

JAPAN INTERNATIONAL
COOPERATION AGENCY


MINISTRY OF AGRICULTURE
AND COOPERATIVES,
THE UNITED REPUBLIC OF
TANZANIA

THE STUDY
ON
THE SOIL AND IRRIGATION PROJECTS
IN
CENTRAL WAMI RIVER BASIN, MOROGORO

VOLUME III
DRAWINGS

JANUARY, 1978

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**JAPAN INTERNATIONAL
COOPERATION AGENCY**

**MINISTRY OF AGRICULTURE
AND COOPERATIVES,
THE UNITED REPUBLIC OF
TANZANIA**

**THE STUDY
ON
THE SMALLHOLDER IRRIGATION PROJECTS
IN
CENTRAL WAMI RIVER BASIN, MOROGORO**

**Volume III
DRAWINGS**

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**NIPPON KOEI CO., LTD.
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THE STUDY ON THE SMALLHOLDER IRRIGATION PROJECTS

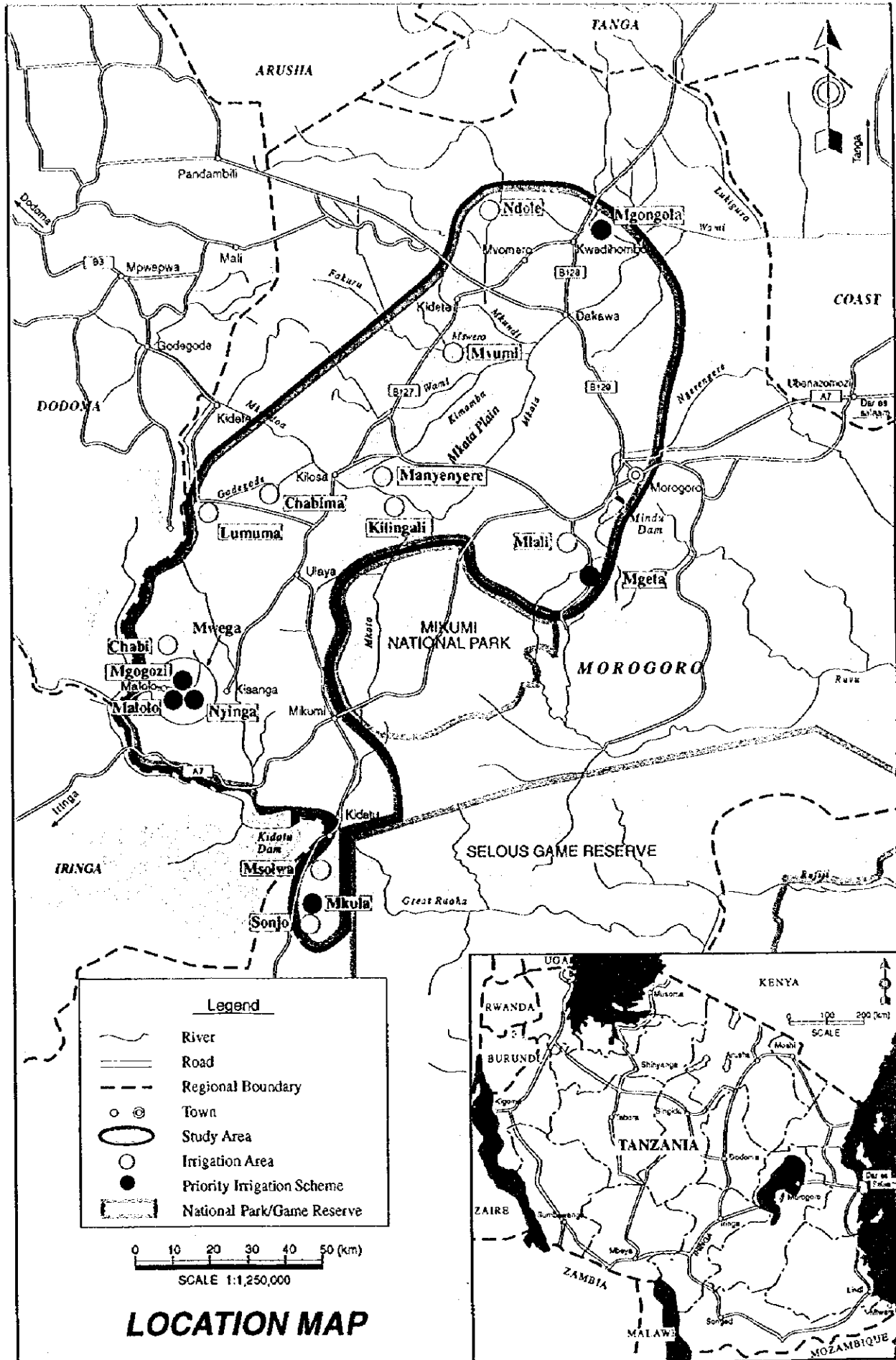
IN
CENTRAL WAMI RIVER BASIN

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DIVISION 1

THE STUDY

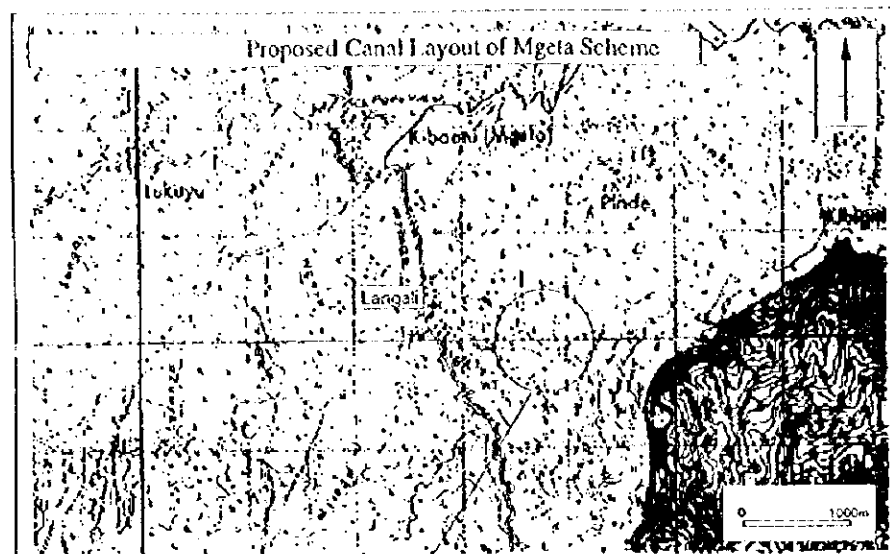
ON

THE SMALLHOLDER IRRIGATION PROJECTS

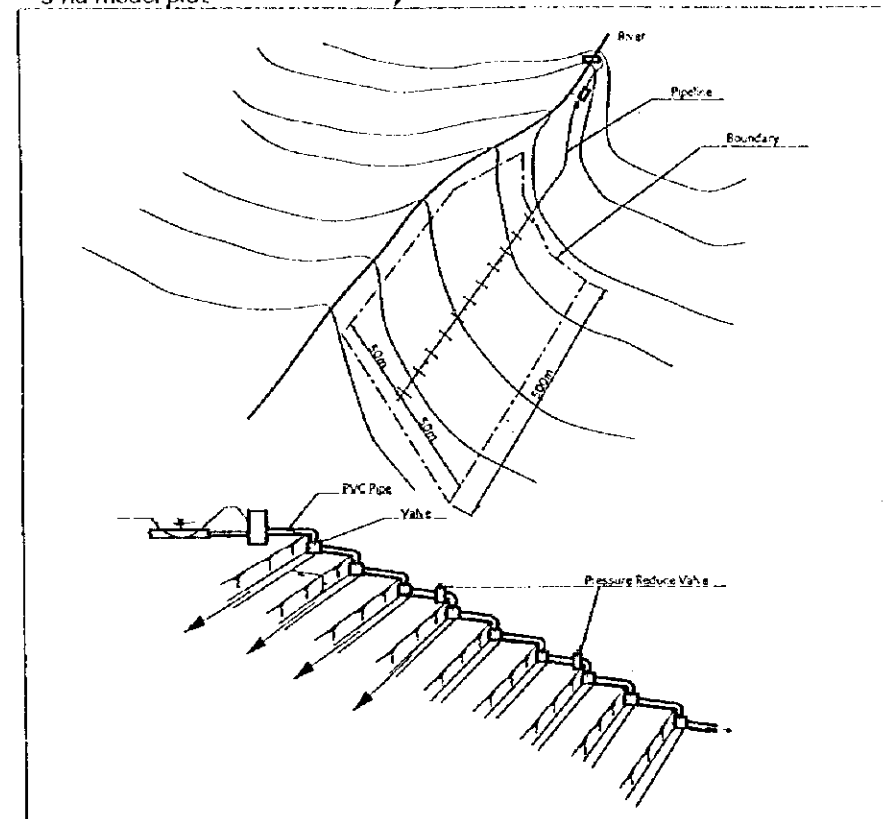
IN

CENTRAL WAMI RIVER BASIN

MASTER PLAN

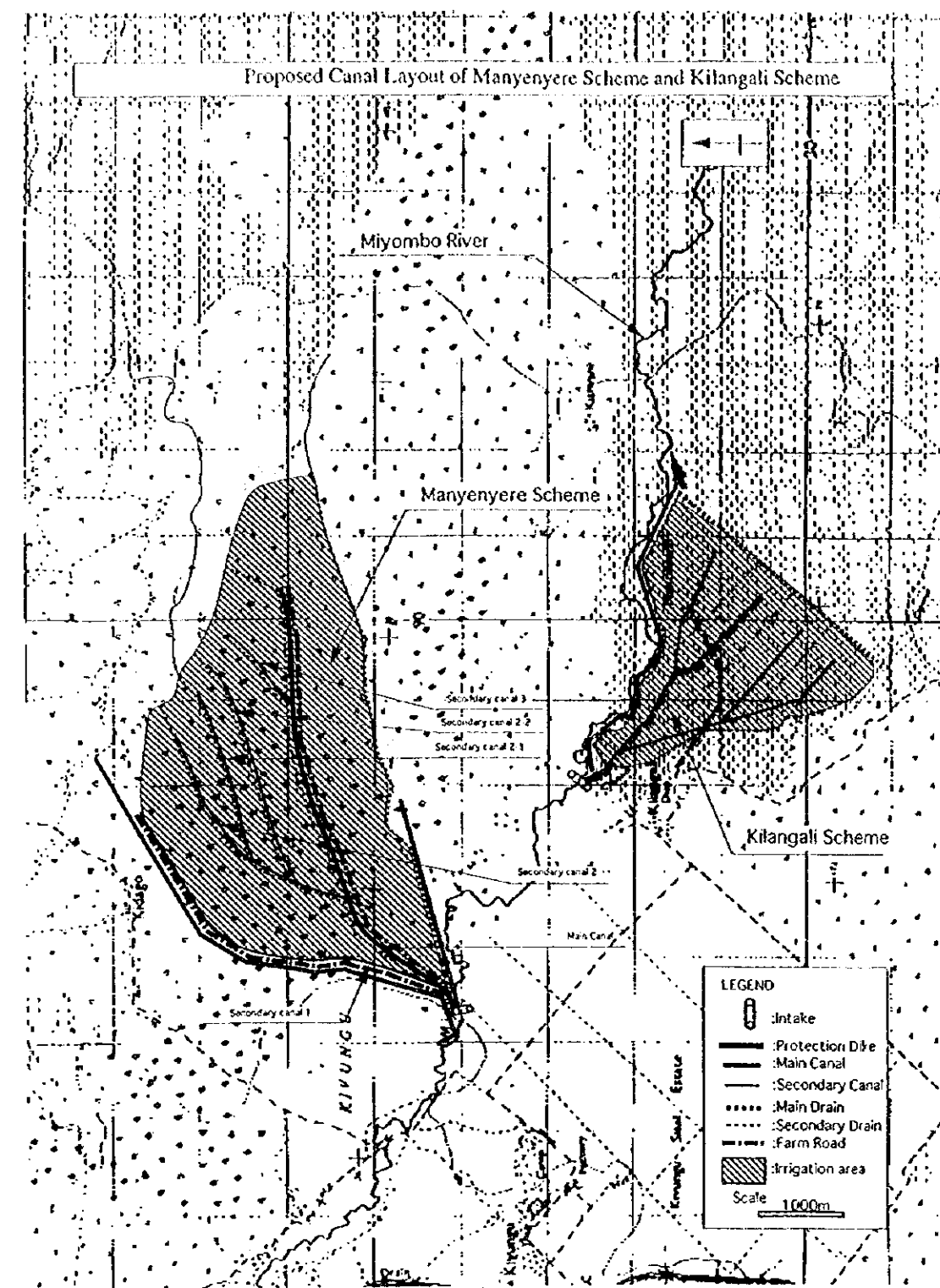


5 ha model plot



Mgeta scheme

Cropping area	5 ha
Irrigation system	Pipeline system
Headworks (intake)	Newly provided at traditional intake sites
- Design intake discharge	About 5 litre/sec
- Type	Perforated PVC pipes covered by sand, gravel, and cobble stone, protected by concrete and rock riprap
- Pipe diameter	Around 10 to 30 cm
- Total Pipe length	10 m
Irrigation canals	Pile line, PVC pipe buried in the ground
- Pipe diameter	50 to 100 mm
- Length	Depending on the topography, about 600 m.
- Nos of outlets	About 20 - 30 valves
- Nos. of pressure relief valves	About 2 - 3 valves



Manyenyere Scheme

Gross cropping area	1,300 ha
Net cropping area	1,040 ha
Headworks	Reconstruction
- Design flood discharge	100 m ³ /sec
- Design intake discharge	2.10 m ³ /sec
- Weir type	Stopeg gated type, 22 m in total span length.
- Intake Inlet gate	Steel slide gate, 1.6m wide x 1.6m high
Irrigation canals	Rehabilitation of 7.5 km with lining, 9.5 km earthen canal
Drainage canals	Kidago stream (Natural drain) and construction of 25 km
Flood protection dike	Earth type, about 1 m high, about 7.5 km long
Farm road	16 km
On-farm development	Land leveling of 1,040 ha, field ridges and field ditches

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FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO

