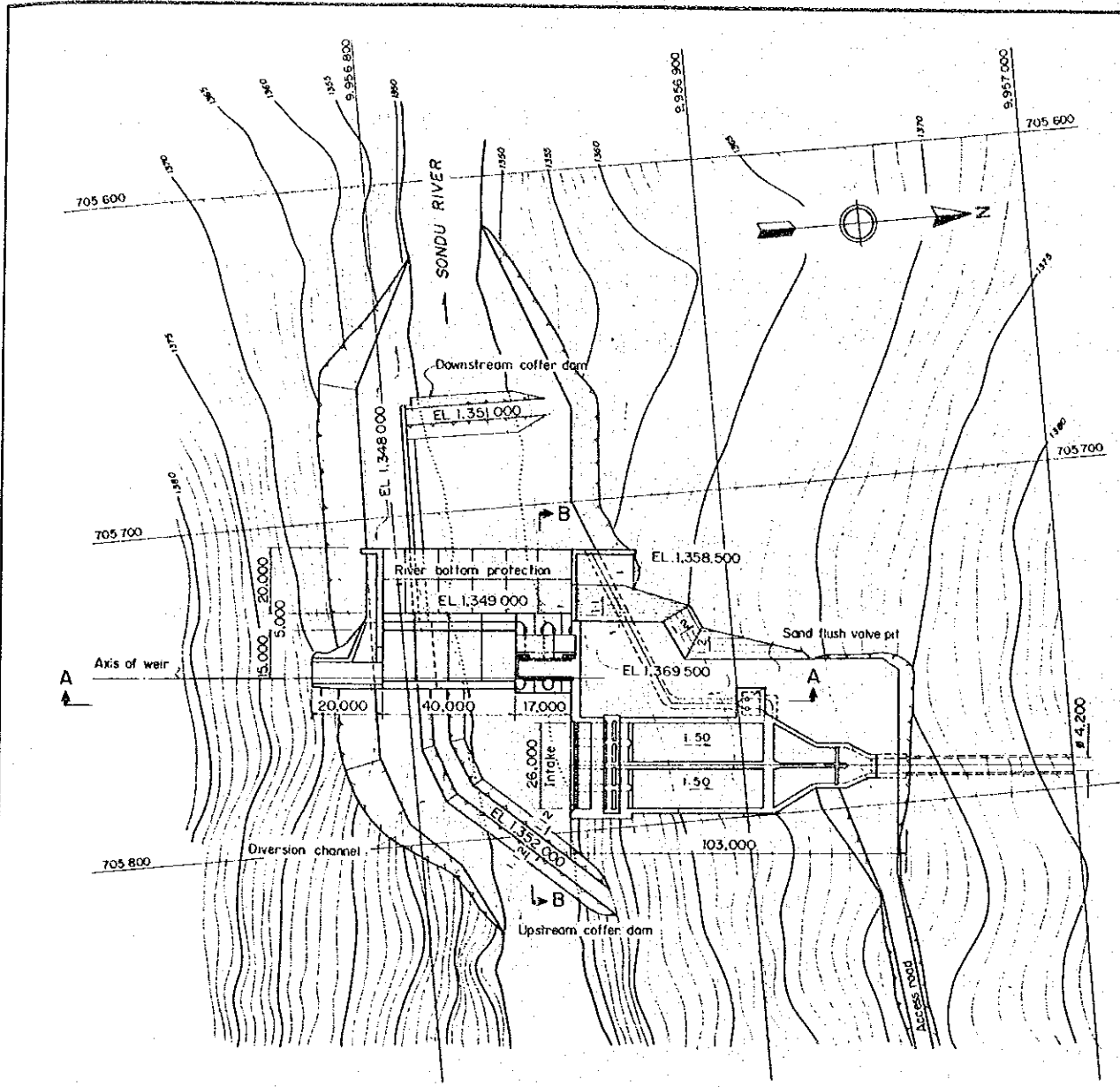
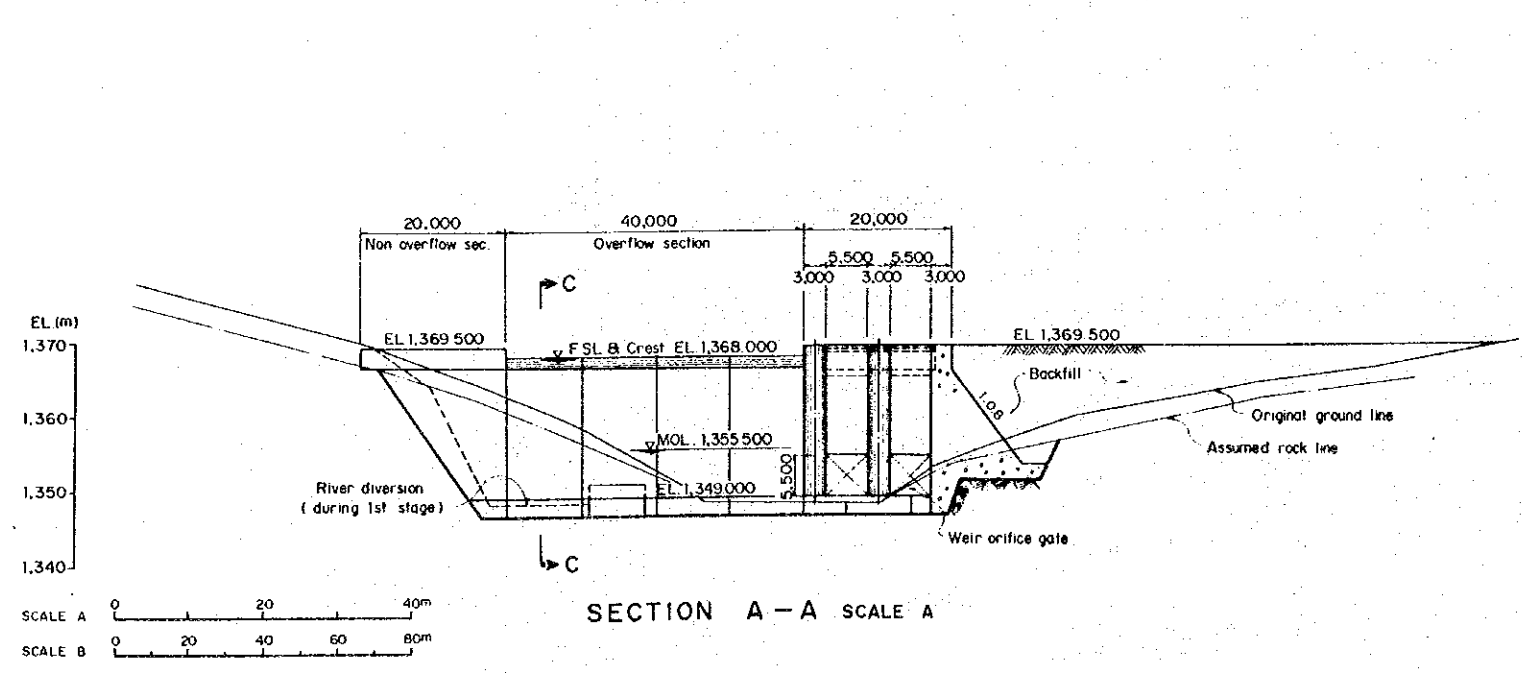