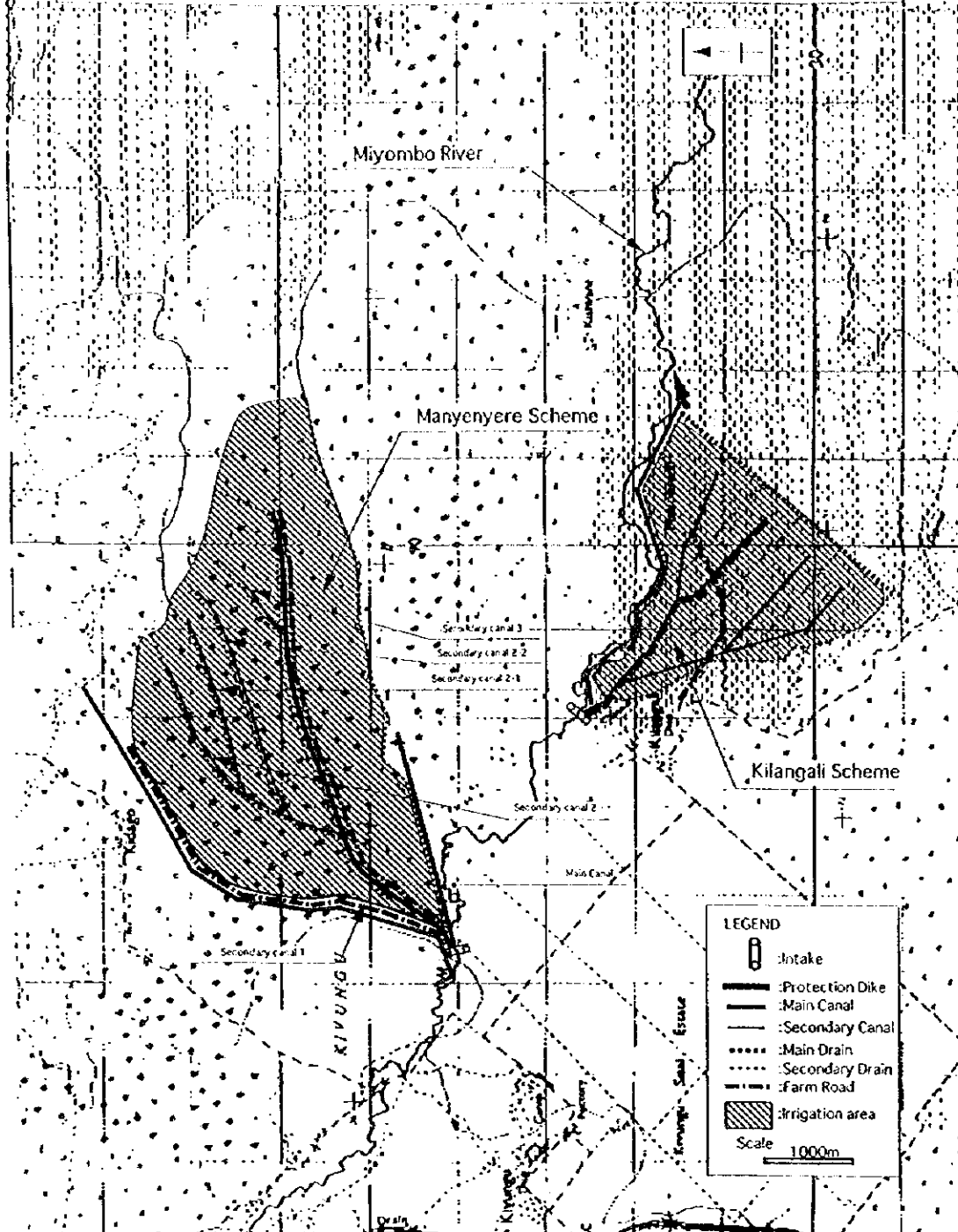
TITLE OF DRAWING MASTER PLAN

CANAL LAYOUT OF MGETA & MANYENYERE SCHEMES

Date	Drawing No.	101
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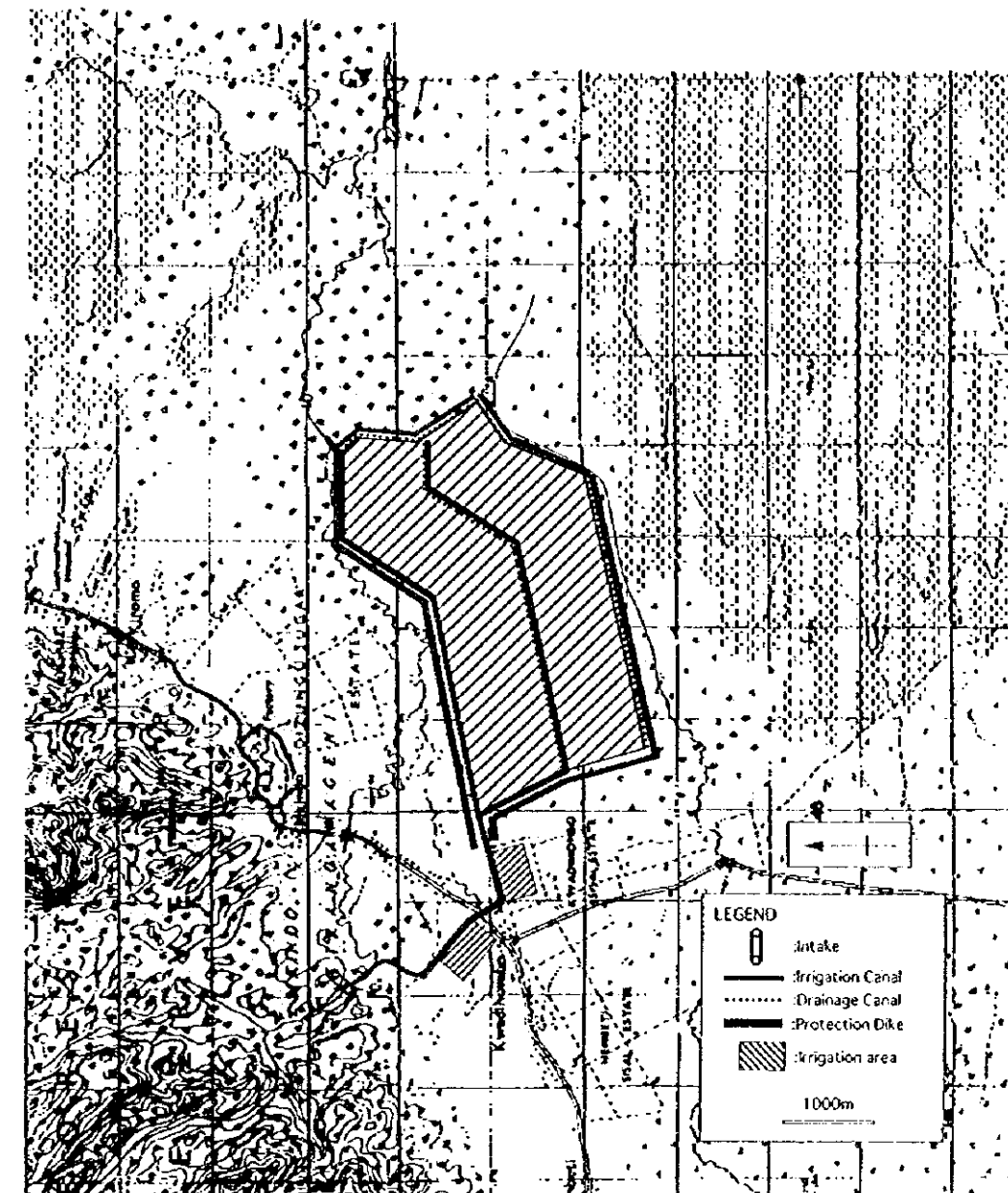
Proposed Canal Layout of Manyenyere Scheme and Kilangali Scheme



Kilangali Scheme

Gross cropping area	460 ha
Net cropping area	370 ha
Headworks	Reconstruction
- Design flood discharge	100 m ³ /sec
- Design intake discharge	0.74 m ³ /sec
- Weir type	Stoplog gated type, 22 m in total span length, steel slide gate, 0.8m wide x 0.8m high
- Intake	
Irrigation canals	Rehabilitation,
- Main canal	Trapezoidal shape, stone or brick masonry lining, about 3.5 km long
- Secondary canals	Earthen canal, 4 nos. about 4 km in total length
Drainage canals	New construction
- Main drains	Trapezoidal, earthen type, about 3,900 m long
- Secondary drain	Earthen canal, about 12 km in total length
Flood protection dike	New construction for about 5.5 km long
Farm road	8.5 km
On-farm development	Paddy field, land leveling of 370 ha, field ridges and field ditches

Proposed Canal Layout of Mgongola Scheme



Mgongola Scheme

Gross cropping area	830 ha including existing Mkindo area
Net cropping area	660 ha including existing Mkindo area
Headworks	Minor repairing with replacement of 4 steel gates
- Design flood discharge	112 m ³ /sec in 50 year return period
- Design intake discharge	1.4 m ³ /sec
- Type	Fixed weir on the top of natural fall
- Intake	inlet gate
- scouring gate	Steel slide gate, 1 m wide x 1 m high x 2 sets
Irrigation canals	all newly constructed
- Head race	replaced, stone or brick masonry lining, about 1 km long
- Main canal	lining canal type, about 2.5 km long
- Secondary canals	earthen canal, 2 canals, about 9 km in total
- Tertiary canals	earthen canal, commanding about 24 ha each, about 700 - 1,000 m long each
Drainage canals	all newly constructed
- Main drains	trapezoidal, earthen type, about 250 m long
- Secondary drains	earthen type, 2 drains, about 8 km long
- Tertiary canals	earthen canal, commanding about 24 ha each, about 700 - 1,000 m long each
Flood protection dike	15 km long
Farm road	two way road 2.3 km and one way road 17 km
On-farm development	land leveling of 620 ha, and field ditches

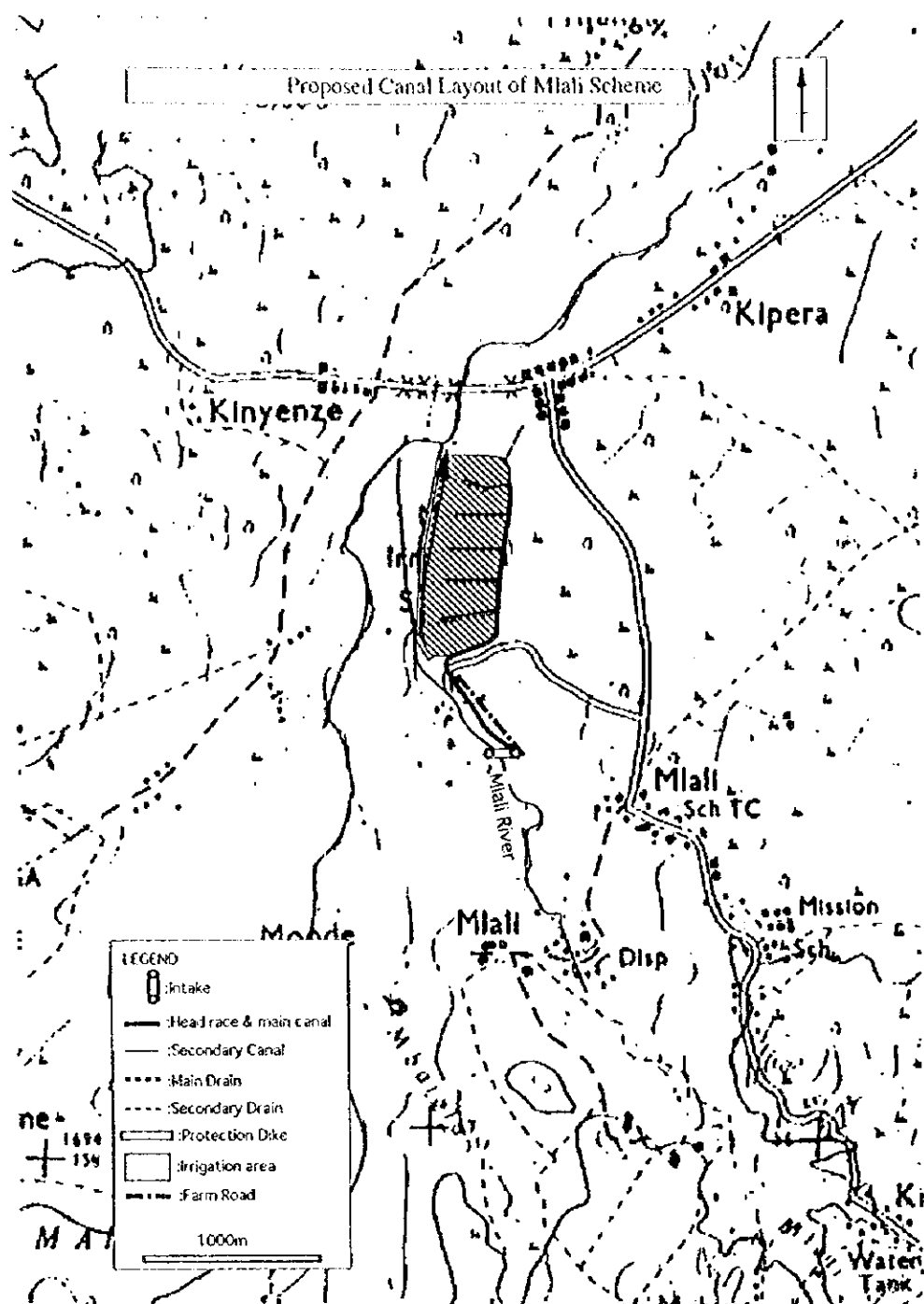
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FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO

TITLE OF DRAWING MASTER PLAN
CANAL LAYOUT OF KILANGALI & MGONGOLA SCHEMES

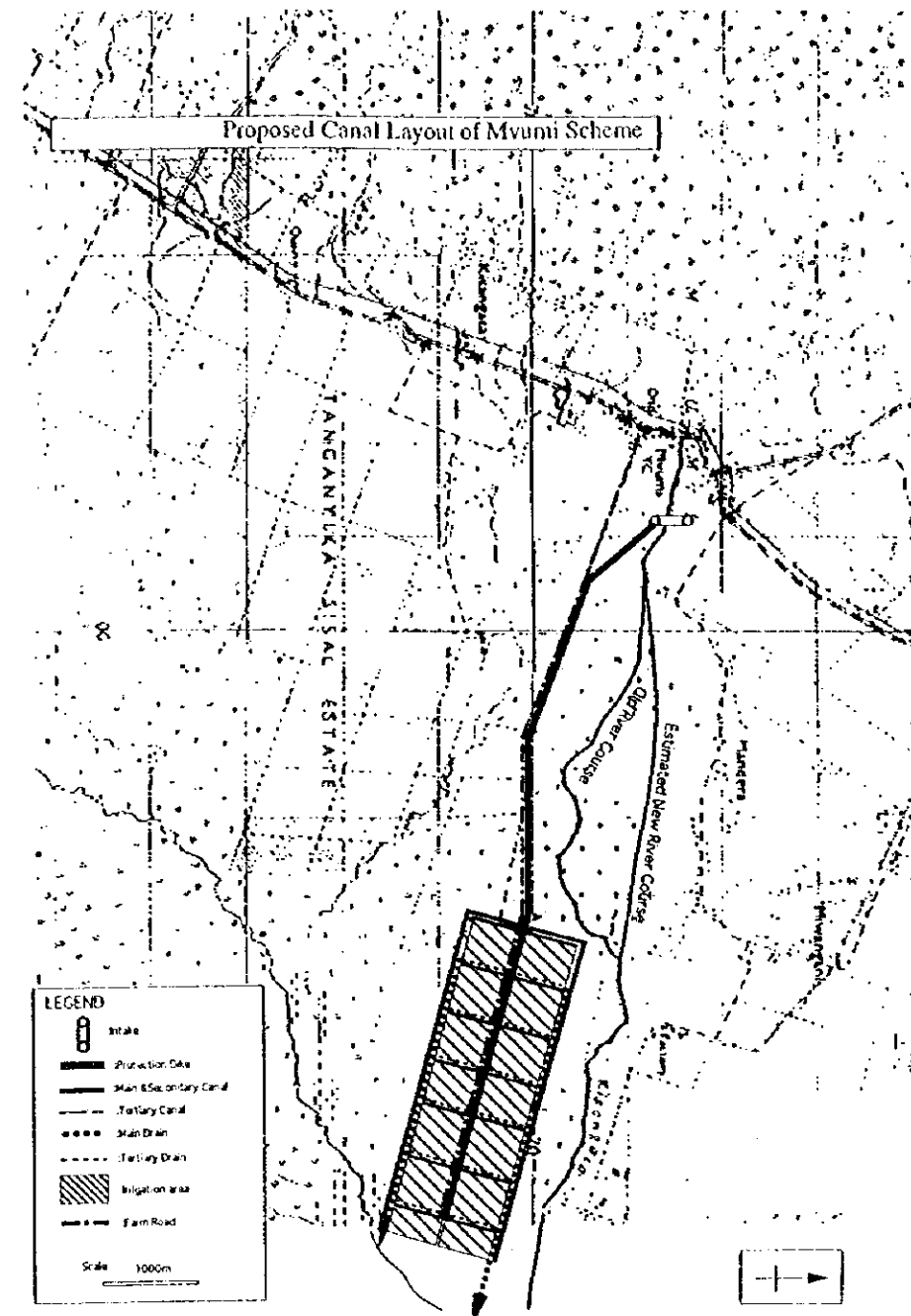
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Mlali Scheme

Gross cropping area	80 ha
Net cropping area	60 ha
Headworks	only an intake be constructed in the upstream 240 m or 600 m
- Design flood discharge	64 m ³ /sec in 50 year return period
- Design intake discharge	0.12 m ³ /sec
- Type	Intake without weir
- Intake	Stoplog type, 2 m wide x 0.6 m high
Irrigation canals	
- Headrace	Newly provided, stone or brick lining, 250 m
- Main canal	Rehabilitated with masonry lining, about 1,400 m long
- Secondary canals	Newly constructed, earthen canal, about 1.2 km in total
Drainage canals	Main 2.1 km, secondary 1.2 km
Flood protection dike	Earth type, about 1.5 m high, 1.3 km long
Farm road	Improvement from Mgeta road to present weir and then newly constructed to new intake, total 1.5 km



Mvumi Scheme

Gross cropping area	330 ha
Net cropping area	260 ha
Headworks	New construction at 1.5 km upstream of present buried intake
- Design flood discharge	244 m ³ /sec in 50 year return period
- Design intake discharge	0.5 m ³ /sec
- Weir type	Stoplog gated type
- Intake	Steel gate, 0.8 m wide x 0.8 m high
Irrigation canals	New construction
- Headrace	lining, about 4 km long
- Main canal	lining, about 3 km long
- Secondary canals	Earthen canal, 6 km in total, about 500 m ² 25 ha each
Drainage canals	New construction
- Main drains	Trapezoidal, earthen type, along right & left boundary, about 3.3 km long each
- Secondary drain	Earthen canal, 6 km, commanding about 25 ha each, about 8.5 km long
Flood protection dike	Improvement, 5 km, new road in area; 3 km
Farm road	
On farm development	
- Paddy field	Land leveling of 200 ha, field ridges and field ditches
- Upland	Field ditches for 60 ha

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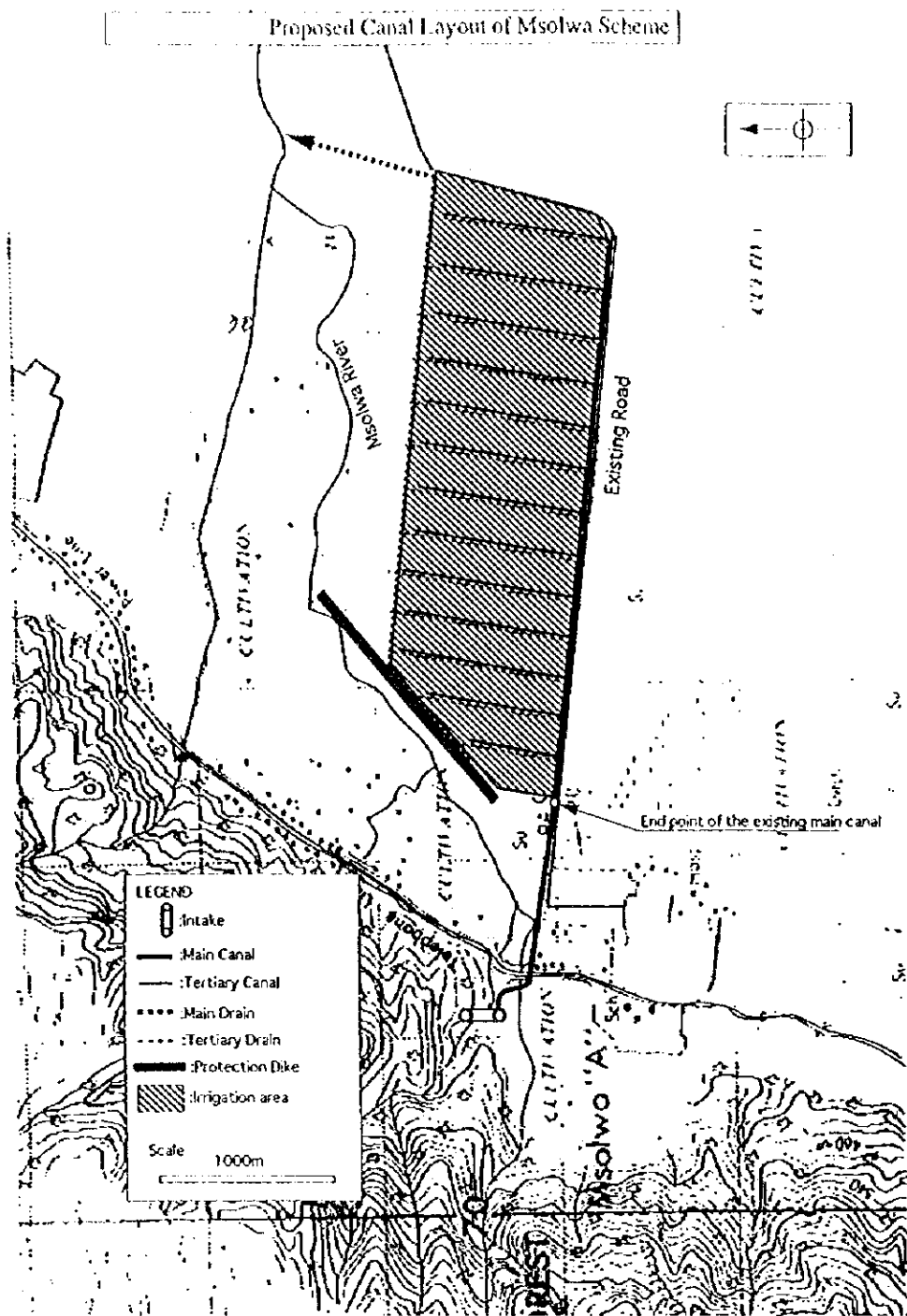
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO