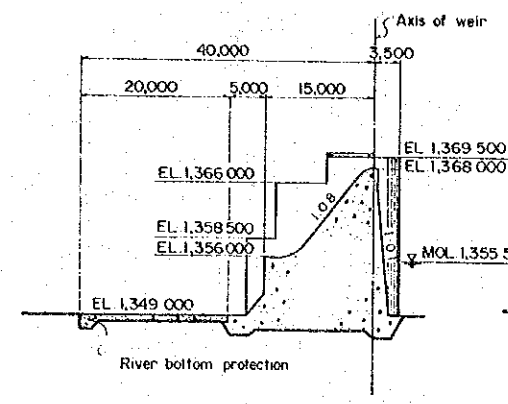
図-5 水路平面及び縦断面図



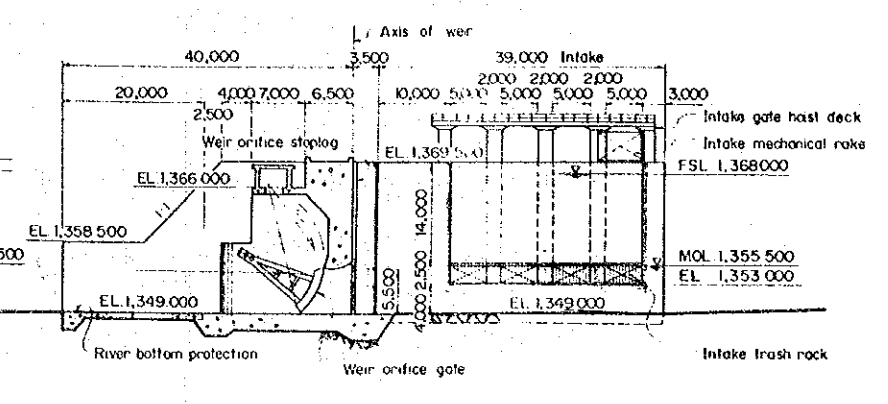
PLAN SCALE B



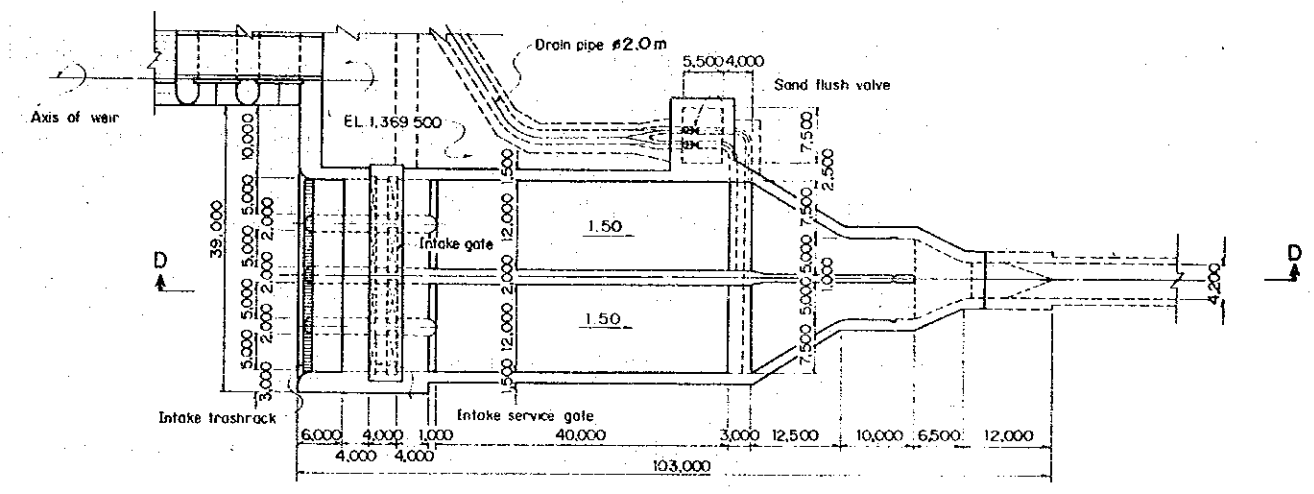
SECTION A-A SCALE A



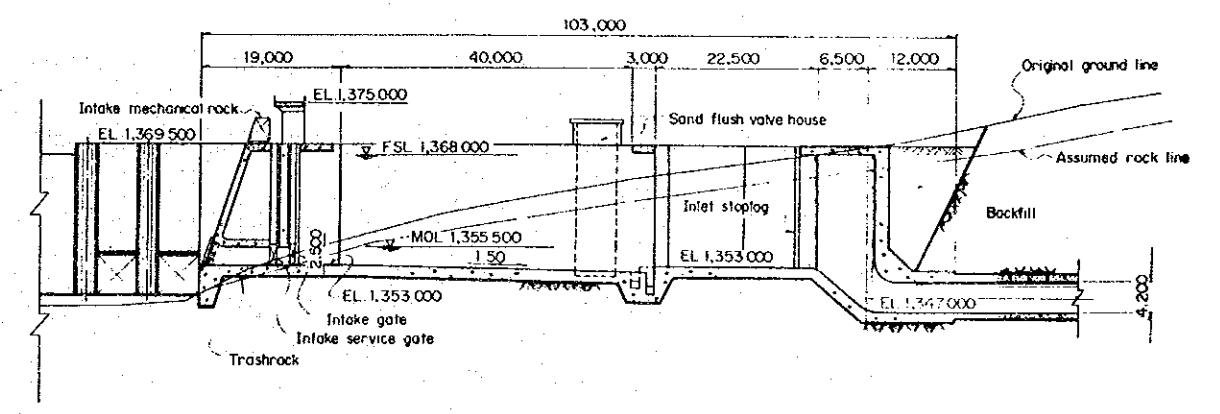
SECTION C-C SCALE A