TITLE OF DRAWING MASTER PLAN

CANAL LAYOUT OF MLALI & MVUMI SCHEMES

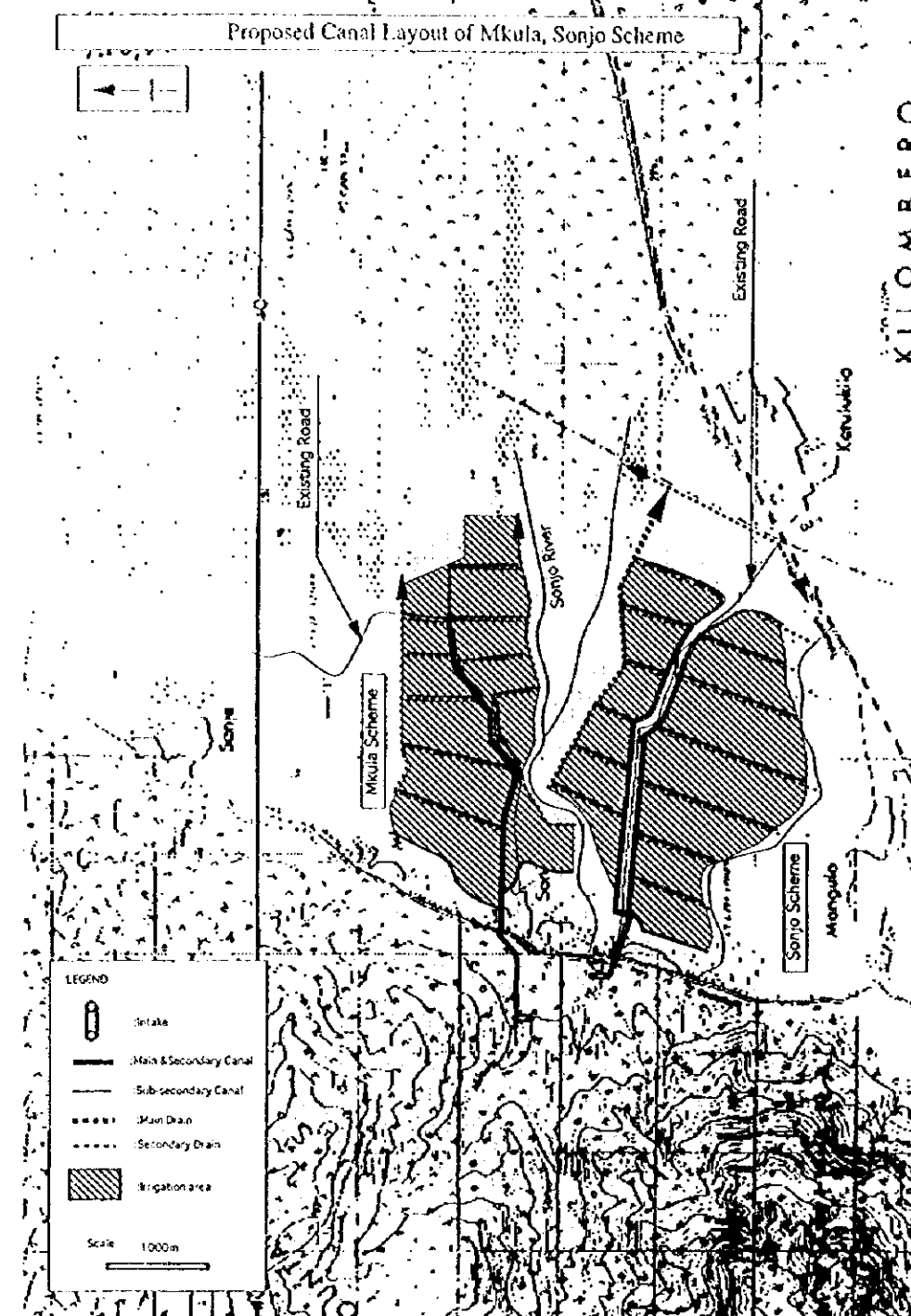
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Msolwa Scheme

Gross cropping area	400 ha
Net cropping area	320 ha
Headworks	Rehabilitation of existing weir and intake with gates' replacement
- Design flood discharge	97 m ³ /sec in 50 year return period
- Design intake discharge	0.3 m ³ /sec
- Weir type	Fixed overflow type
- Weir length	about 17 m
- Intake type	A gated inlet followed by a sand trap pond
- Intake inlet gate	Steel slide gate existing, 0.9 m wide x 1.2 m high
- Intake sand flush gate	Steel slide gate existing, 0.9 m wide x 1.3 m high
Irrigation canals	
- Head race	Rehabilitated at leakage points and increasing capacity, 1.3 km long
- Main canal	Newly constructed, lining 3.8 km long
- Secondary canals	Newly constructed, earthen canal, about 13 km in total
- Major related structures	Culverts for crossing farm road and division structures
Drainage canals	
- Main drains	newly constructed, earthen type, about 5 km long
- Secondary drains	newly constructed, earthen type, about 13 km long in total
Flood protection dike	Earth type, about 1 m high, 1.2 km long
On-farm development	Land leveling of 100 ha, and field ditches for paddy fields Field ditches for 220 ha of upland crop fields



Mkula Scheme

Gross cropping area	400 ha
Net cropping area	320 ha
Headworks	Rehabilitation of existing head works, intake and apron
- Design flood discharge	59 m ³ /sec in 50 year return period
- Design intake discharge	0.3 m ³ /sec
- Weir type	Fixed overflow type
- Weir length	about 11 m
- Intake inlet gate	steel slide gate, 0.6 m wide x 0.6 m high
Irrigation canals	
- Head race	Replaced with new one, lining about 175 m
- Main canal	Raising walls height by 30 cm for total 450 m length and repair leakage points Newly constructed, lining, 3 km long
- Secondary canals	Newly constructed, earthen canal, about 11 km in total
Drainage canals	
- Main drains	Newly constructed, earthen type, about 5 km long
- Secondary drains	Newly constructed, earthen type, about 11 km long in total
Flood protection dike	Earth type, 2.5 km long
On-farm development	Land leveling of 220 ha, and field ditches for paddy fields Field ditches for 100 ha of upland crop fields

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FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO

TITLE OF DRAWING MASTER PLAN

CANAL LAYOUT OF MSOLWA & MKULA SCHEMES

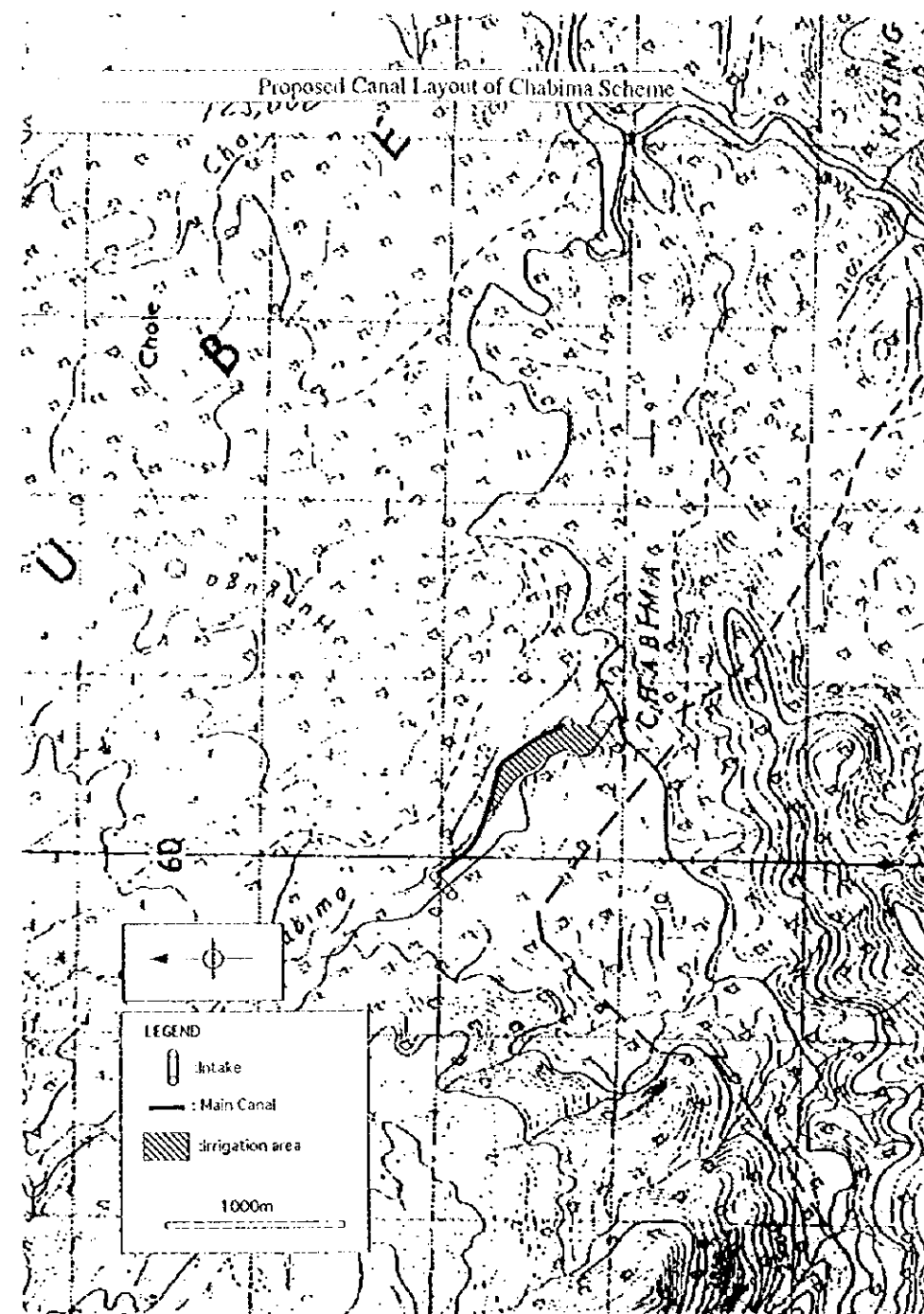
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Sonjo Scheme

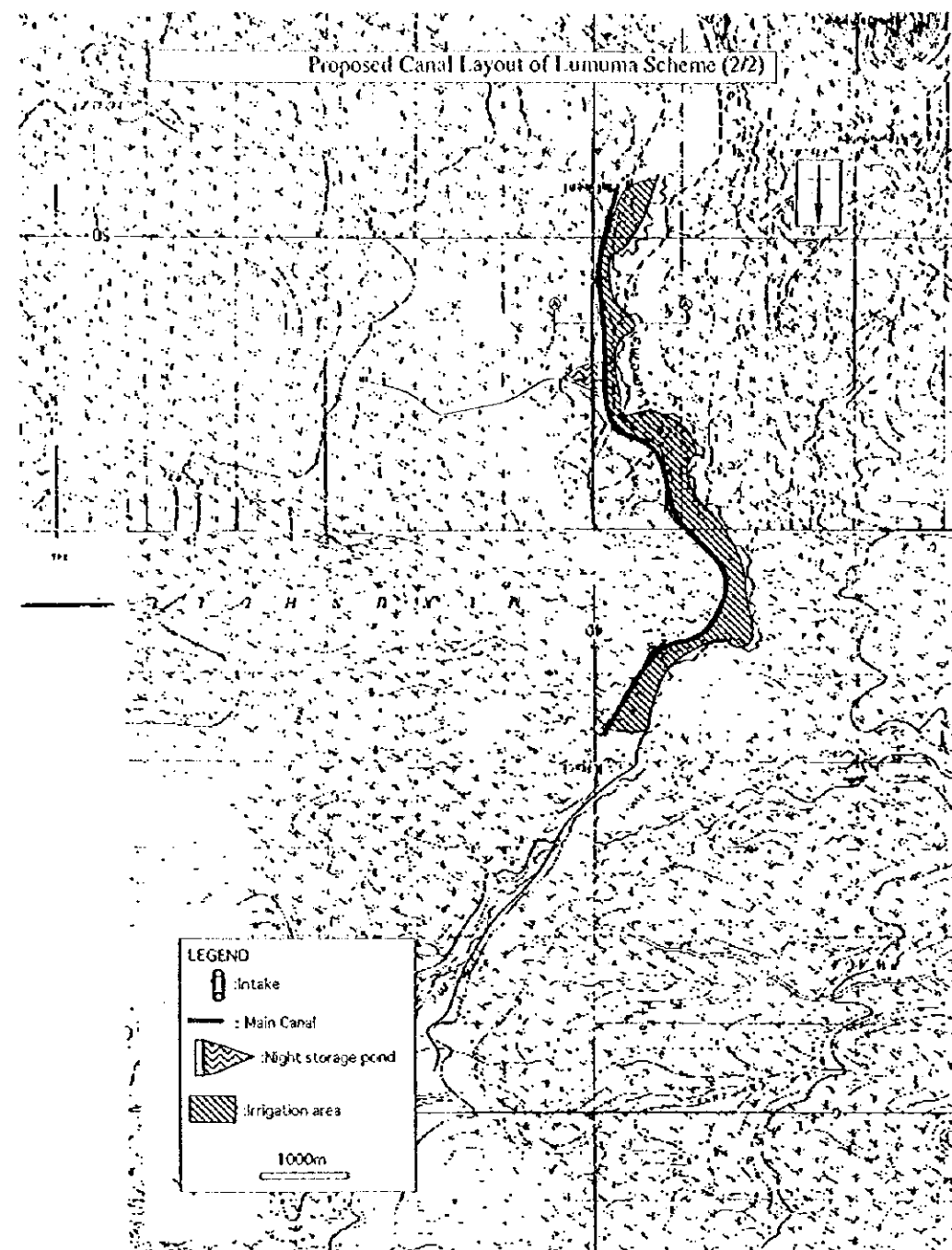
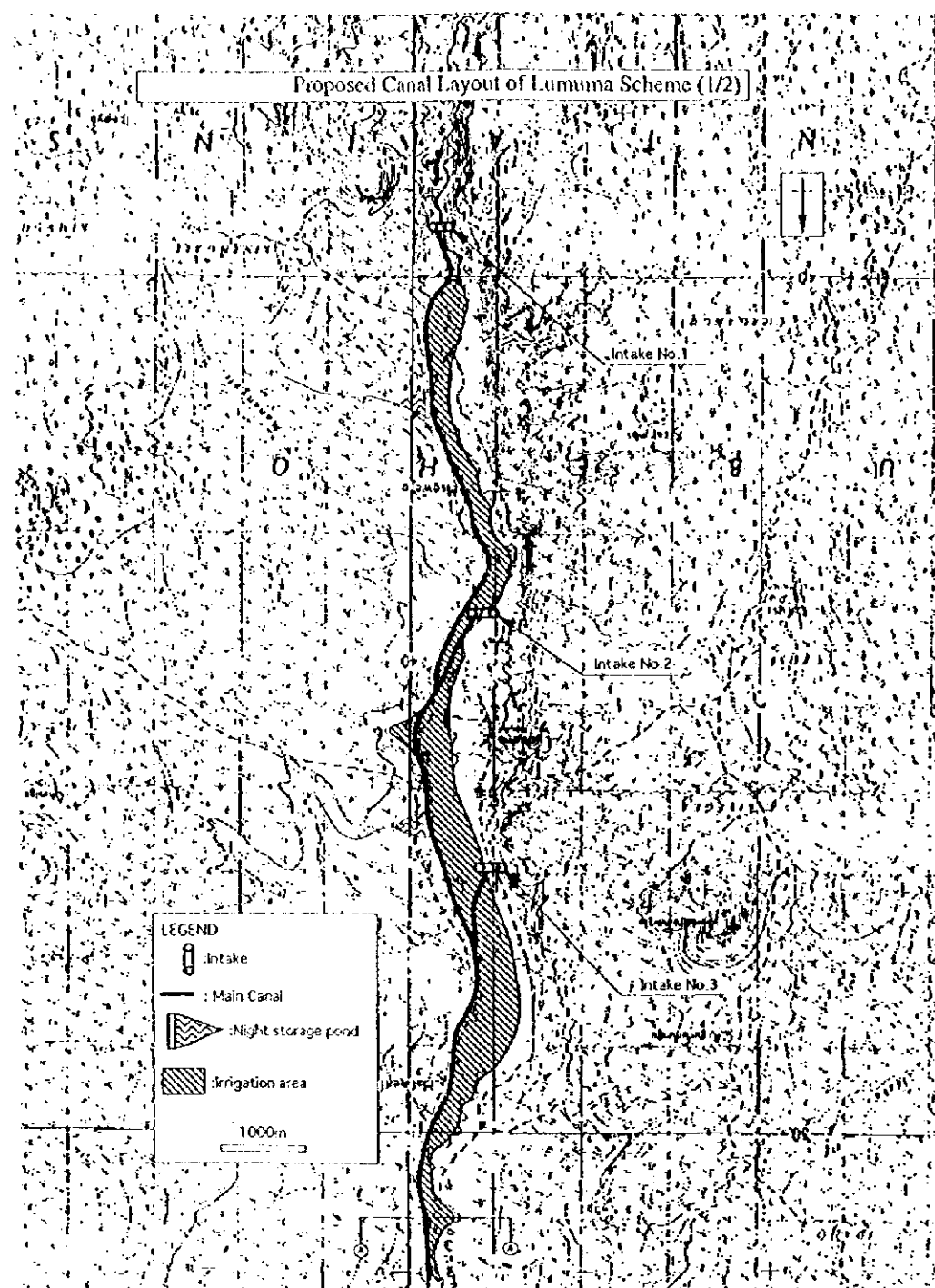
Gross cropping area	600 ha
Net cropping area	480 ha
Headworks	Newly provided
Design flood discharge	154 m ³ /sec in 50 year return period
Design intake discharge	0.5 m ³ /sec
Weir type	Fixed overflow type
Weir length	about 15 m
Intake inlet gate	Steel slide gate, 0.9 m wide x 0.9 m high
Irrigation canals	
Main canal	Stone or brick masonry lining, 3.5 km long
Secondary canals	Stone or brick masonry lining, 3 km long
Other secondary canals	Mainly earthen canal, about 12 km in total
Drainage canals	
Main drains	New construction in both sides, earthen type, about 4 km long
Secondary drains	New construction, earthen type, about 12 km long in total
Flood protection dike	2.4 km long
On-farm development	Land leveling of 260 ha, and field ditches for paddy fields Field ditches for 220 ha of upland crop fields