SECTION B-B SCALE A

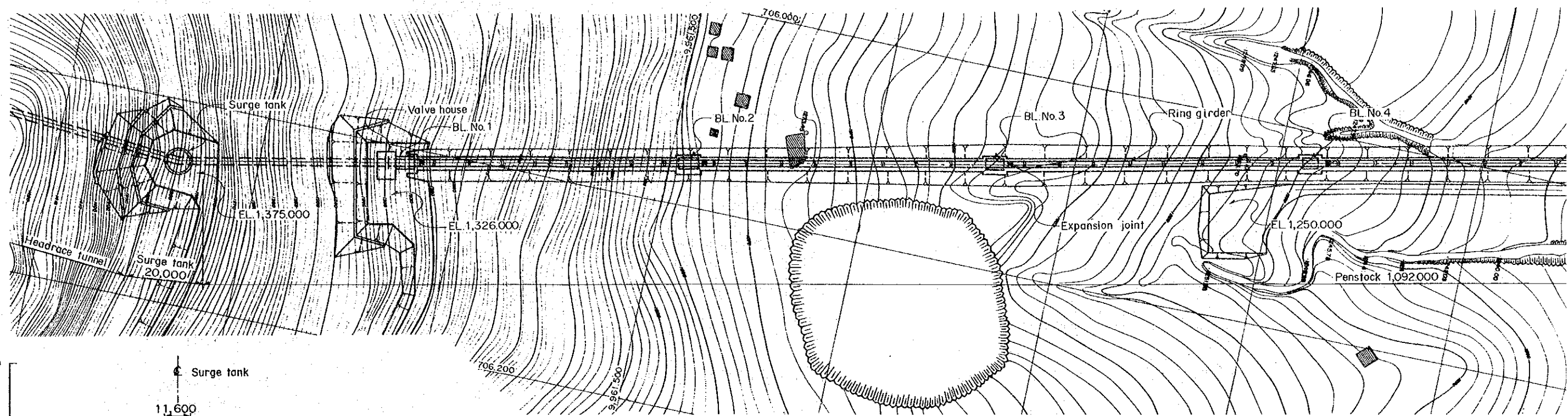


PLAN (INTAKE AND DESILTING BASIN) SCALE A

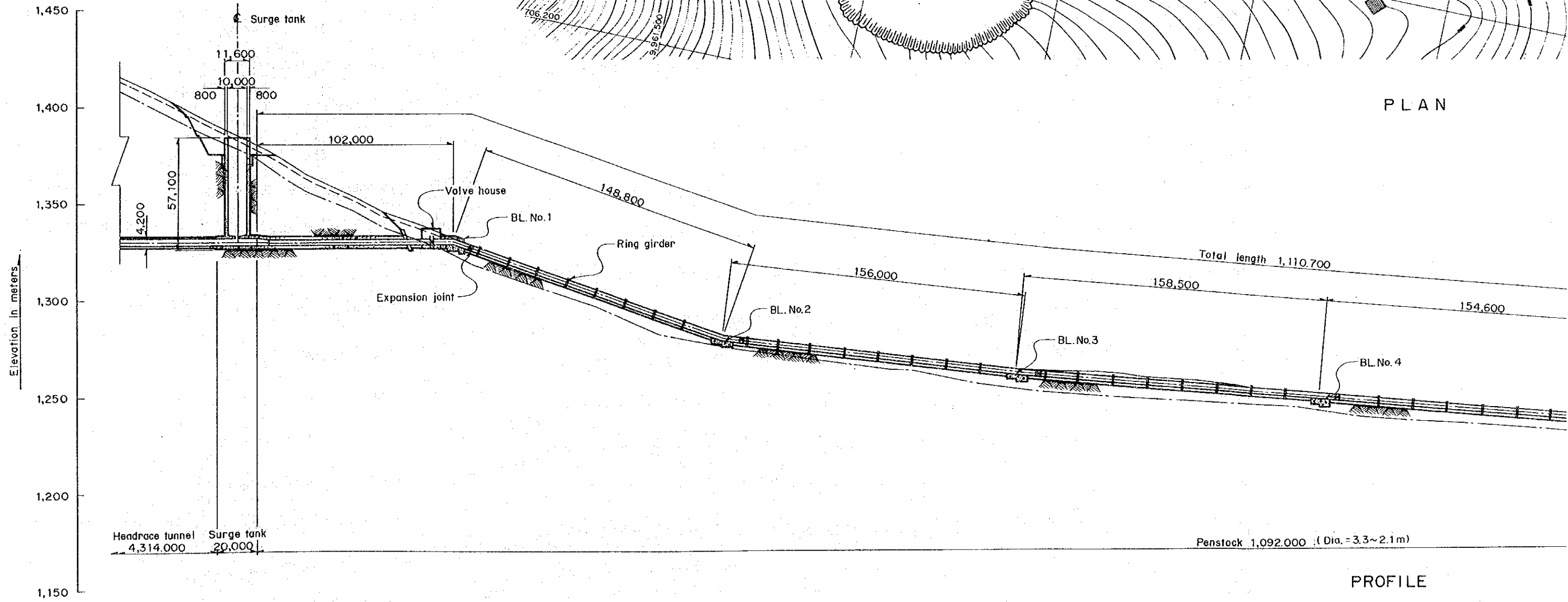


SECTION D-D SCALE A

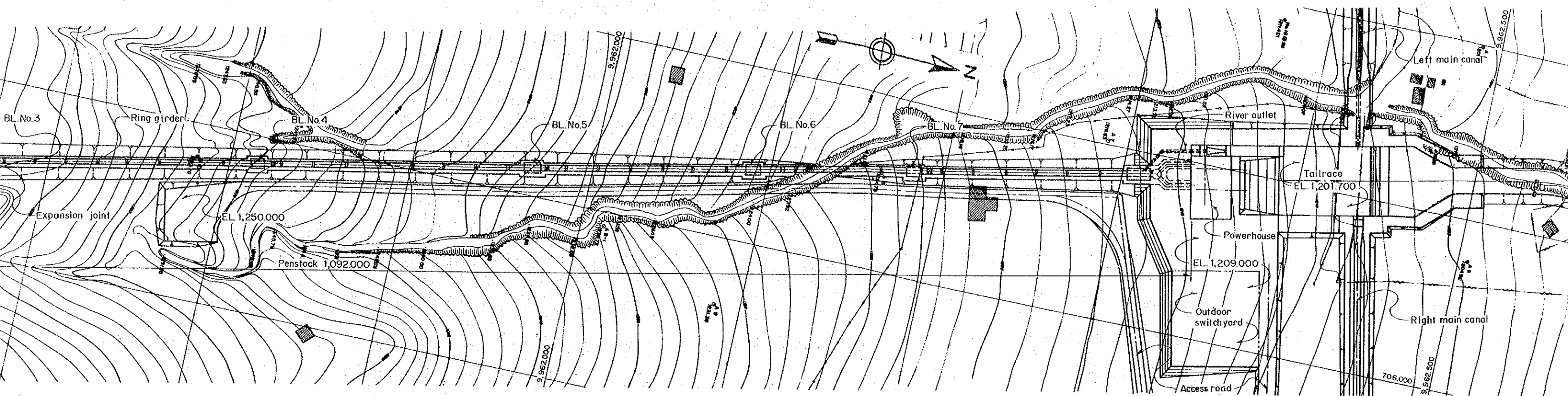
図-6 取水堰平面及び縦横断面



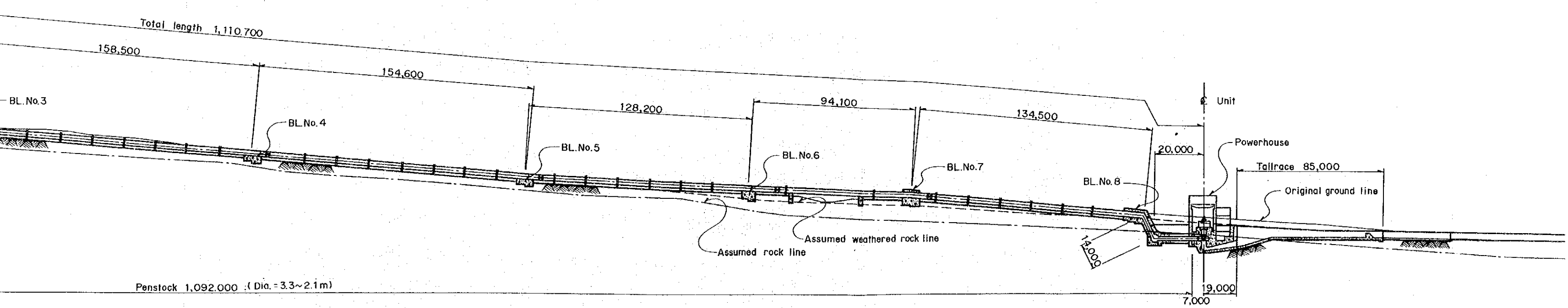