Chabima Scheme

Gross cropping area	15 ha
Net cropping area	10 ha
Headworks	Rehabilitation of cracked portion, reinforcement of apron & right wing, intake is newly provided
Design flood discharge	16 m ³ /sec in 50 year return period
Design intake discharge	0.01 m ³ /sec
Weir Type	Fixed type weir
Intake Type	A stoplog gated inlet, 0.5m wide x 0.8m high
Irrigation canals	New construction
Main canal	earthen canal, about 1 km long
On-farm development	10 ha

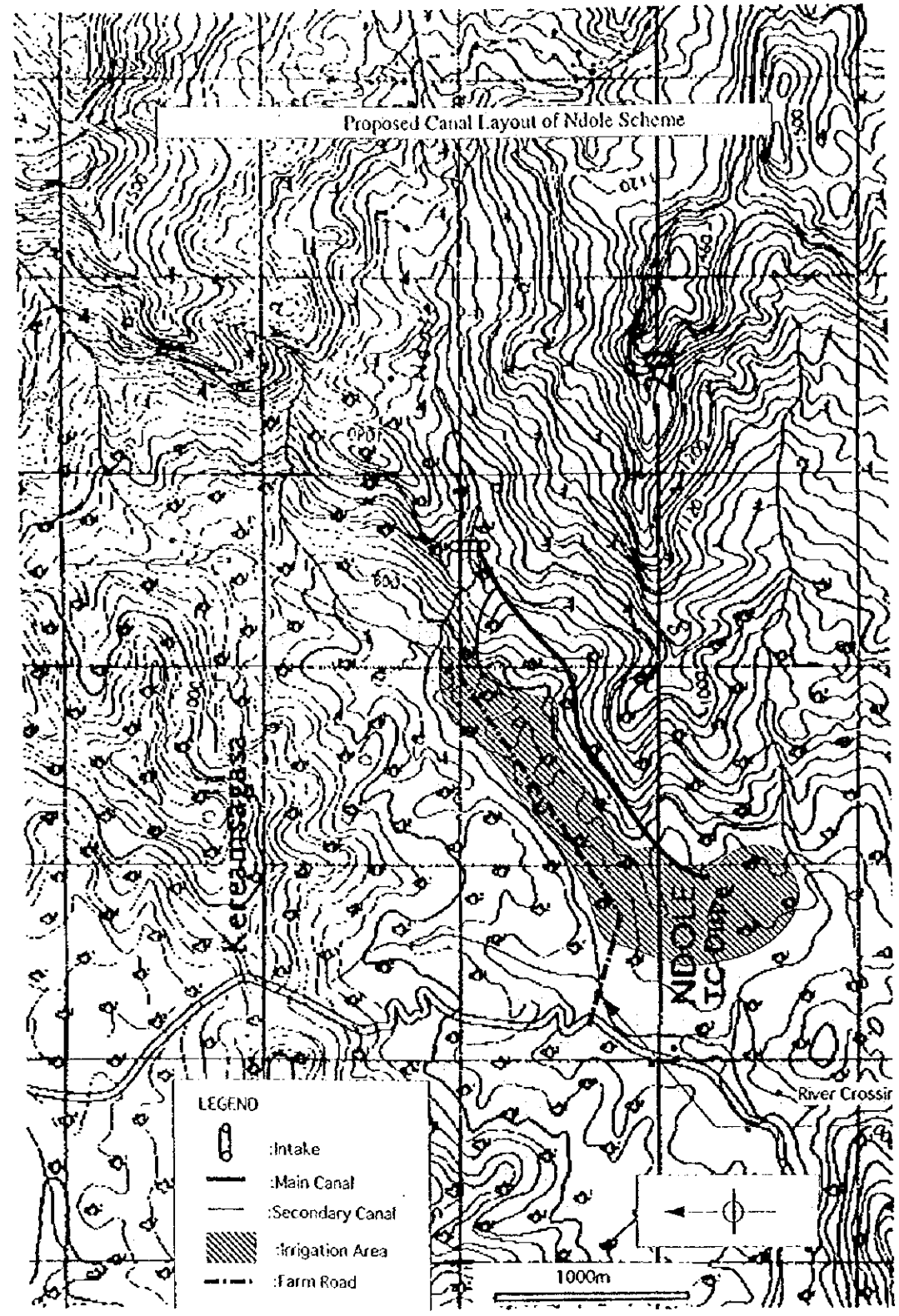
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FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MASTER PLAN	
CANAL LAYOUT OF SONJO & CHABIMA SCHEMES			
Date	Drawing No.	105	
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Lumuma Scheme

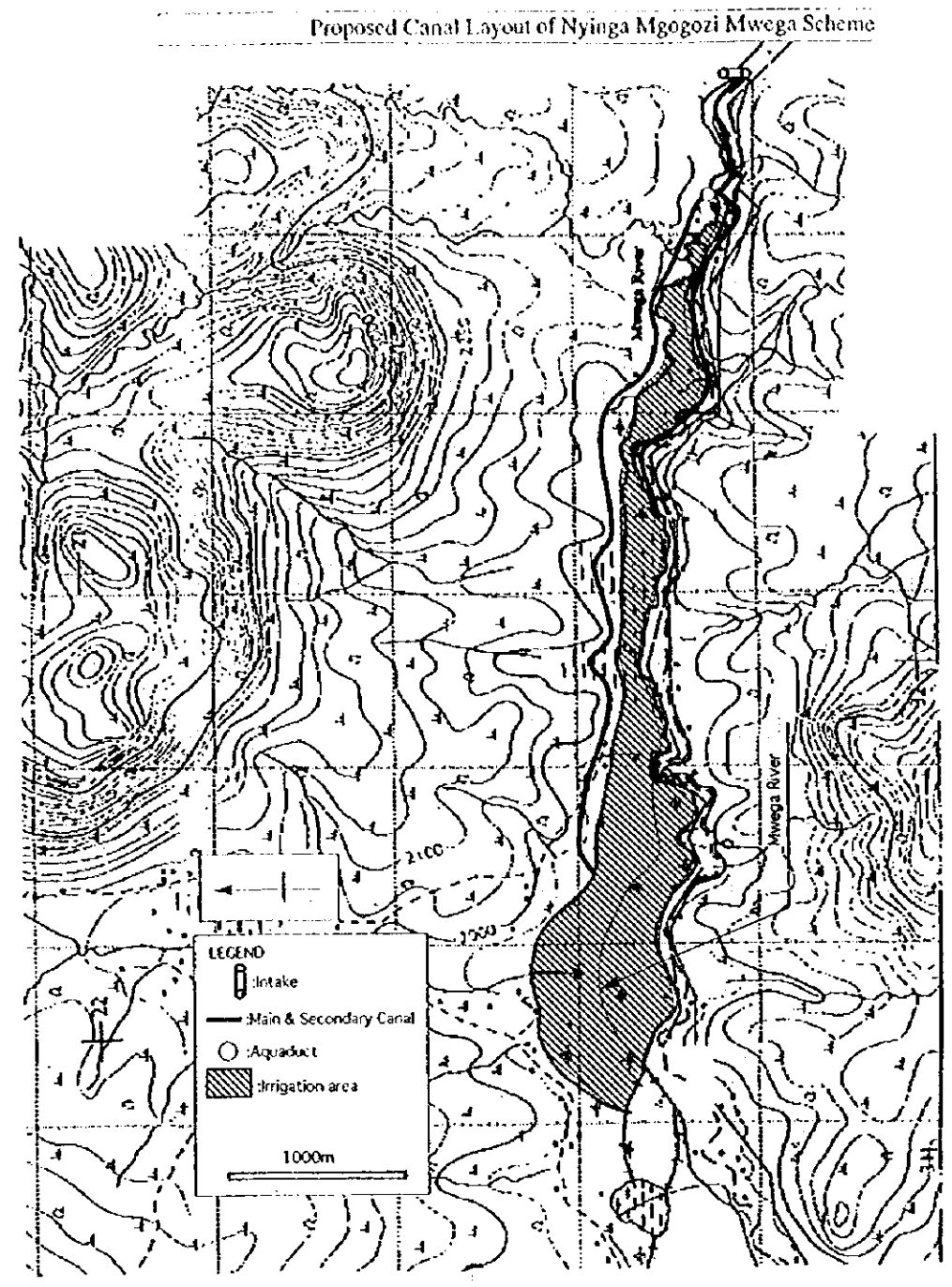
Gross cropping area	480 ha		
Net cropping area	380 ha		
Headworks	First System	Second System	Third System
- Design flood discharge	Traditional intakes are released with permanent head works.		
- Design intake discharge	161 m ³ /sec in 50 year return period		
- Weir type	0.13 m ³ /sec	0.10 m ³ /sec	0.15 m ³ /sec
- Intake inlet gate	Fixed overflow type	Stoplog gated type	Stoplog gated type
Irrigation canals	Steel slide gate, gate leaf size: 0.6 m wide x 0.6 m high x 1 set		
- Main canal lining	4.5 km	5 km	11 km
- Night storage pond, capa.	2,800 m ³	2,200 m ³	3,200 m ³

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FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MASTER PLAN	
CANAL LAYOUT OF LUMUMA SCHEME			
Date		Drawing No.	106
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Ndole Scheme

Gross cropping area	100 ha
Net cropping area	80 ha
Irrigation canals	Rehabilitation of existing canal & extension of main canal
Head race	Increasing canal height, about 250 m long
Main canal	Flume type, lining, about 2.5 km long
Secondary canal	Provision of lining, about 0.3 km long
Major related structures	Construction of stepped chute and division box on main canal
Farm road	2 km with a bridge for river crossing
On-farm development	Field ditches for 80 ha



Nyinga and Mgogozi Mwega Scheme

Gross cropping area	180 ha
Net cropping area	150 ha
Headworks	Newly constructed for unification of traditional intakes
Design flood discharge	99 m ³ /sec
Design intake discharge	0.15 m ³ /sec
Weir type	stoplog gated type
Intake inlet gate	Steel slide gate, gate leaf size: 0.5 m wide x 0.5 m high x 1 set
Irrigation canals	
Proposed main canal	3.2 km, lining
Proposed secondary canal to Mgogozi area	4.4 km, lining

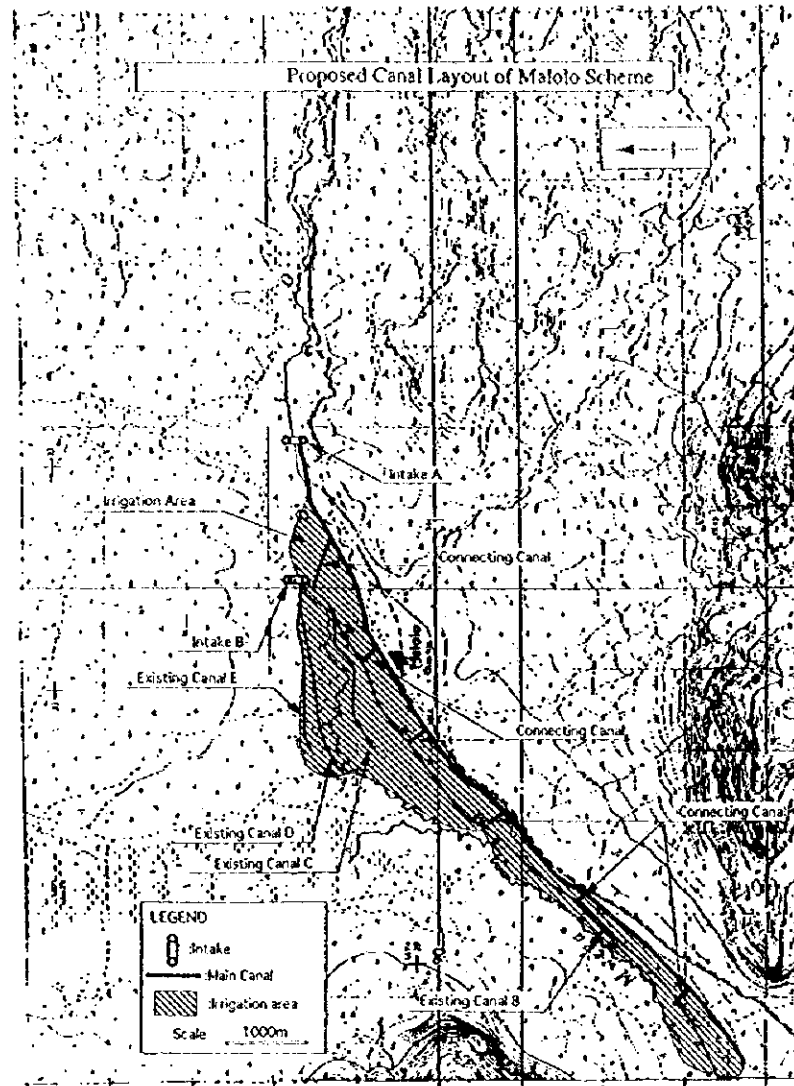
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FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO

TITLE OF DRAWING MASTER PLAN
CANAL LAYOUT OF NDOLE & NYINGA, MGOGOZI MWEGA SCHEMES

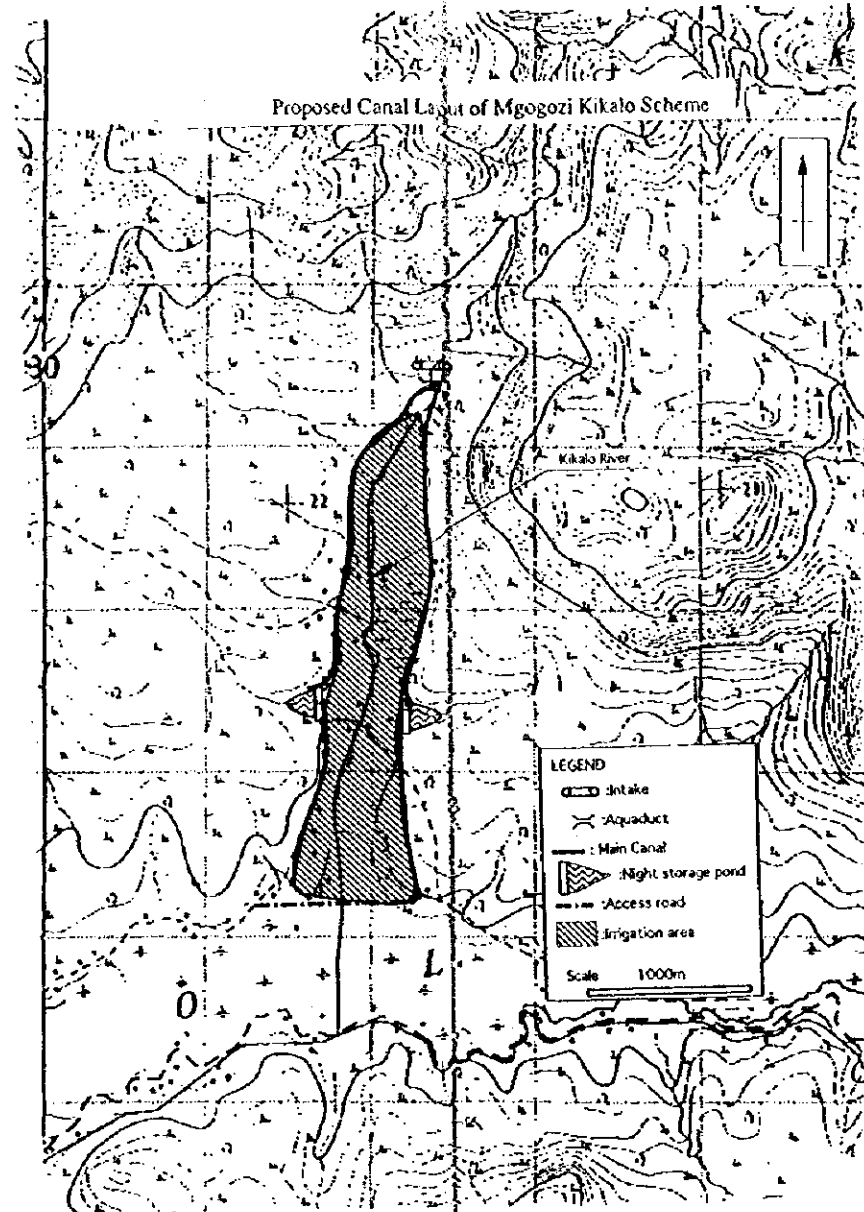
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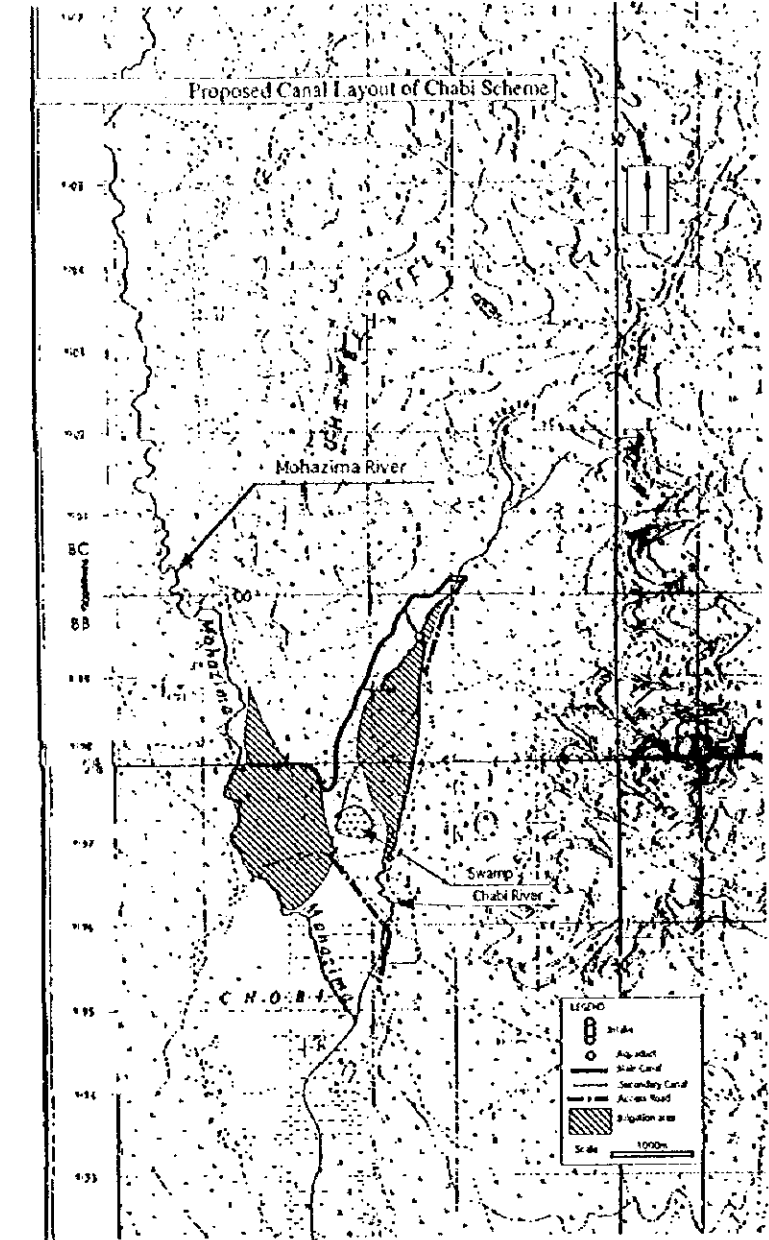
Malolo Scheme