PLAN



PROFILE



PLAN



PROFILE

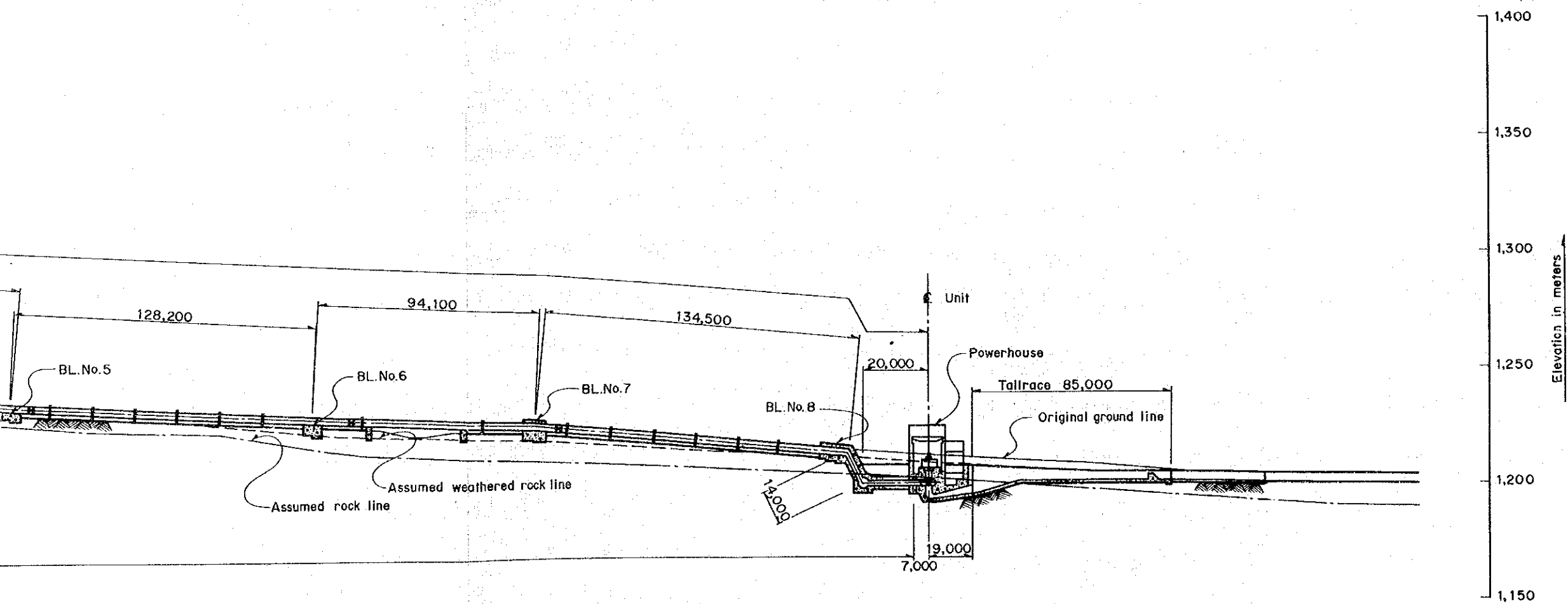
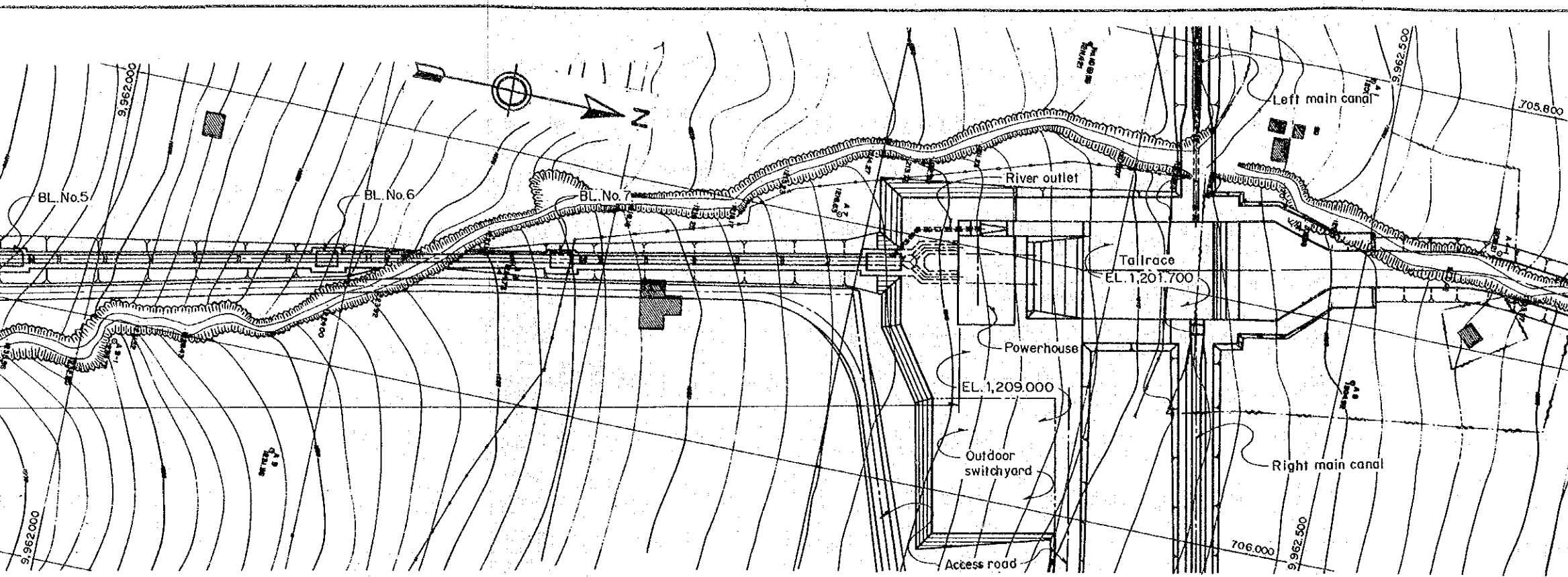
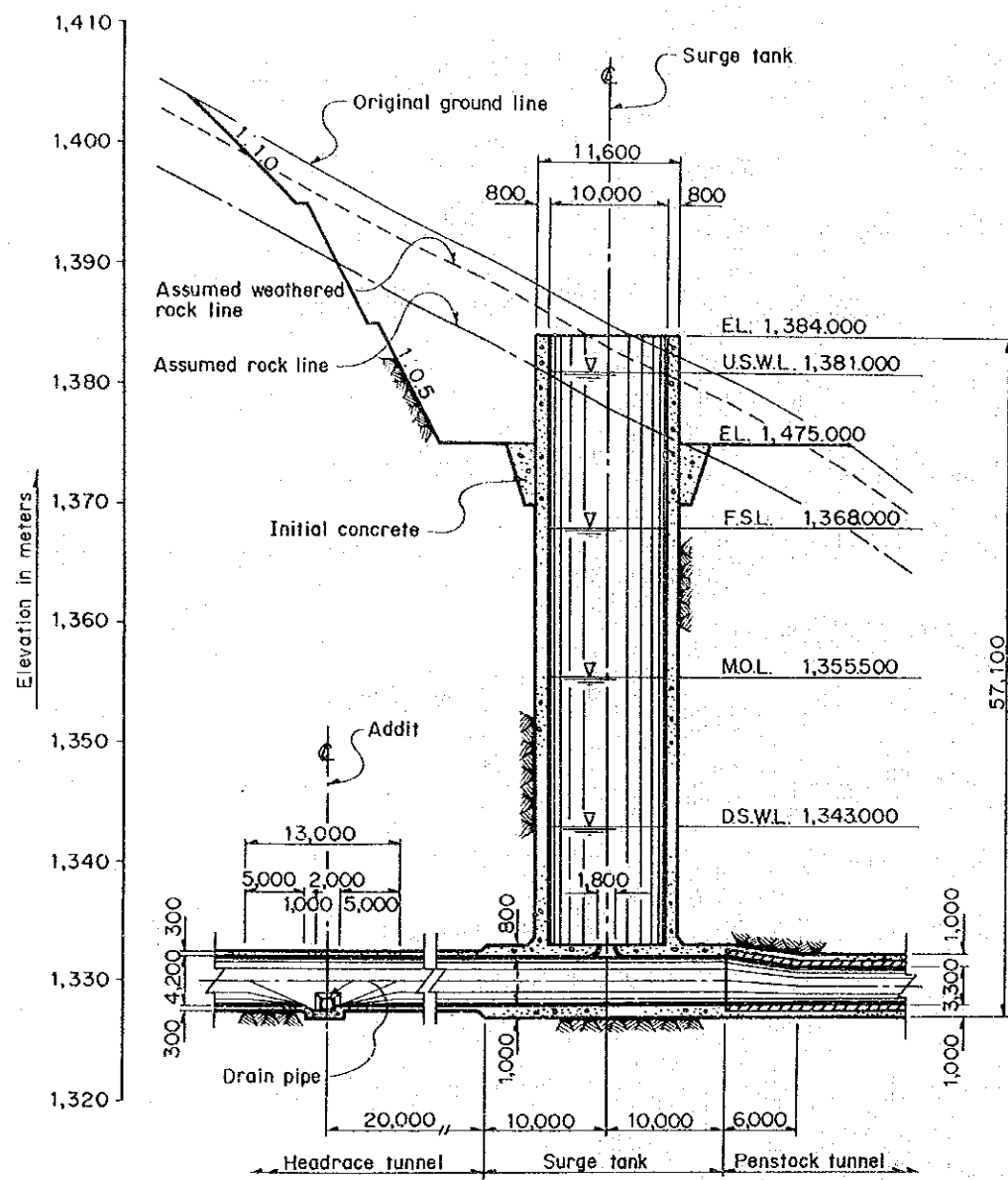
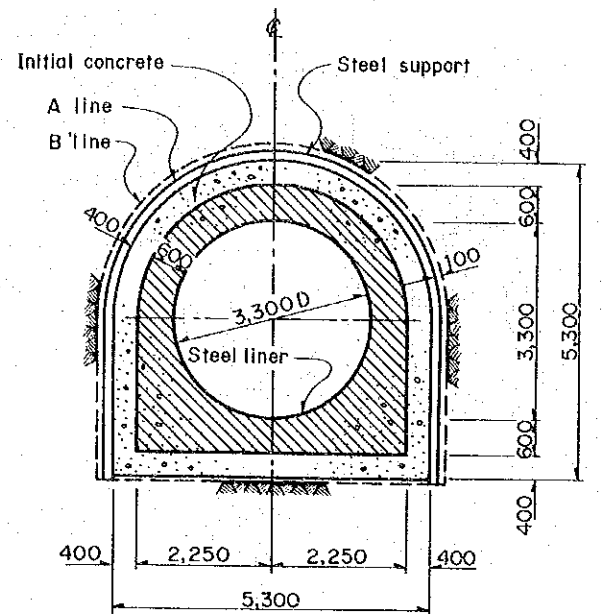
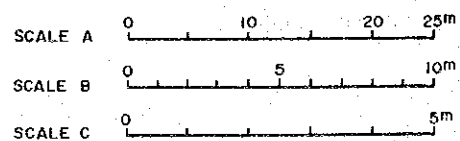