Gross cropping area	500 ha	
Net cropping area	400 ha	
Net irrigation area	Intake A system (Left bank area) 350 ha	Intake B system (Right bank area) 50 ha
Headworks	Replaced with new one	Improvement
Design flood discharge	117 m ³ /sec	
Design intake discharge	0.35 m ³ /sec	0.05 m ³ /sec
Weir type	stoplog gated type	stoplog gated type
Intake type	an inlet and a sand trap pond with slide gates	
Intake gate (leaf size)	0.9 m x 0.9 m	0.5 m x 0.5 m
Irrigation canals	Main canal A, 10.5 km	
Main canal	Proposed connecting canal from canal-A to existing canal-B	
	6 canals, 2.2 km in total	



Mgozi-Kikalo Scheme

Gross cropping area	130 ha
Net cropping area	100 ha
Headworks	Improvement of weir and newly construction of intake
Design flood discharge	8 m ³ /sec in 50 year return period
Design intake discharge	0.10 m ³ /sec
Weir	Existing, fixed overflow type, repairing leakage point
Intake	Steel slide gate, gate leaf size: 0.5 m wide x 0.5 m high x 1 set
Irrigation canals	Lining, 2 km long each
Main canal, Left and right	A night storage pond for each of left and right main canal
Major related structures	Effective storage volume: 900 m ³ to 1,300 m ³ for each
River improvement	Enlargement, about 1 km in the downstream reaches
On-farm development	Small earthen canals, about 3 km in total



Chabi Scheme

Gross cropping area	340 ha
Net cropping area	270 ha, only 240 ha be irrigated by proposed Chabi system
Headworks	Construction of permanent head works on the Chabi river
Design flood discharge	33 m ³ /sec in 50 year return period
Design intake discharge	0.27 m ³ /sec
Weir Type	Fixed type weir
Intake Inlet gate size	Steel gate, 0.6m wide x 0.6m high
Irrigation canals	New construction & rehabilitation of existing canal
Main canal	Lining, about 5 km long
Secondary canals	New construction, of 0.5 km & improvement of about 3 km by lining
On-farm development	Small earthen canals, 11 km in total

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FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO

TITLE OF DRAWING MASTER PLAN
CANAL LAYOUT OF MALOLO, MGOZOZI KIKALO & CHABI SCHEMES

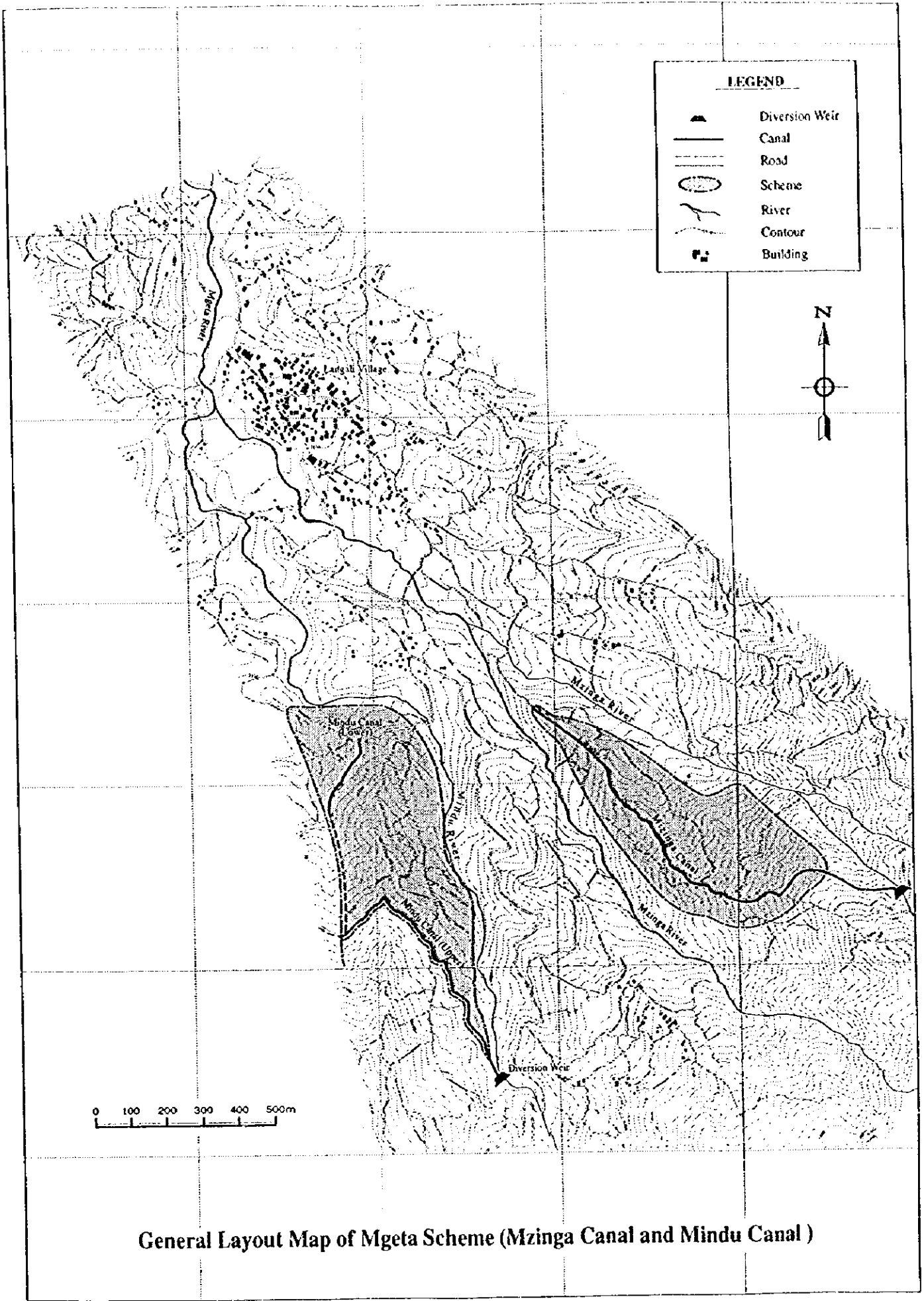
Date	Drawing No.	108
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JAPAN INTERNATIONAL COOPERATION AGENCY

DIVISION-2

**THE STUDY
ON
THE SMALLHOLDER IRRIGATION PROJECTS
IN
CENTRAL WAMI RIVER BASIN**

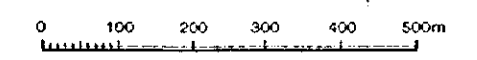
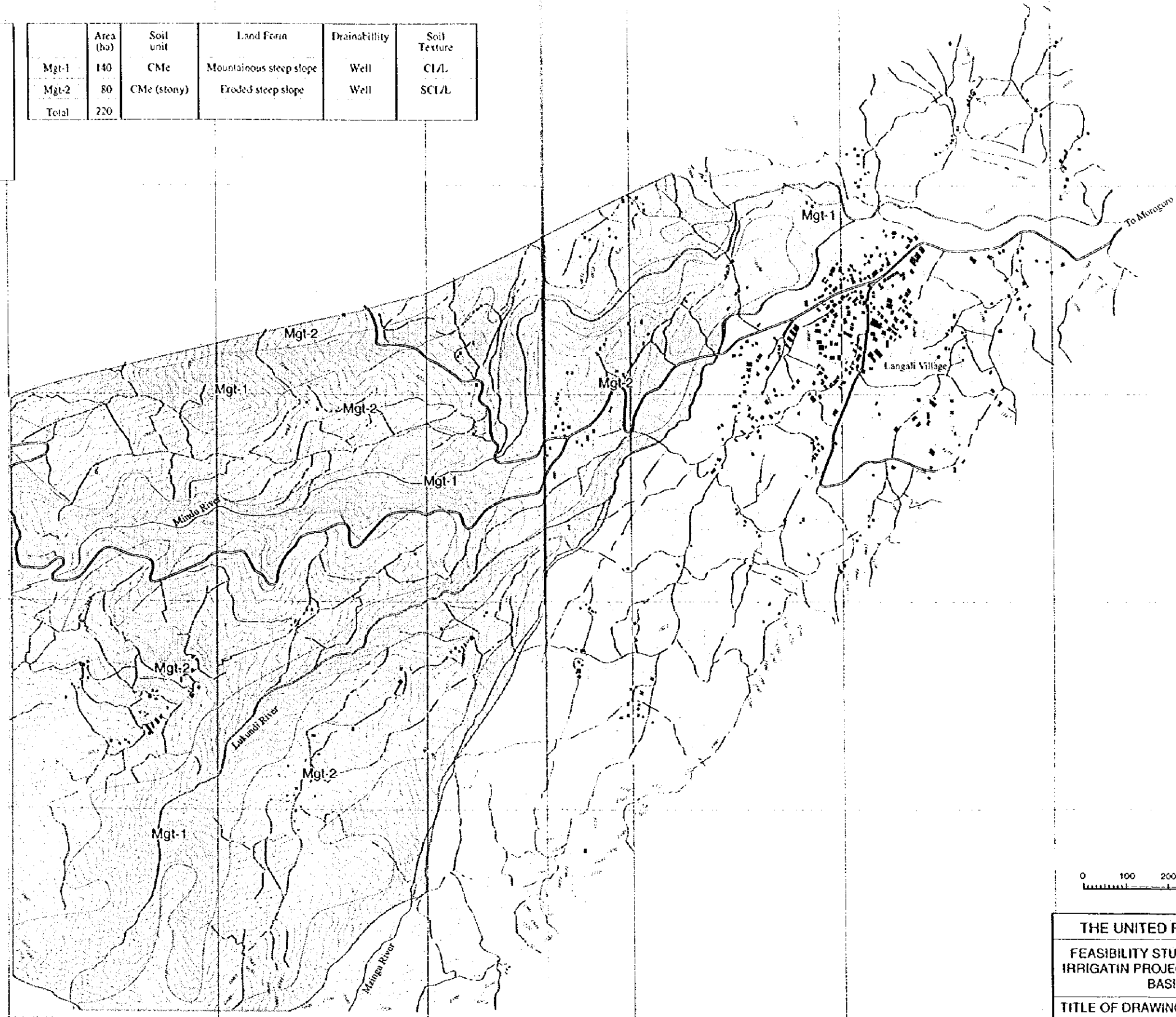
**FEASIBILITY STUDY
ON
MGETA SCHEME**



LEGEND

- Road
- River
- Farm Land
- Contour
- House/Building

	Area (ha)	Soil unit	Land Form	Drainability	Soil Texture
Mgt-1	140	CMe	Mountainous steep slope	Well	Cl/L
Mgt-2	80	CMe (stony)	Eroded steep slope	Well	SCl/L
Total	220				

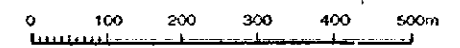
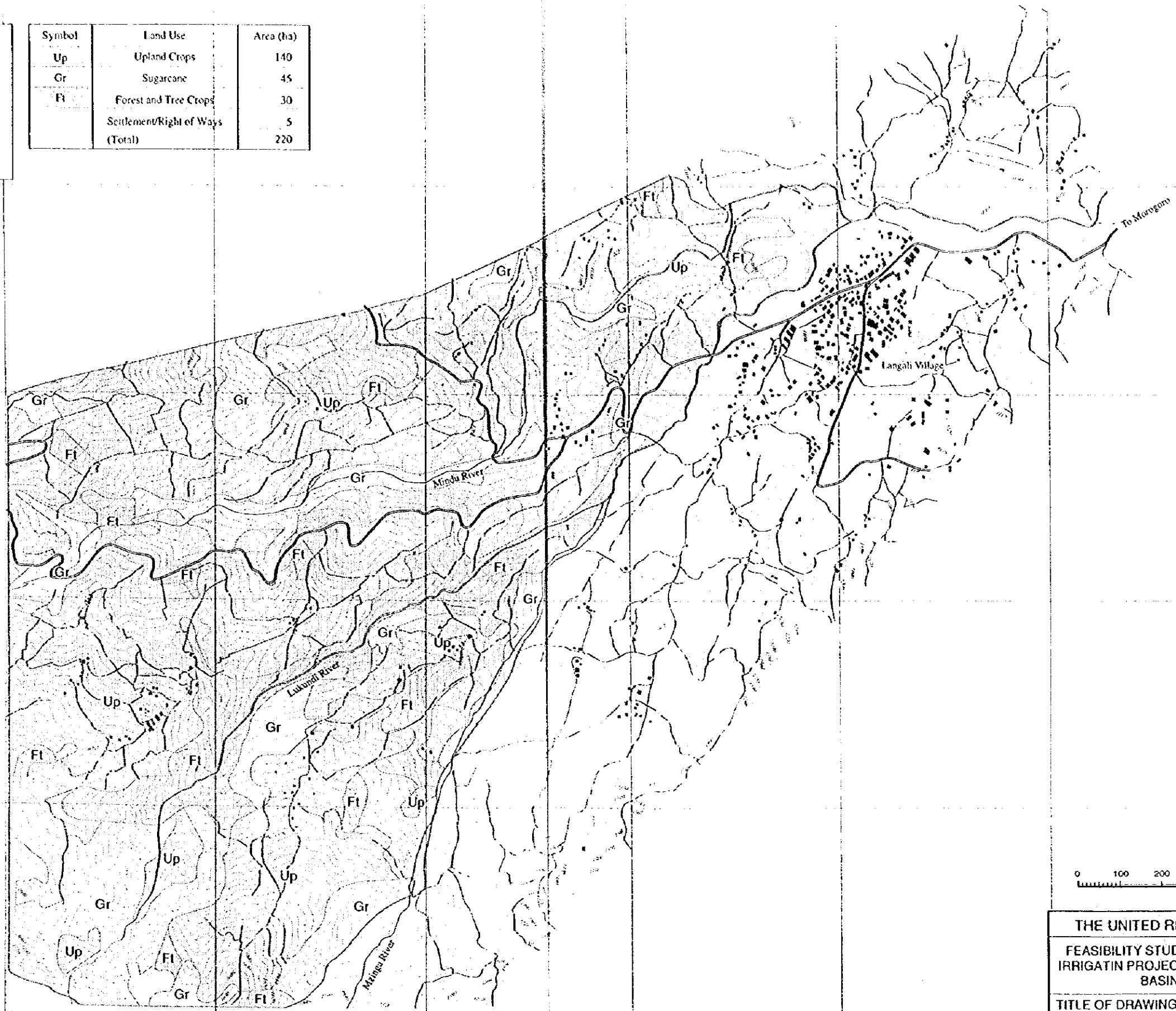


THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGETA SCHEME	
SOIL MAP			
Date		Drawing No.	20
JAPAN INTERNATIONAL COOPERATION AGENCY			

LEGEND

	Road
	River
	Farm Land
	Contour
	House/Building

Symbol	Land Use	Area (ha)
Up	Upland Crops	140
Gr	Sugarcane	45
Fl	Forest and Tree Crops	30
	Settlement/Right of Ways	5
	(Total)	220



THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGETA SCHEME	
PRESENT LAND USE			
Date		Drawing No.	202
JAPAN INTERNATIONAL COOPERATION AGENCY			