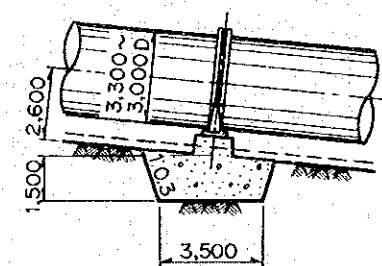
図-7 水圧鉄管路平面及び縦断面図



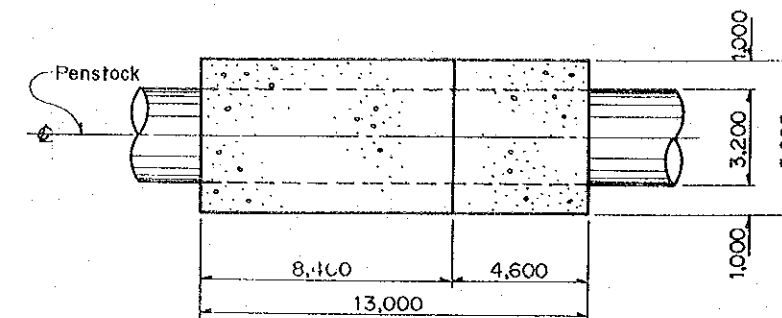
SURGE TANK SCALE A



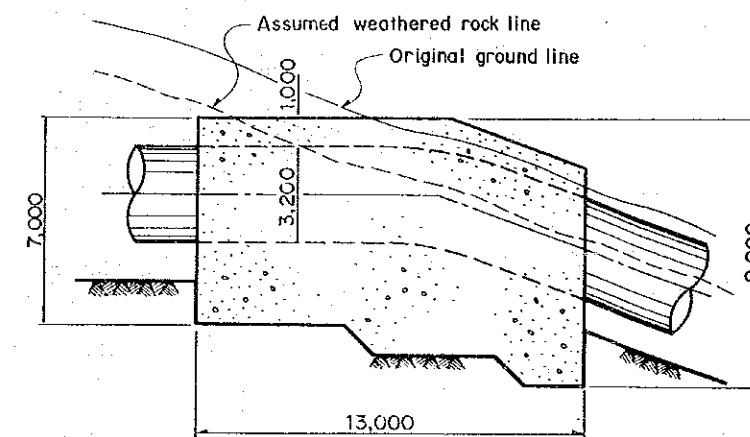
PENSTOCK TUNNEL SCALE C



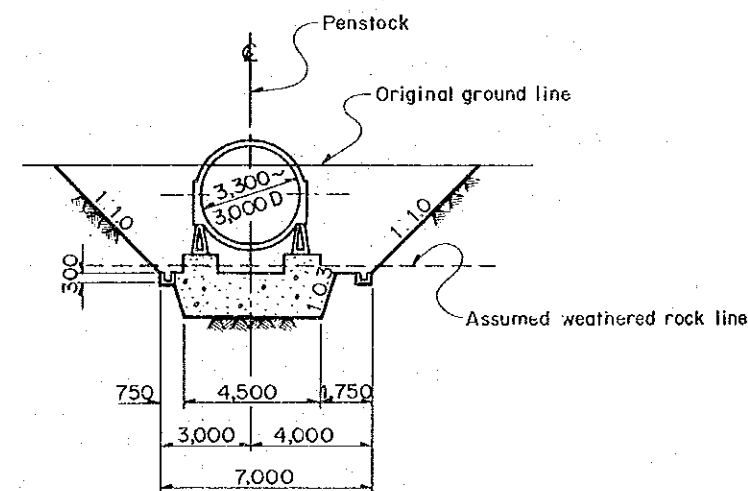
PROFILE OF SADDLE PIER SCALE B



PLAN OF ANCHOR BLOCK SCALE B



PROFILE OF ANCHOR BLOCK SCALE B



TYPICAL SECTION OF SADDLE PIER SCALE B

図-8

サージタンク及び水圧鉄管路
詳細図

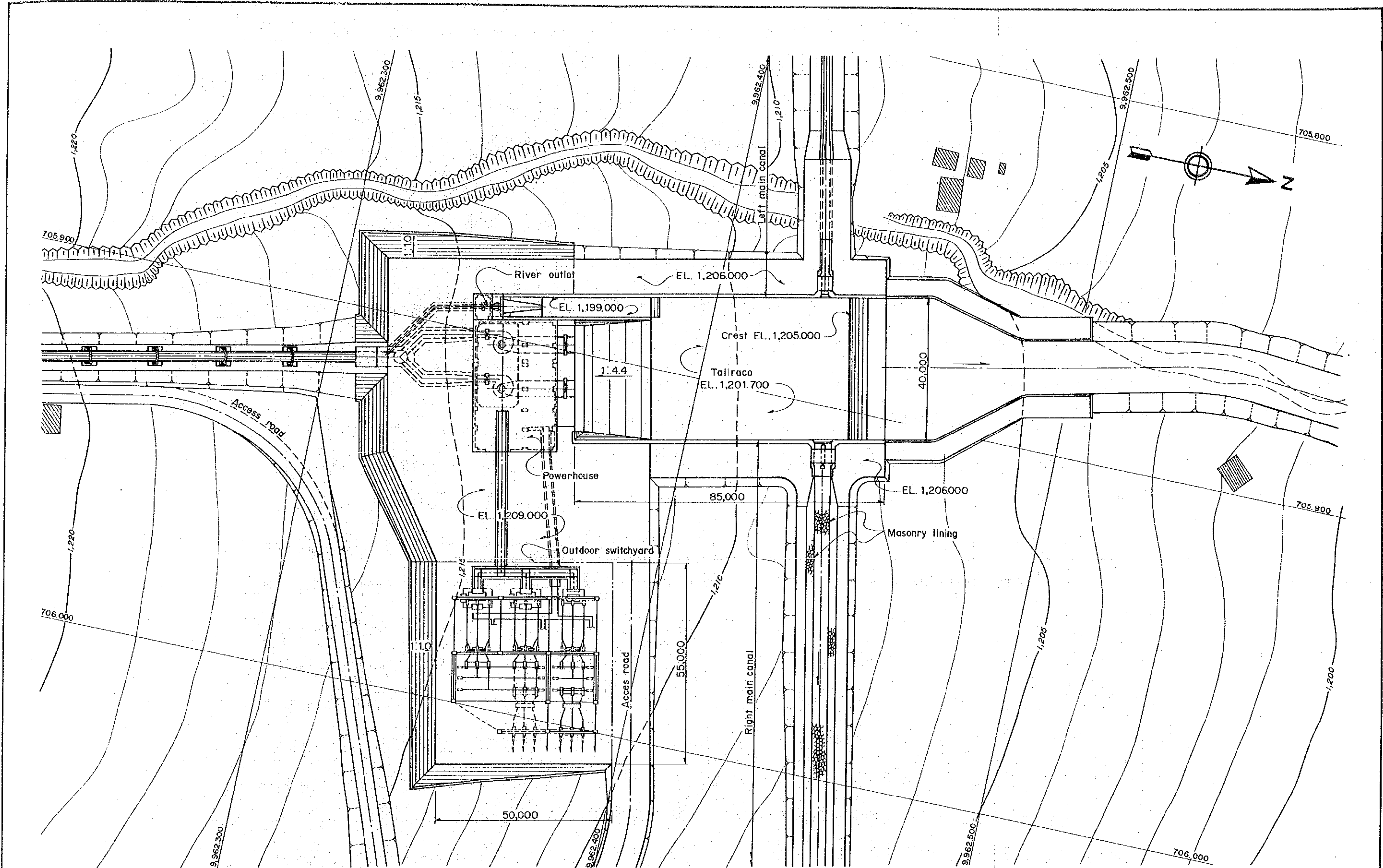
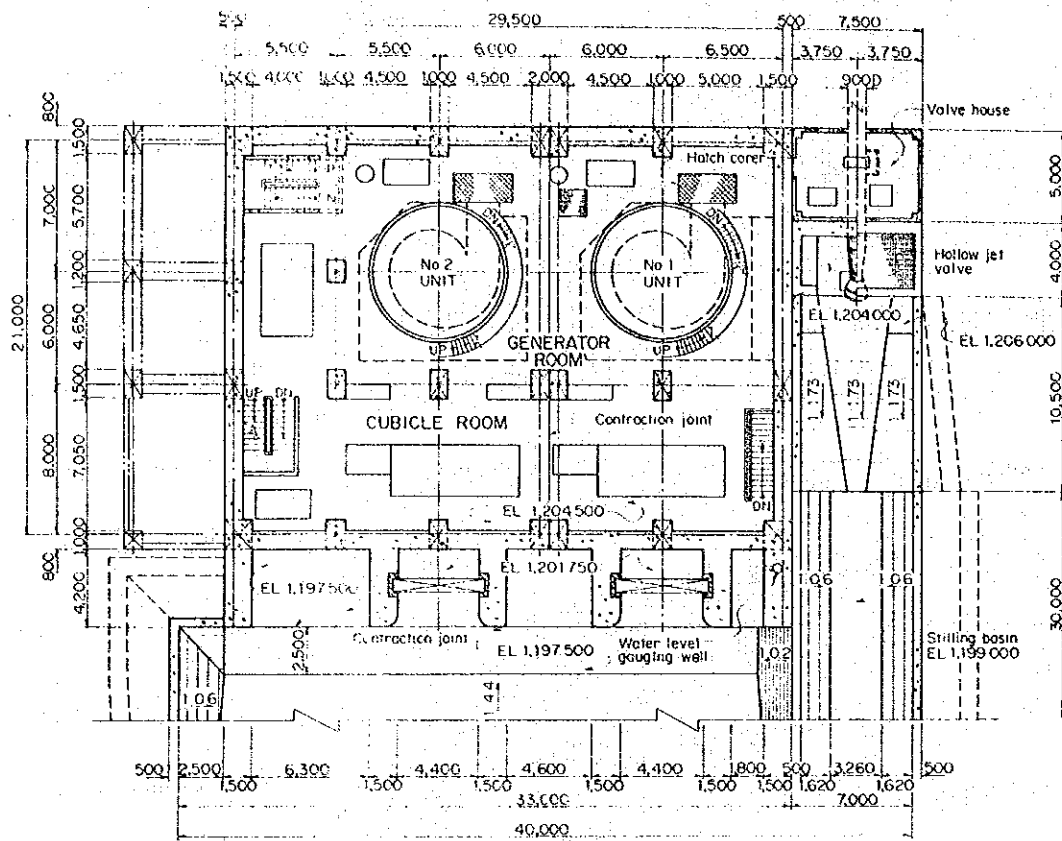