LEGEND

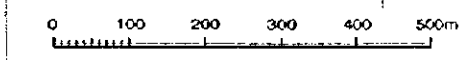
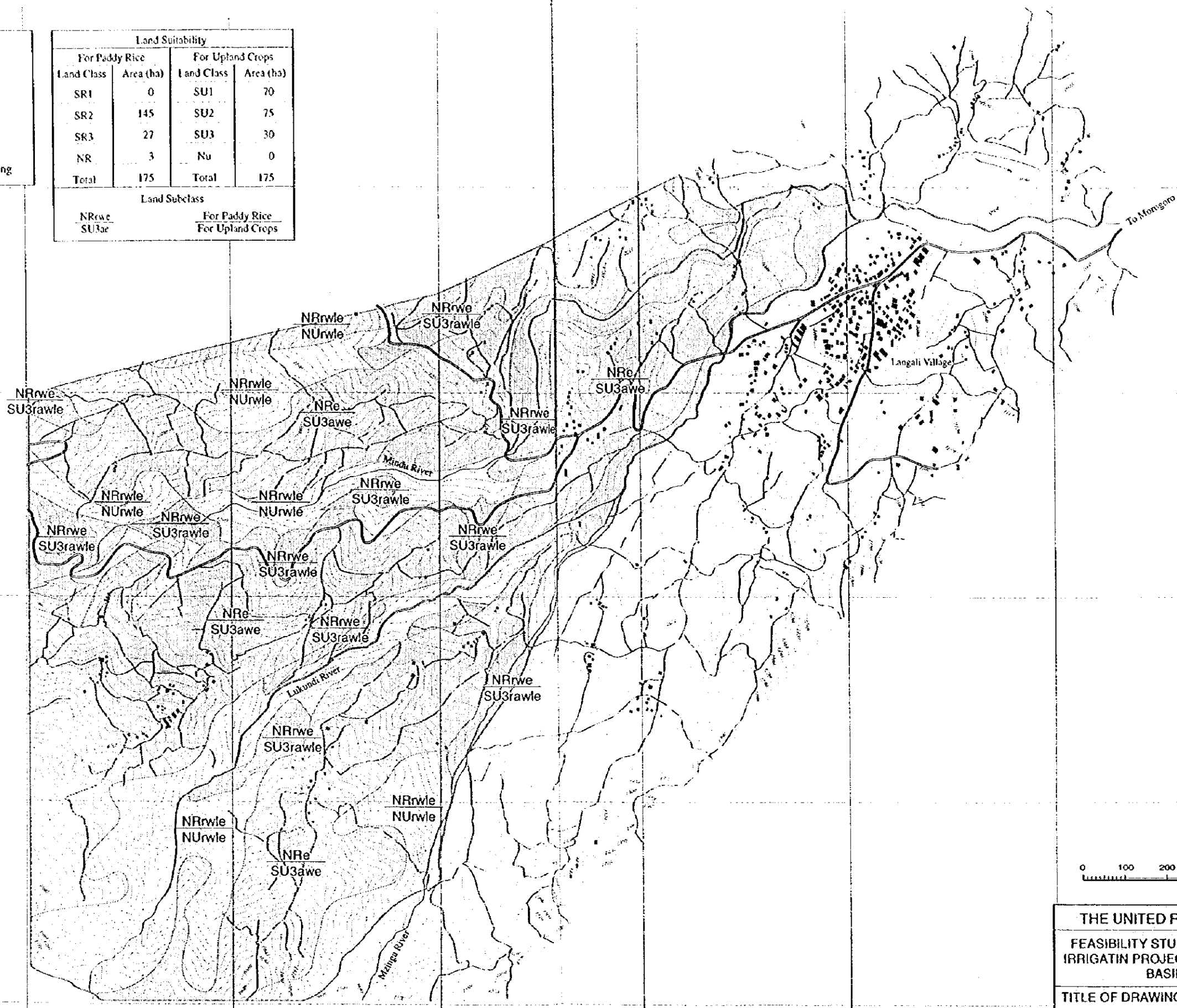
	Road
	River
	Farm Land
	Contour
	House/Buikling

Land Suitability

For Paddy Rice		For Upland Crops	
Land Class	Area (ha)	Land Class	Area (ha)
SR1	0	SU1	70
SR2	145	SU2	75
SR3	27	SU3	30
NR	3	Nu	0
Total	175	Total	175

Land Subclass

NRrwe	For Paddy Rice
SU3rwe	For Upland Crops

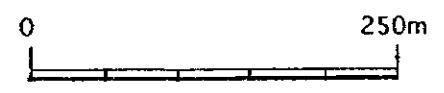
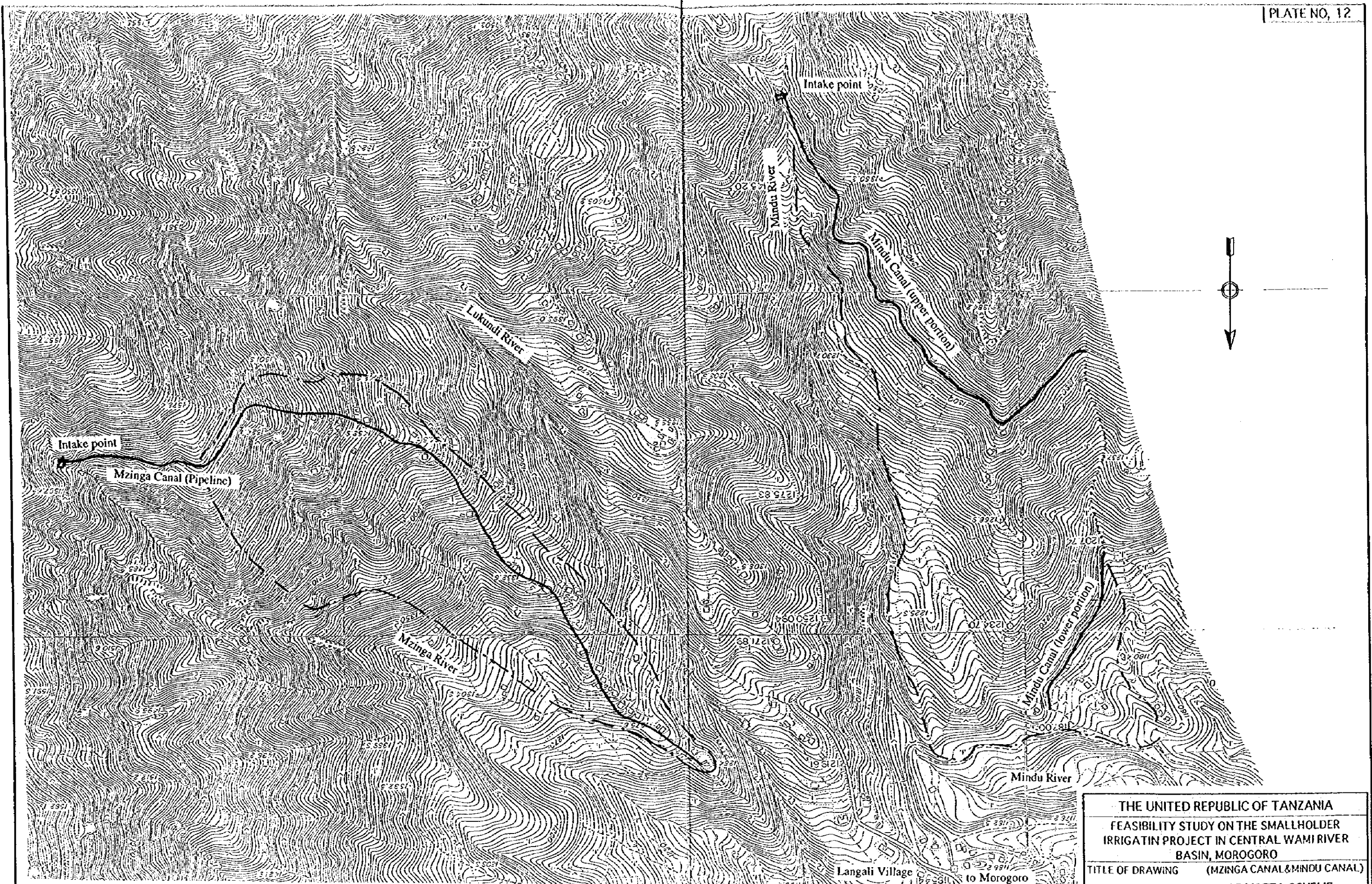


THE UNITED REPUBLIC OF TANZANIA
 FEASIBILITY STUDY ON THE SMALLHOLDER
 IRRIGATION PROJECT IN CENTRAL WAMI RIVER
 BASIN, MOROGORO

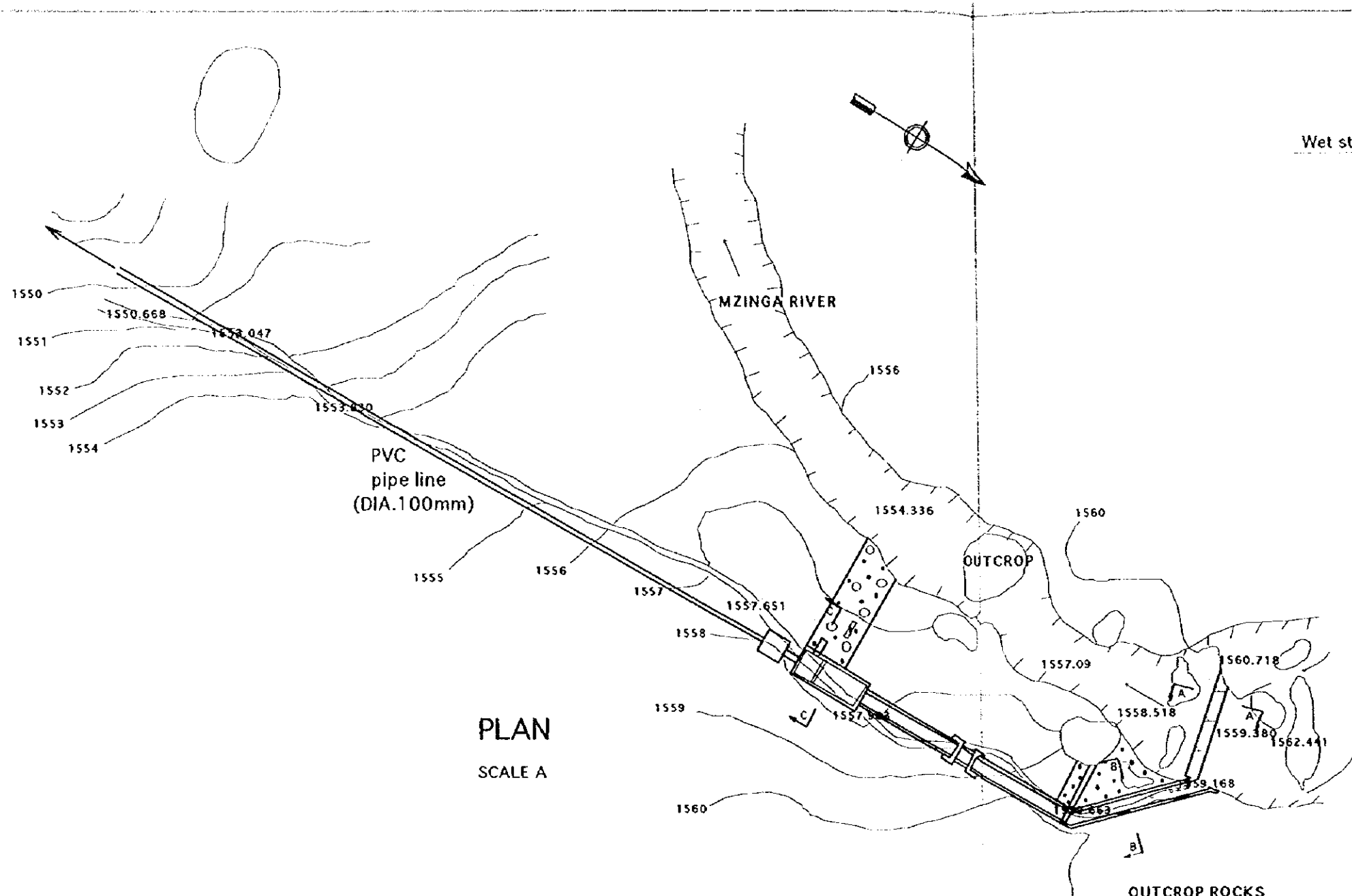
TITLE OF DRAWING MGETA SCHEME
 IRRIGATION SUITABILITY MAP

Date	Drawing No.	203
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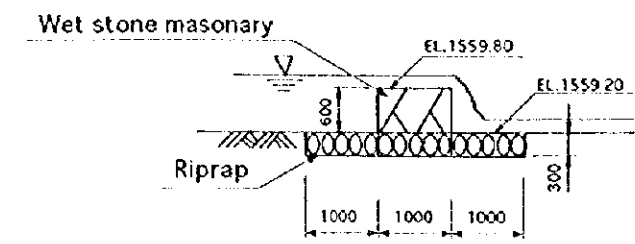
JAPAN INTERNATIONAL COOPERATION AGENCY



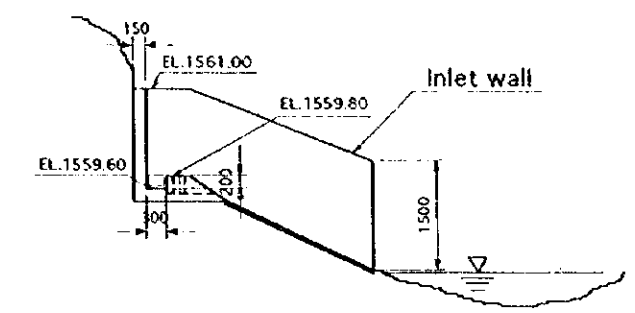
THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING (Mzinga Canal & Mindu Canal)			
GENERAL LAYOUT OF MGETA SCHEME			
Date		Drawing No.	204
JAPAN INTERNATIONAL COOPERATION AGENCY			



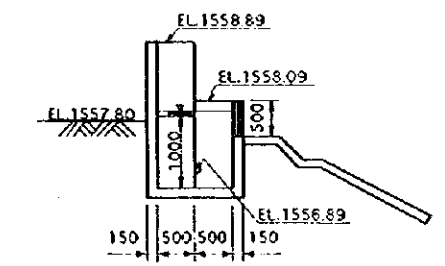
PLAN
SCALE A



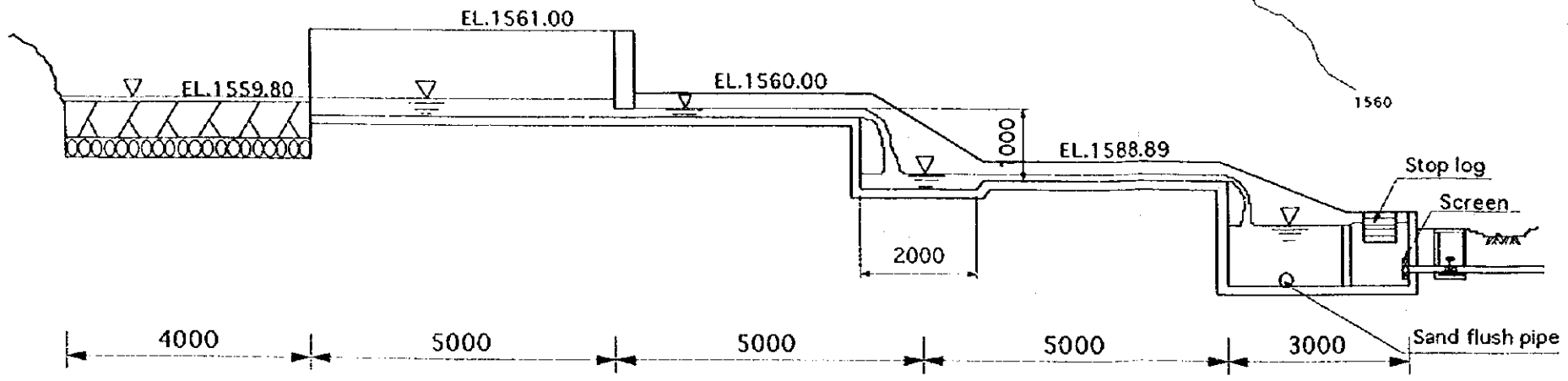
SECTION A-A
SCALE B



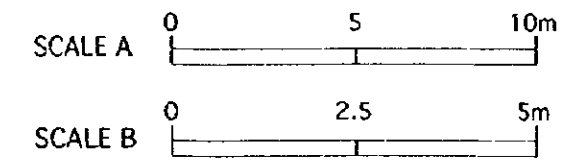
SECTION B-B
SCALE B



SECTION C-C
SCALE B



PROFILE
SCALE B

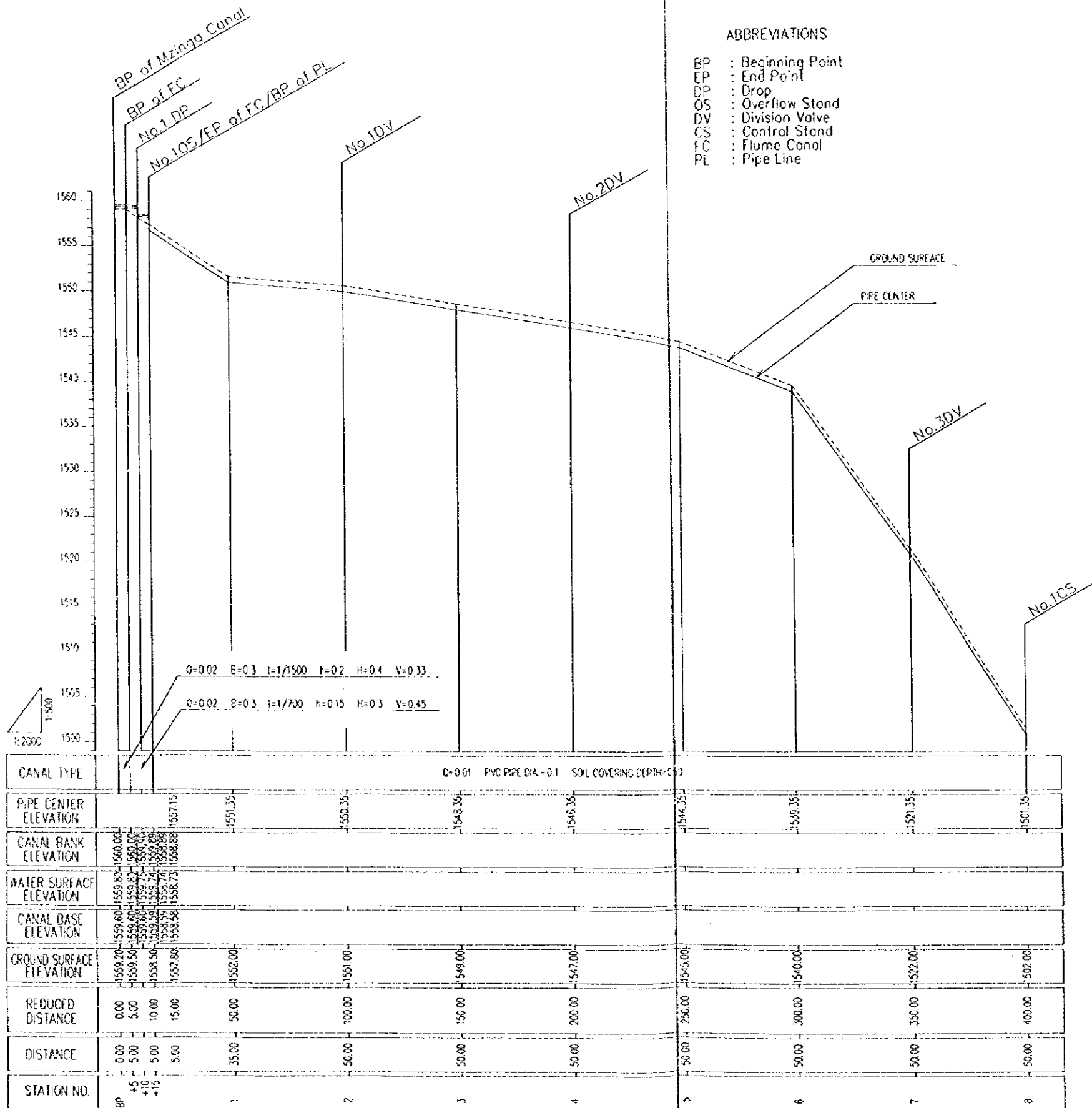


THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGETA SCHEME (MZINGA SYSTEM)	
		INTAKE	
Date		Drawing No.	205
JAPAN INTERNATIONAL COOPERATION AGENCY			