图-9

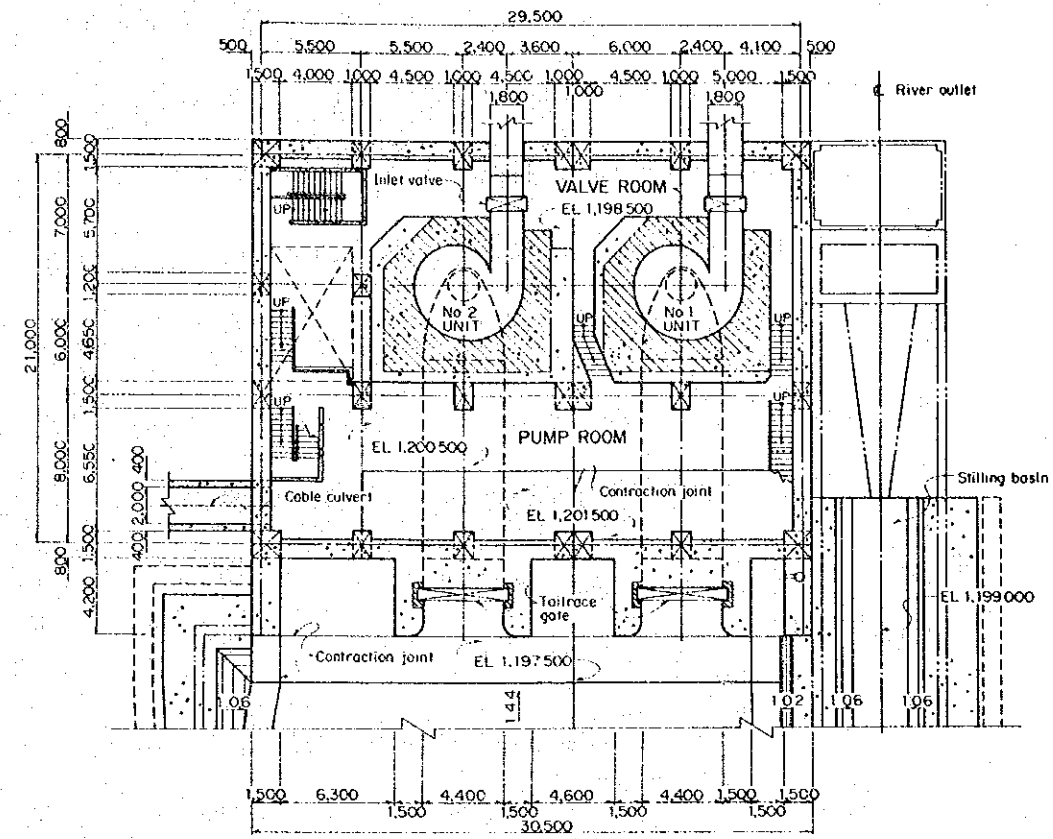
发电所平面图

SCALE 0 50m

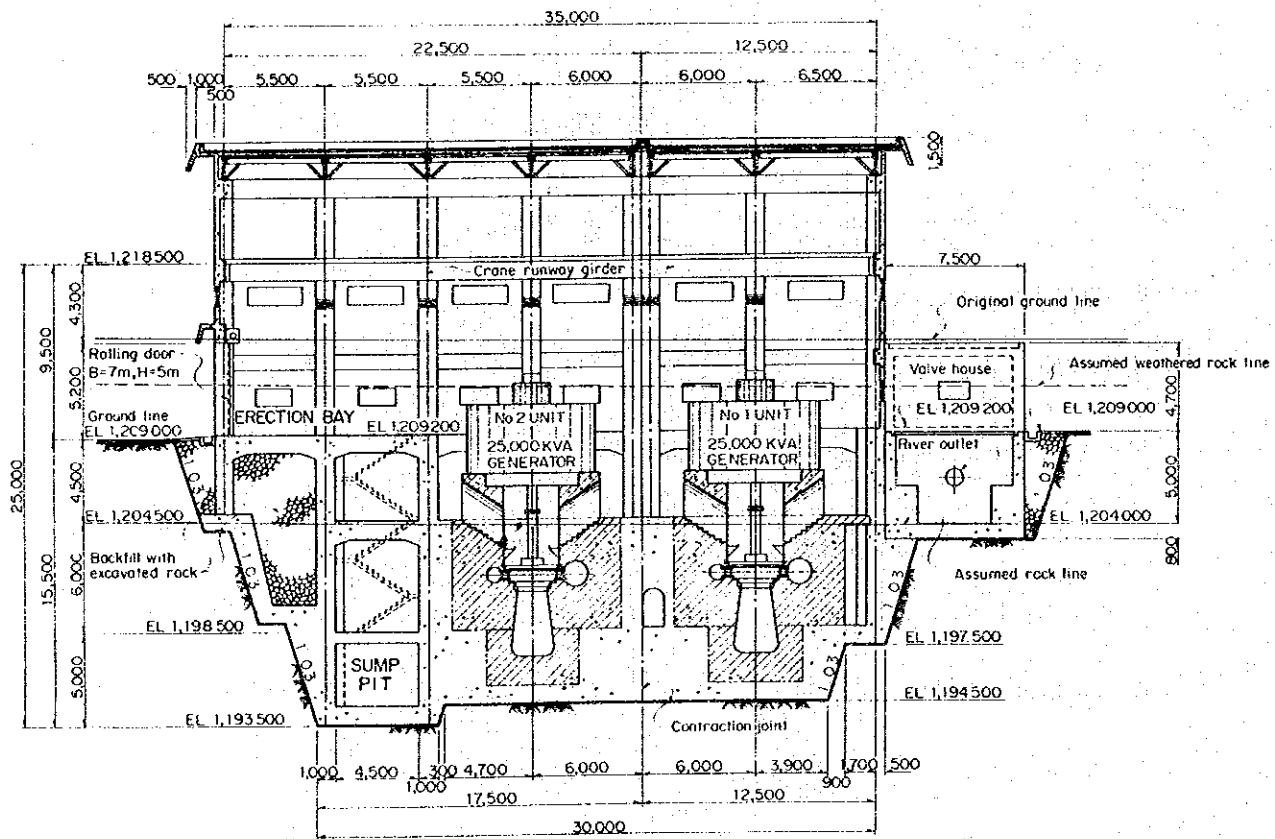
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FLOOR PLAN AT EL. 1,204.500



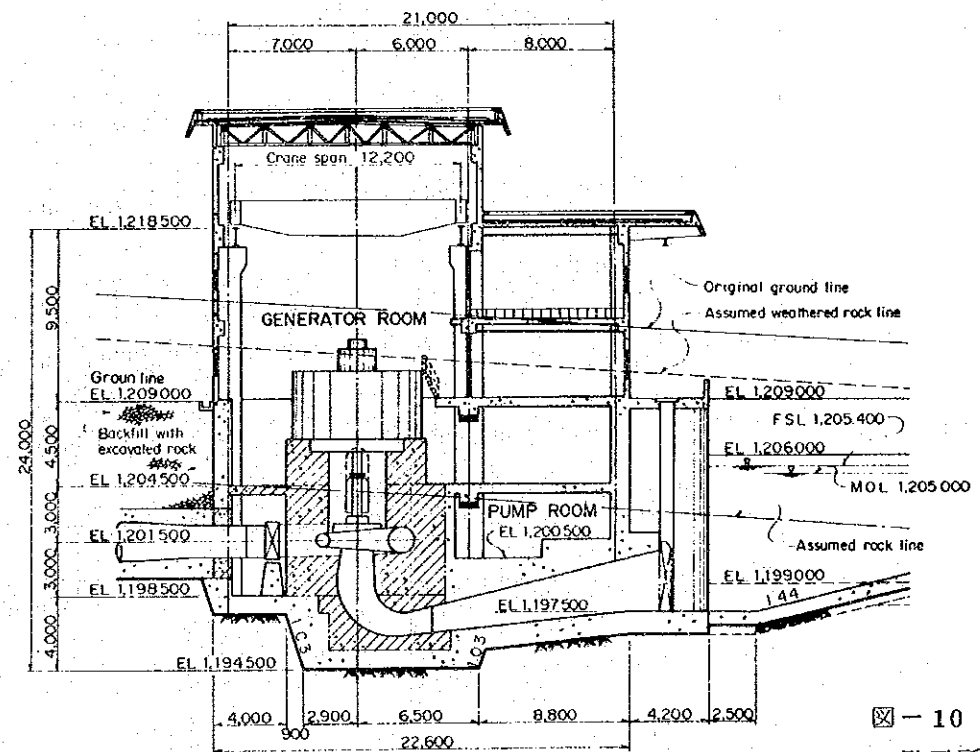
FLOOR PLAN AT EL. 1,198.500 AND EL. 1,200.500



LONGITUDINAL SECTION

SCALE

15m

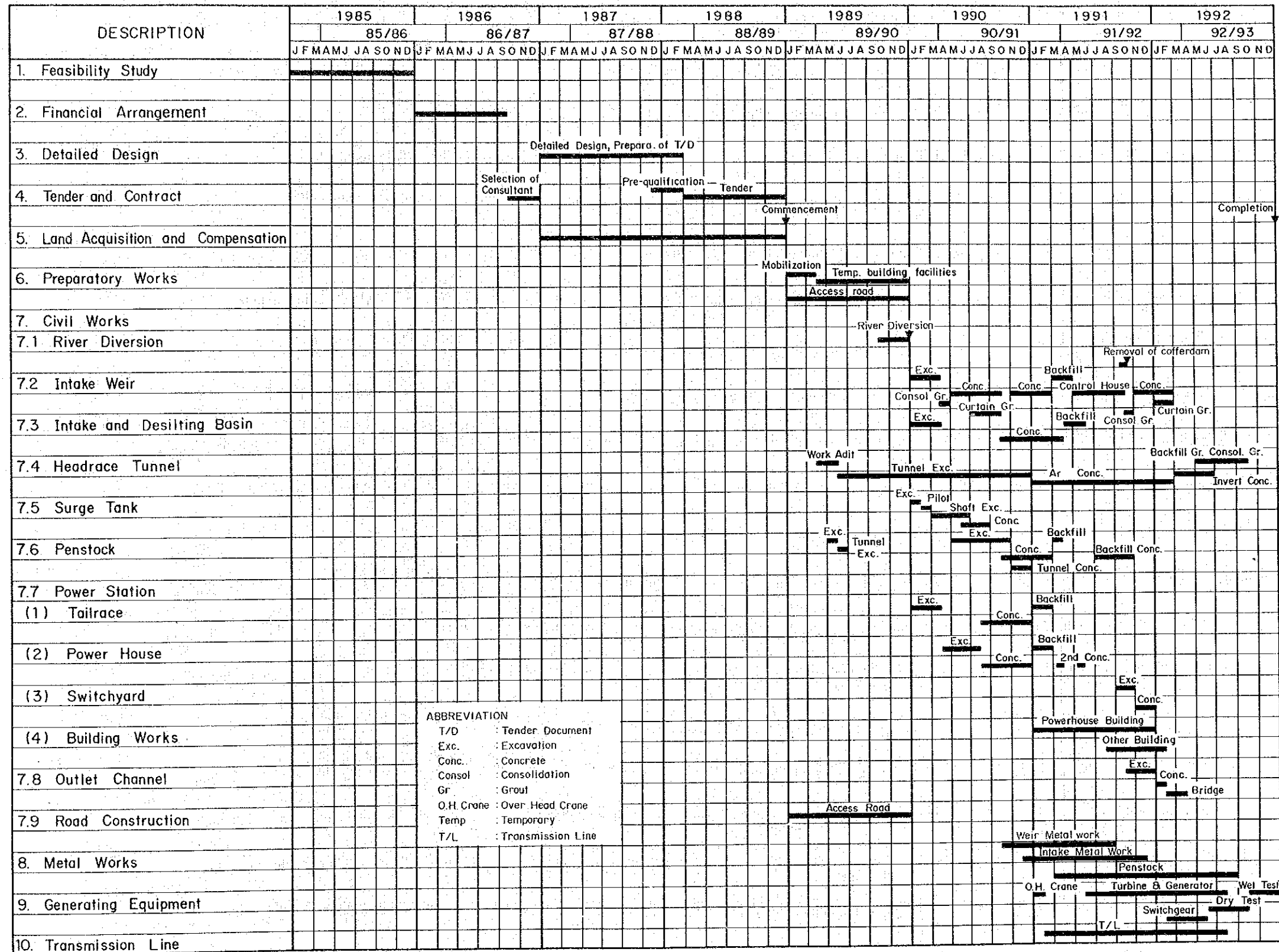


TRANVERSE SECTION

图-10

發電所建屋

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ABBREVIATION
T/D : Tender Document
Exc. : Excavation
Conc. : Concrete
Consol : Consolidation
Gr : Grout
O.H. Crane : Over Head Crane
Temp : Temporary
T/L : Transmission Line