Mzinga canal (1/5)

ABBREVIATIONS

- BP : Beginning Point
- EP : End Point
- DP : Drop
- OS : Overflow Stand
- DV : Division Valve
- CS : Control Stand
- FC : Flume Canal
- PL : Pipe Line



THE UNITED REPUBLIC OF TANZANIA

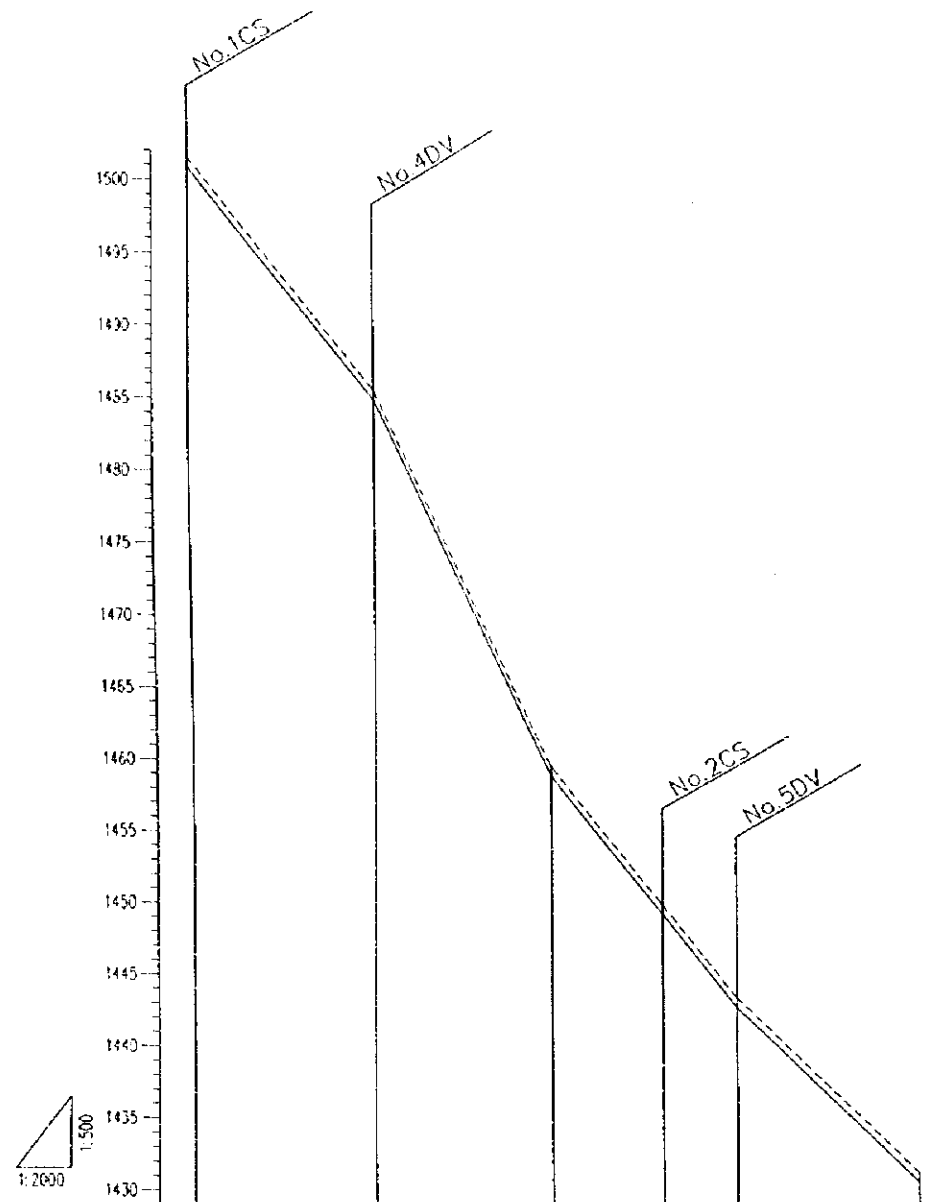
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO

TITLE OF DRAWING MGETA SCHEME (Mzinga SYSTEM)

PROFILE OF CANAL(1)

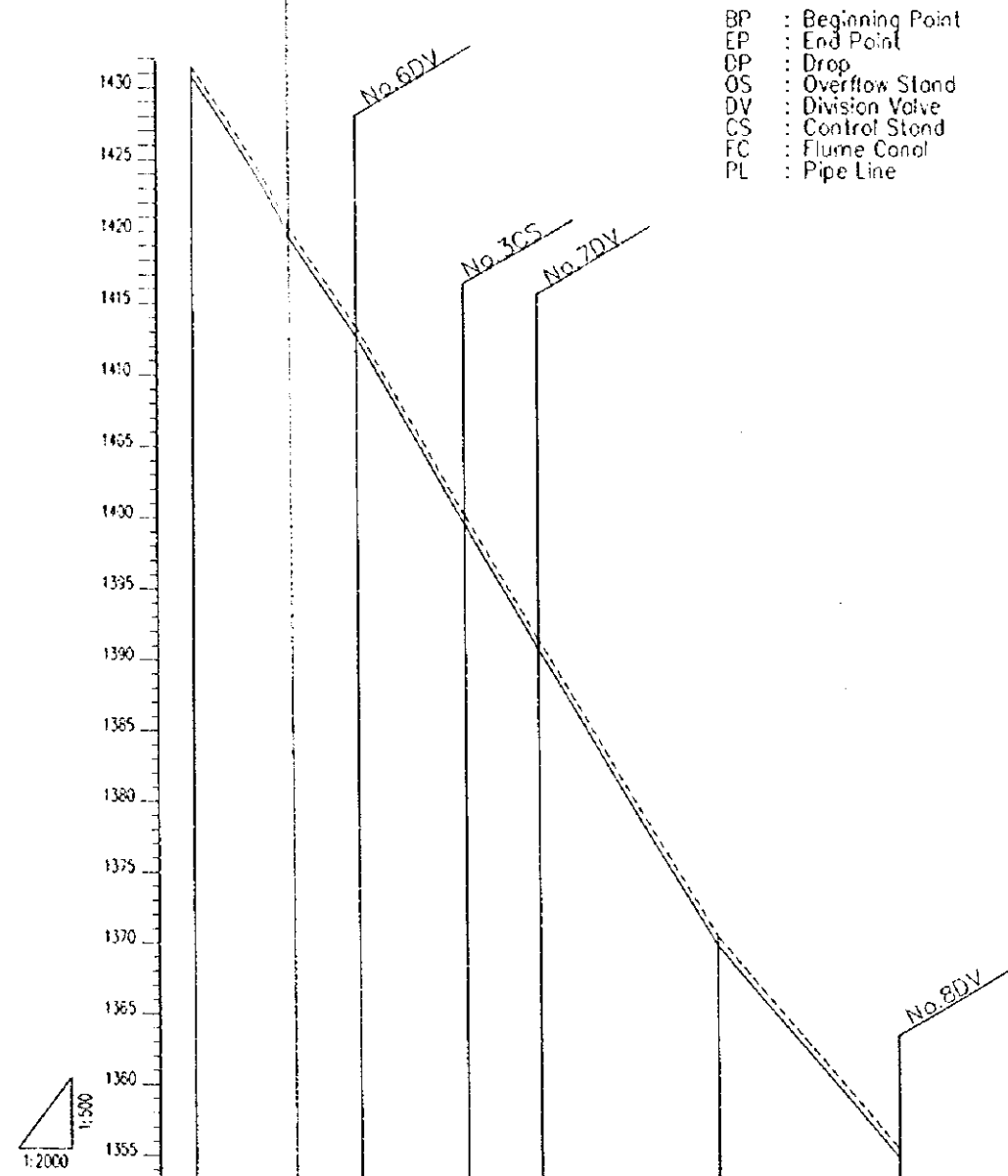
Date		Drawing No.	206
JAPAN INTERNATIONAL COOPERATION AGENCY			

Mzinga canal (2/5)



CANAL TYPE	Q=0.01 PVC PIPE DIA=0.1 SOIL COVERING DEPTH=0.60					
PIPE CENTER ELEVATION	1501.35	1485.35	1459.35	1449.75	1443.35	1431.35
CANAL BANK ELEVATION						
WATER SURFACE ELEVATION						
CANAL BASE ELEVATION						
GROUND SURFACE ELEVATION	1502.00	1486.00	1460.00	1450.40	1444.00	1432.00
REDUCED DISTANCE	400.00	450.00	500.00	530.00	550.00	600.00
DISTANCE	50.00	50.00	50.00	30.00	20.00	50.00
STATION NO.	8	9	10	11	12	

Mzinga canal (3/5)



CANAL TYPE	Q=0.01 PVC PIPE DIA=0.1 SOIL COVERING DEPTH=0.60					
PIPE CENTER ELEVATION	1431.35	1413.35	1400.15	1391.35	1370.35	1355.35
CANAL BANK ELEVATION						
WATER SURFACE ELEVATION						
CANAL BASE ELEVATION						
GROUND SURFACE ELEVATION	1432.00	1414.00	1400.80	1392.00	1371.00	1356.00
REDUCED DISTANCE	600.00	650.00	680.00	700.00	750.00	800.00
DISTANCE	50.00	50.00	30.00	20.00	50.00	50.00
STATION NO.	12	13	14	15	16	

- ABBREVIATIONS
- BP : Beginning Point
 - EP : End Point
 - OP : Drop
 - OS : Overflow Stand
 - DV : Division Valve
 - CS : Control Stand
 - FC : Flume Canal
 - PL : Pipe Line

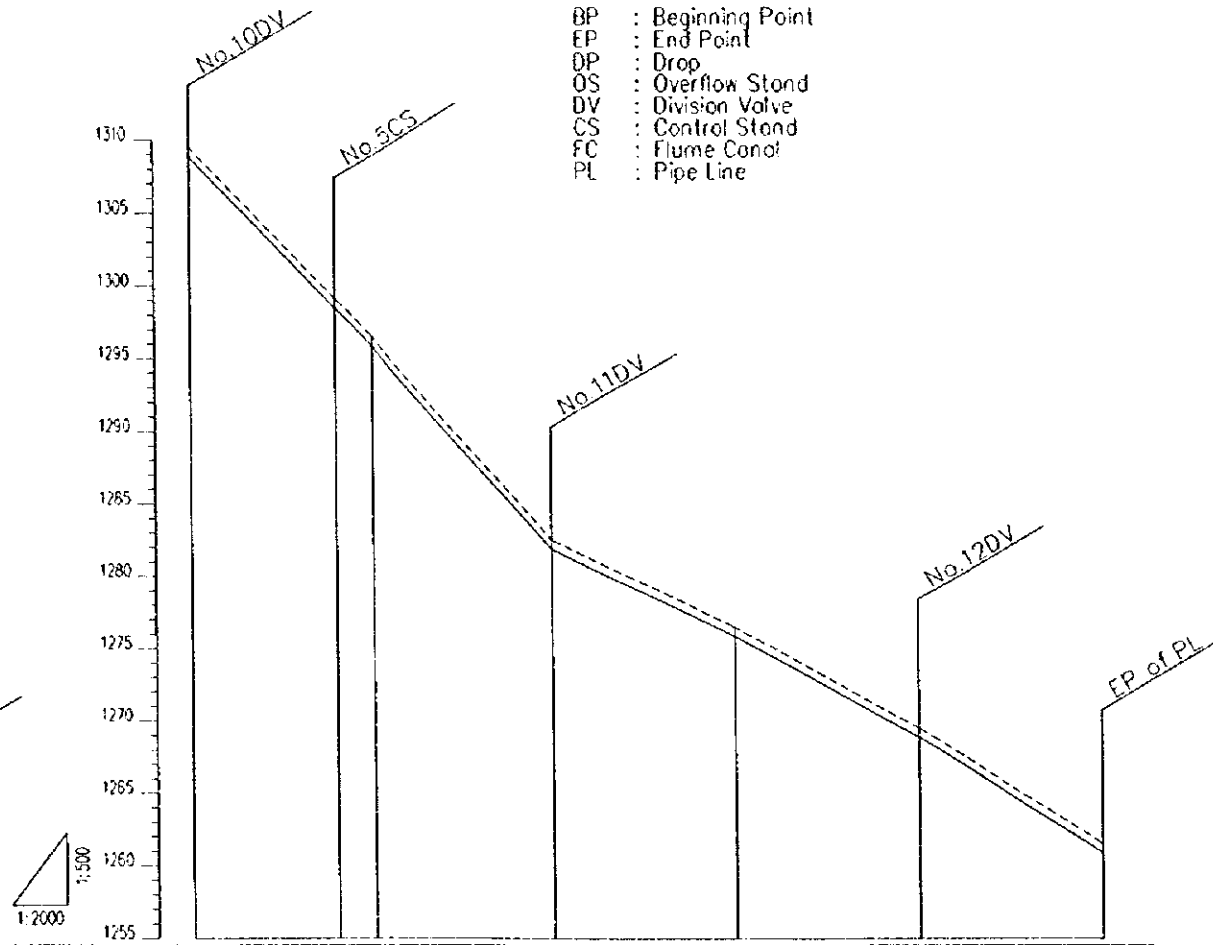
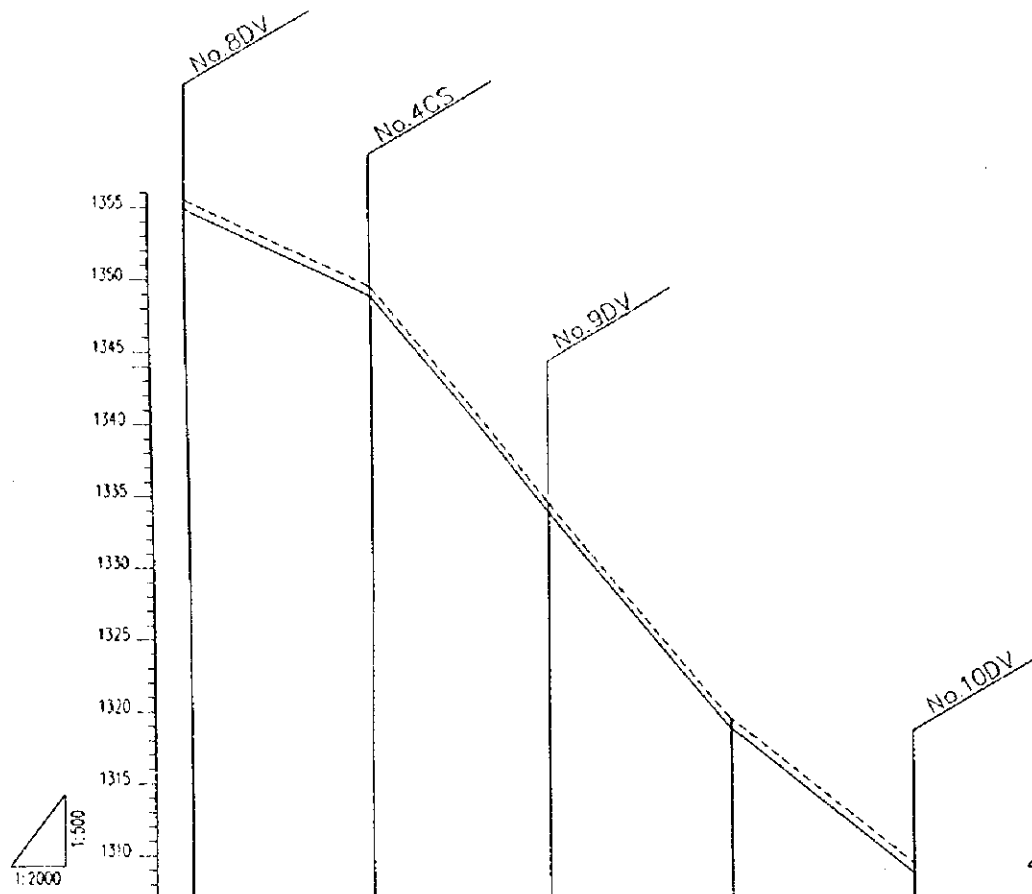
THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGETA SCHEME (Mzinga SYSTEM)	
PROFILE OF CANAL (2)			
Date		Drawing No.	207
JAPAN INTERNATIONAL COOPERATION AGENCY			

Mzinga canal (4/5)

Mzinga canal (5/5)

ABBREVIATIONS

- BP : Beginning Point
- EP : End Point
- DP : Drop
- OS : Overflow Stand
- DV : Division Valve
- CS : Control Stand
- FC : Flume Canal
- PL : Pipe Line

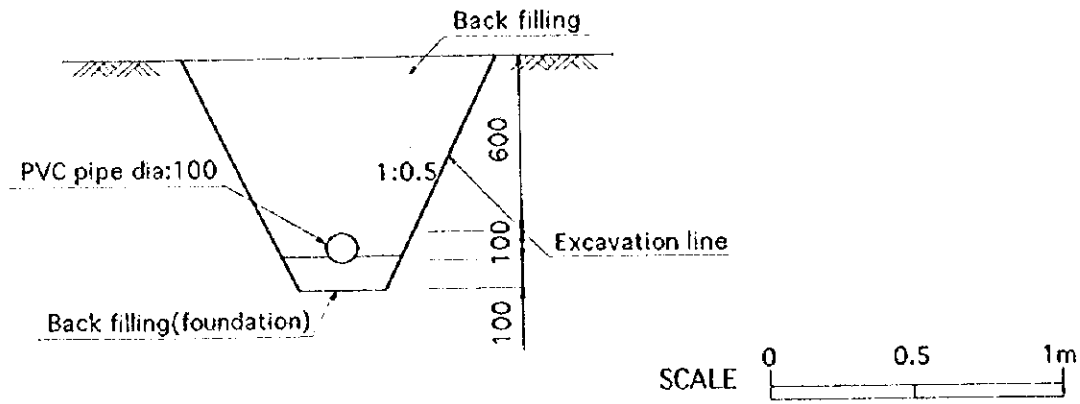


CANAL TYPE	Q=0.01 PVC PIPE DIA=0.1 SOIL COVERING DEPTH=0.60				
PIPE CENTER ELEVATION	1355.35	1349.35	1334.35	1319.35	1309.35
CANAL BANK ELEVATION					
WATER SURFACE ELEVATION					
CANAL BASE ELEVATION					
GROUND SURFACE ELEVATION	1356.00	1350.00	1335.00	1320.00	1310.00
REDUCED DISTANCE	800.00	850.00	900.00	950.00	1000.00
DISTANCE	50.00	50.00	50.00	50.00	50.00
STATION NO.	16	17	18	19	20