図-11
建設工程表

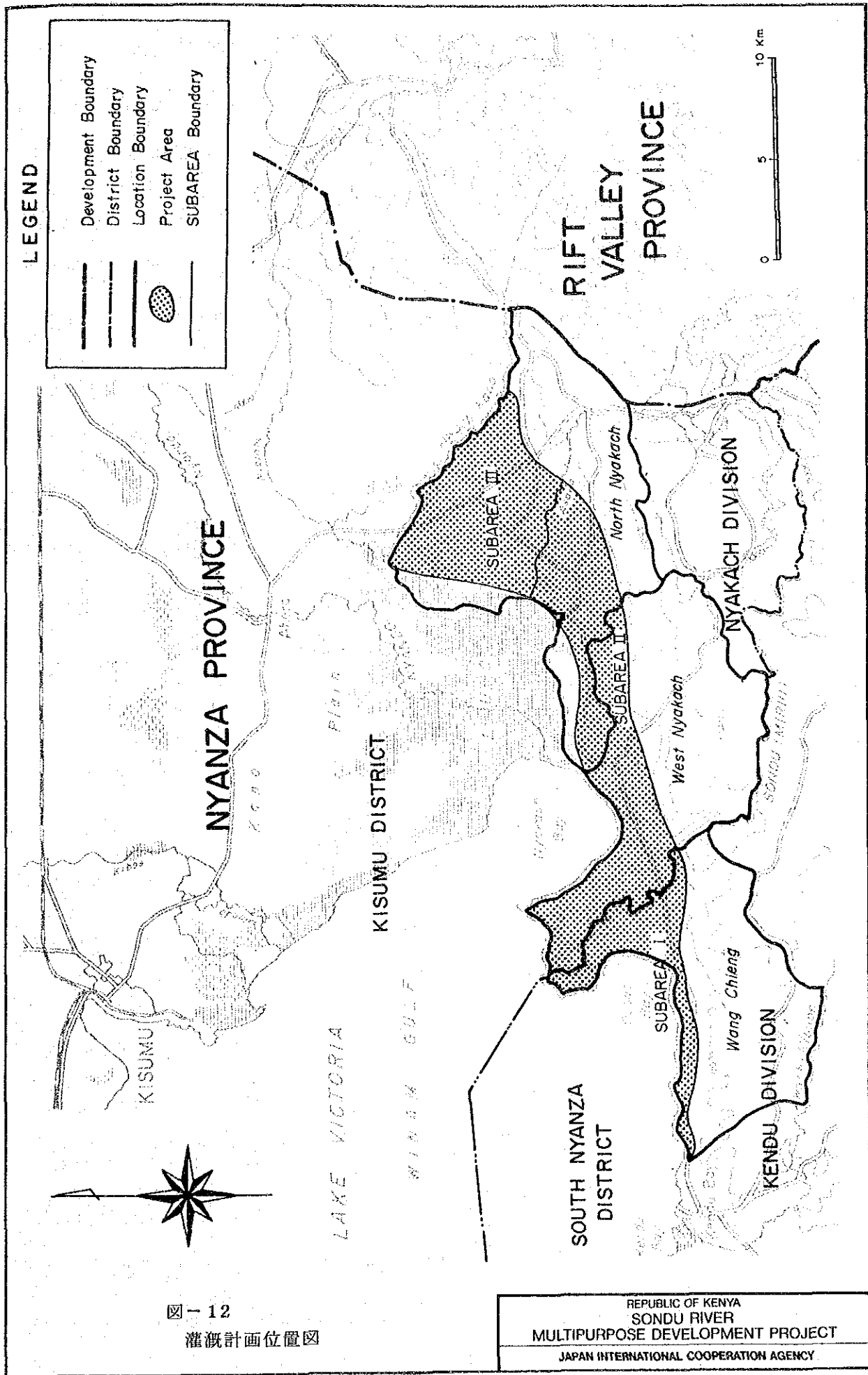


图-12
灌溉計画位置図

REPUBLIC OF KENYA
SONDU RIVER
MULTIPURPOSE DEVELOPMENT PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY

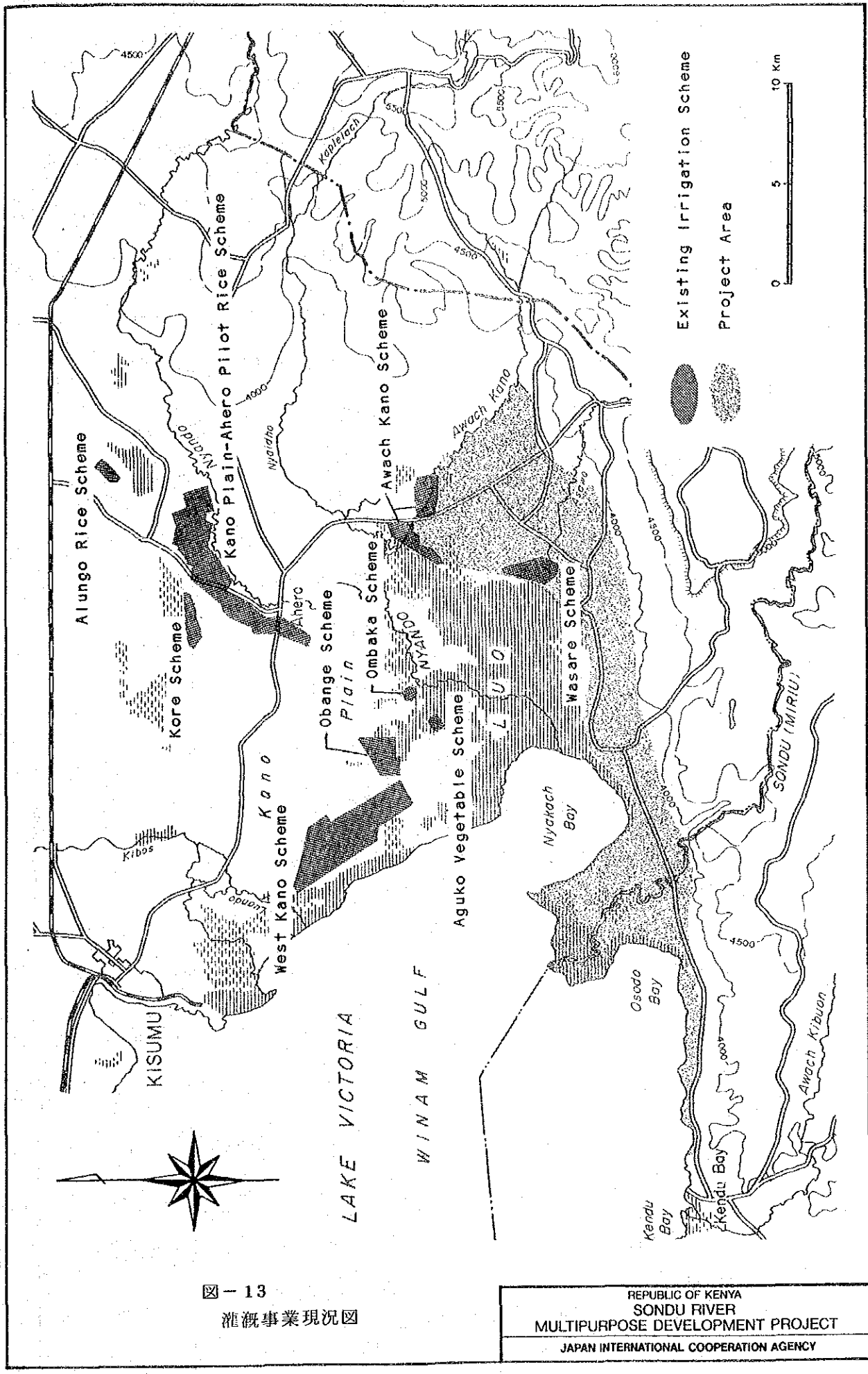







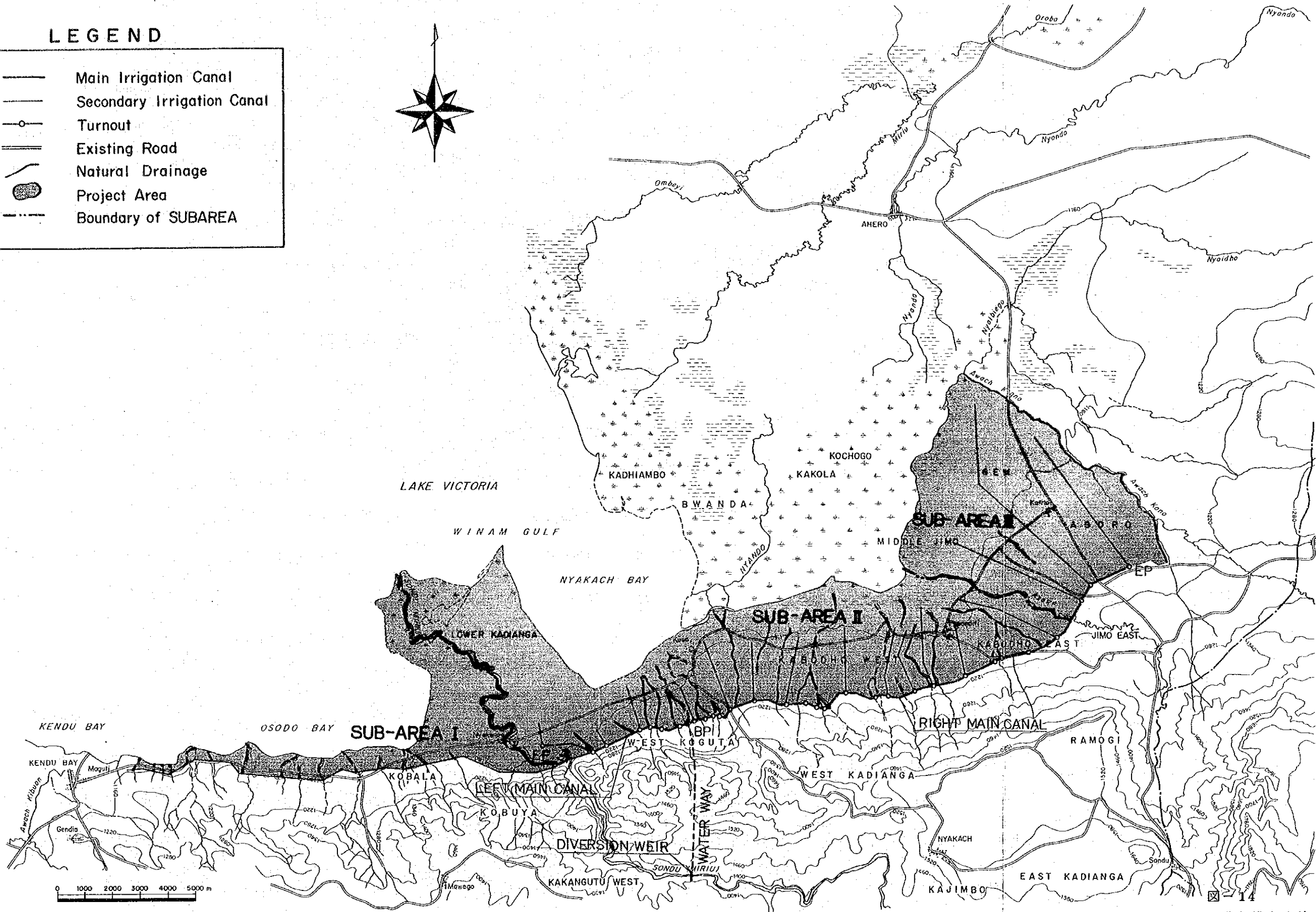


図 - 13
灌漑事業現況図

REPUBLIC OF KENYA
SONDU RIVER
MULTIPURPOSE DEVELOPMENT PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY

LEGEND

-  Main Irrigation Canal
-  Secondary Irrigation Canal
-  Turnout
-  Existing Road
-  Natural Drainage
-  Project Area
-  Boundary of SUBAREA

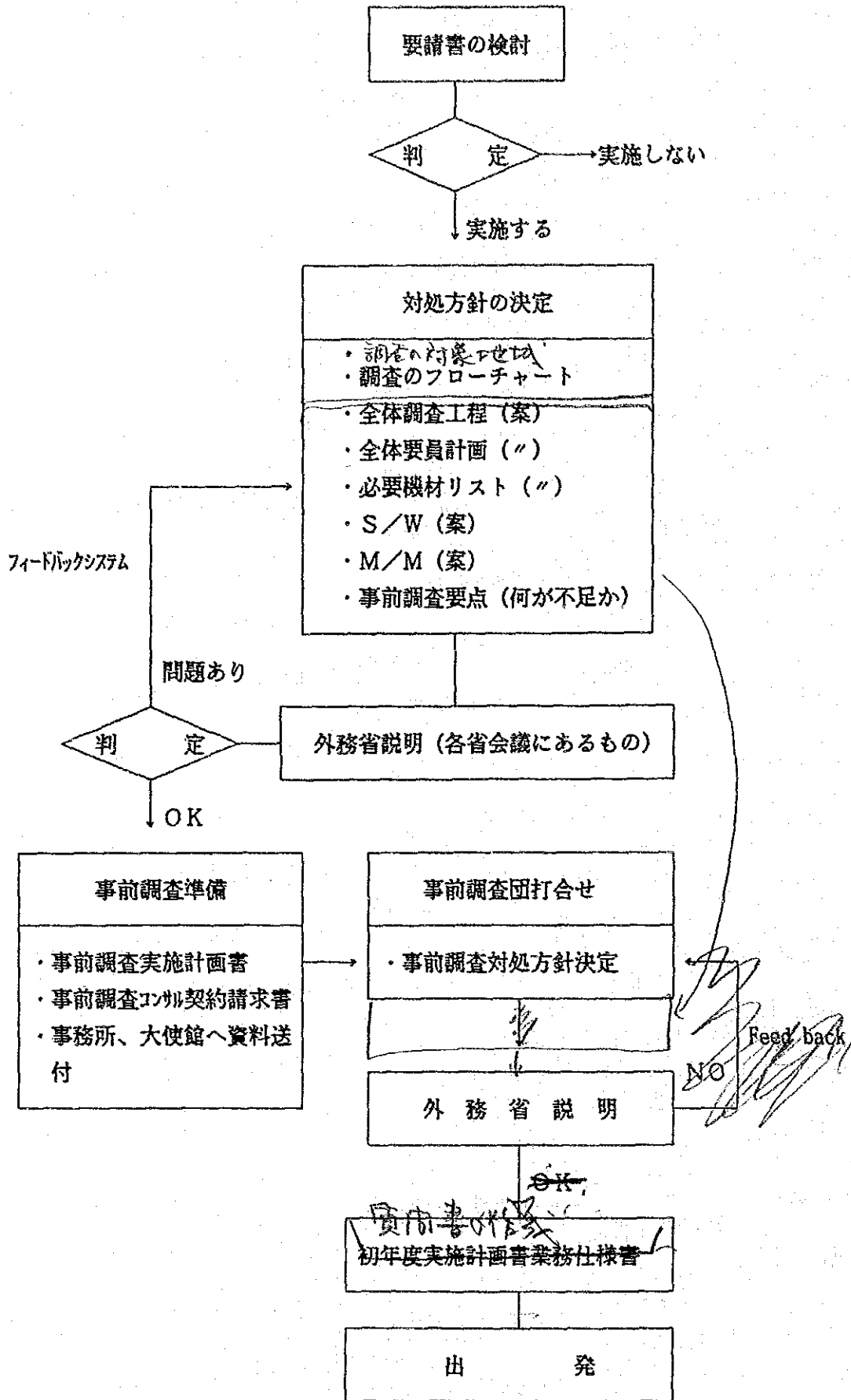


灌溉排水路計画図

REPUBLIC OF KENYA
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 MULTIPURPOSE DEVELOPMENT PROJECT
 JAPAN INTERNATIONAL COOPERATION AGENCY

Description	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
	31.3.85	31.3.86	31.3.87	31.3.88	31.3.89	31.3.90	31.3.91	31.3.92	31.3.93	31.3.94	31.3.95	31.3.96	31.3.97
KAND PLAIN IRRIGATION PROJECT													
Pre-Feasibility Study	■												
Feasibility Study		■											
Loan Application			■										
Detailed Tender Design				■									
Tendering					■								
Construction						■							
-Land Acquisition							■						
-Site Preparation								■					
-Main Canal									■				
-Secondary Canal										■			
-Tertiary & On-farm Unit											■		
-Buildings												■	
Farm Operation Target													■

図3-1 調査の標準的なフロー



L18