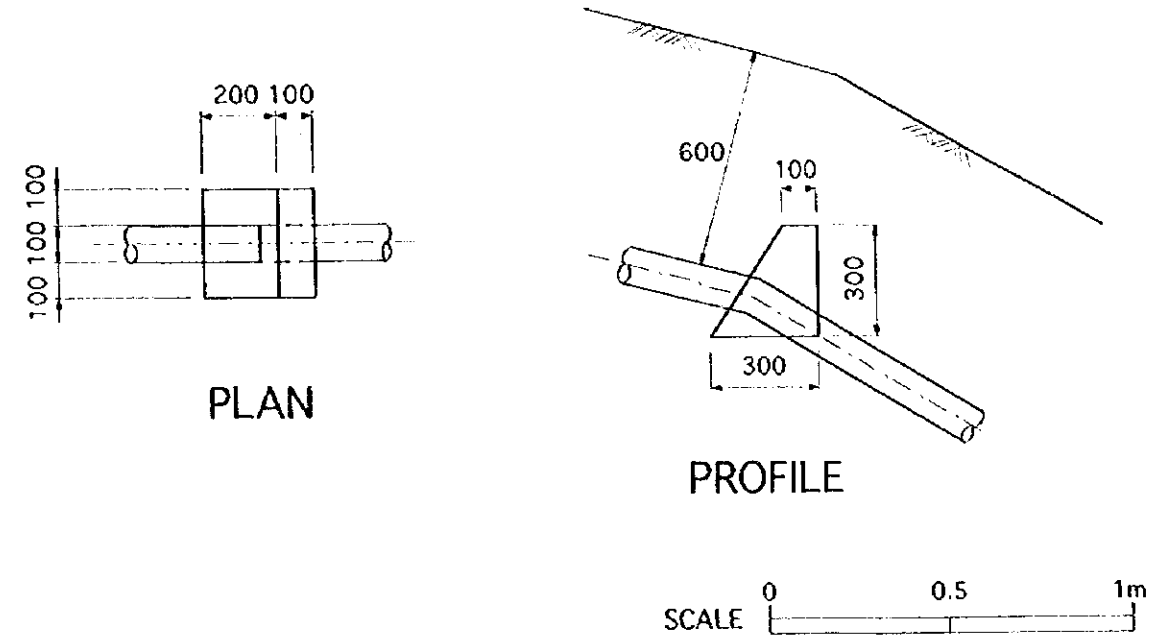
CANAL TYPE	Q=0.01 PVC PIPE DIA=0.1 SOIL COVERING DEPTH=0.60					
PIPE CENTER ELEVATION	1309.35	1298.95	1296.35	1282.35	1276.35	1261.35
CANAL BANK ELEVATION						
WATER SURFACE ELEVATION						
CANAL BASE ELEVATION						
GROUND SURFACE ELEVATION	1310.00	1299.60	1297.00	1283.00	1277.00	1262.00
REDUCED DISTANCE	1000.00	1040.00	1050.00	1100.00	1150.00	1200.00
DISTANCE	50.00	40.00	10.00	50.00	50.00	50.00
STATION NO.	20	+40	21	22	23	24
						25

THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING MGETA SCHEME (MZINGA SYSTEM)			
PROFILE OF CANAL (3)			
Date		Drawing No.	208
JAPAN INTERNATIONAL COOPERATION AGENCY			

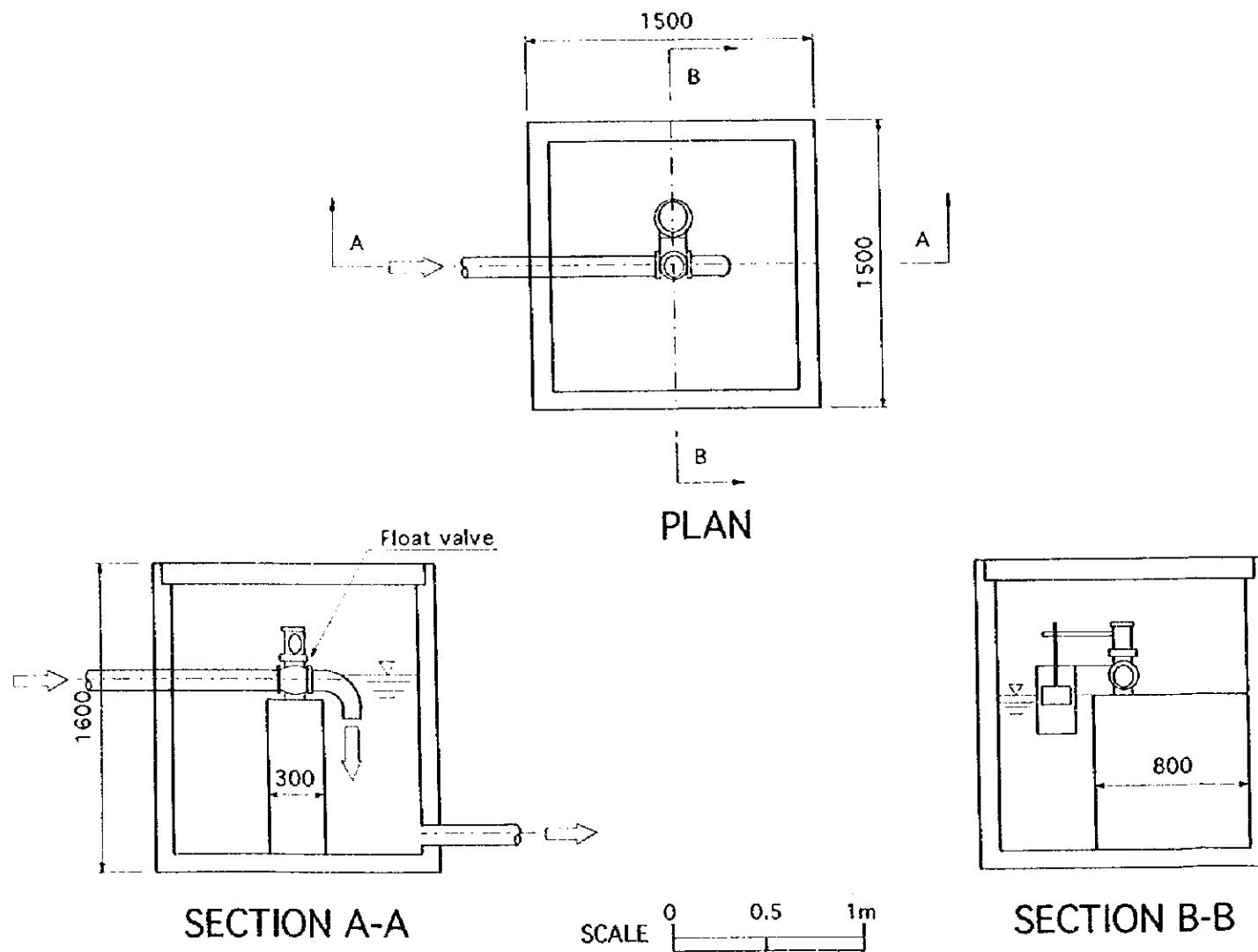
TYPICAL CROSS SECTION OF PIPE LINE



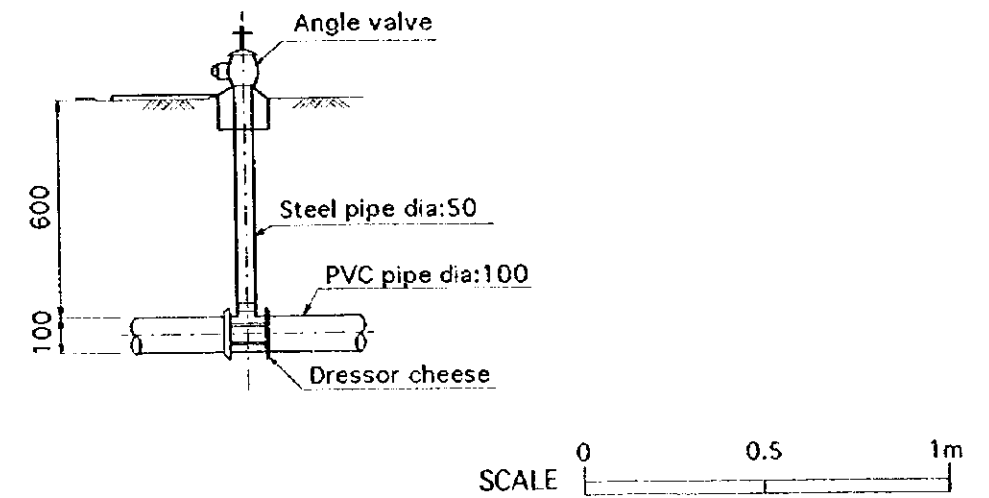
THRUST BLOCK



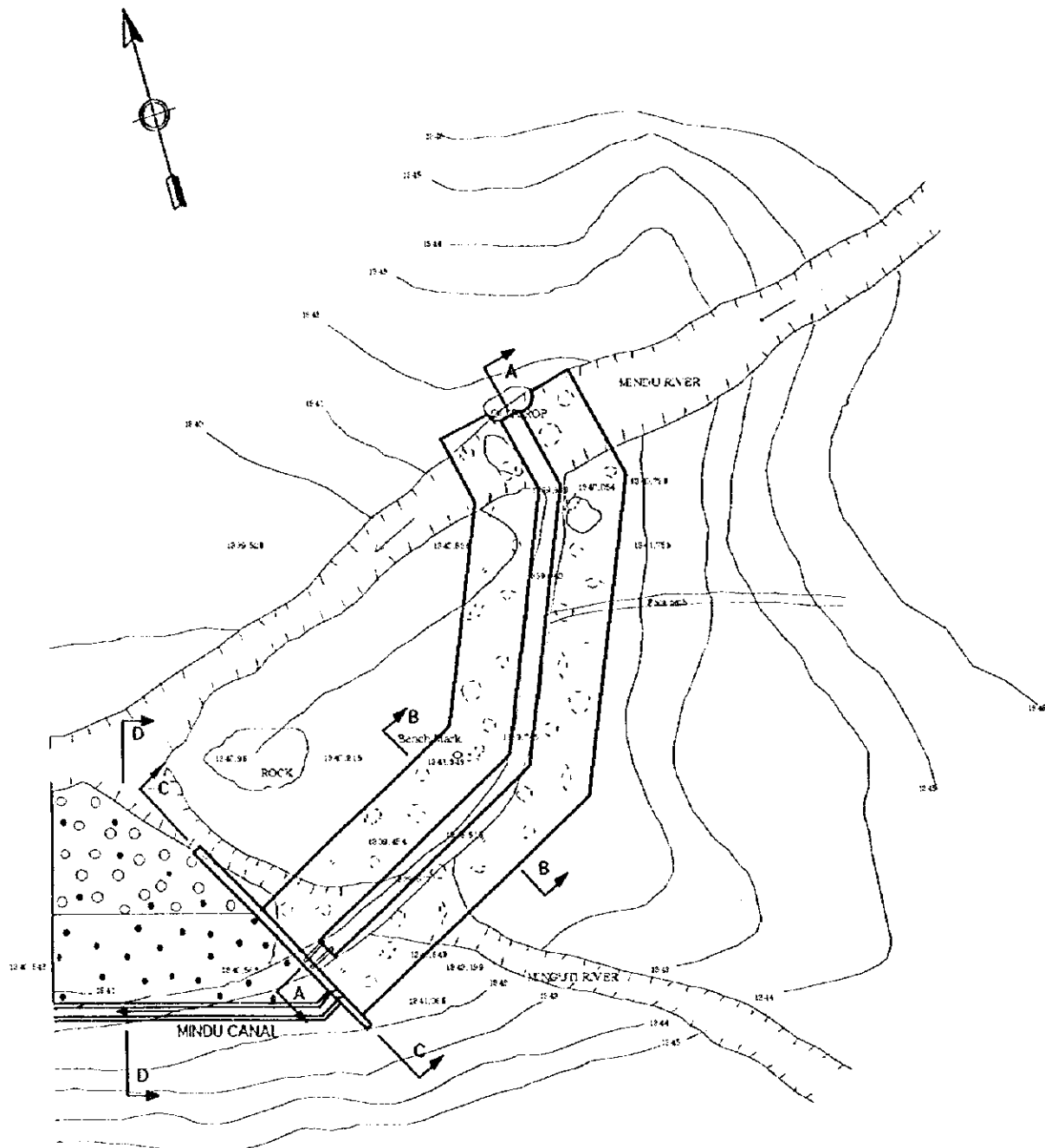
CONTROL STAND



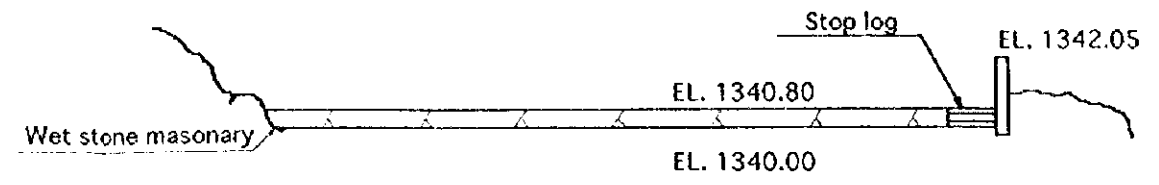
OUTLET VALVE



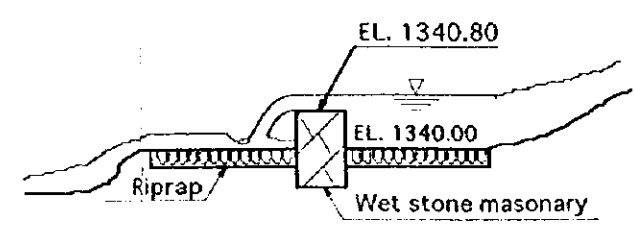
THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGETA SCHEME (MZINGA SYSTEM)	
PIPE LINE SYSTEM			
Date		Drawing No.	209
JAPAN INTERNATIONAL COOPERATION AGENCY			



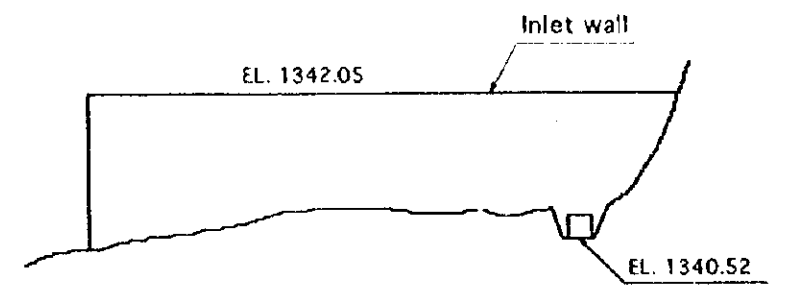
PLAN
SCALE A



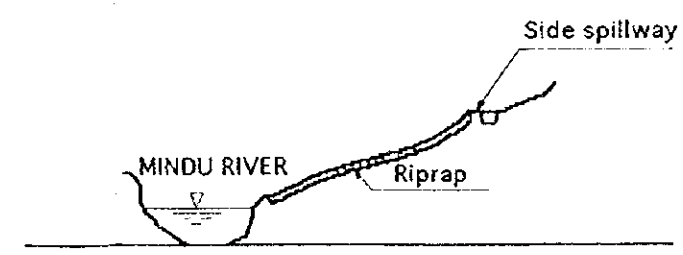
SECTION A-A
SCALE A



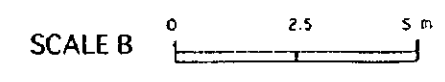
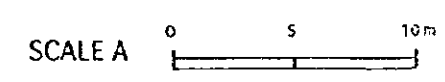
SECTION B-B
SCALE B



SECTION C-C
SCALE B



SECTION D-D
SCALE A



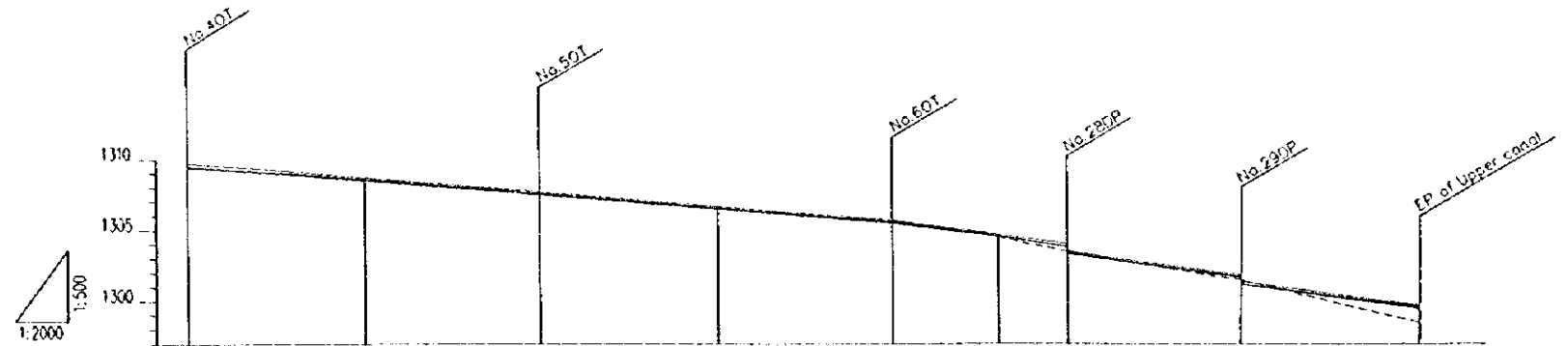
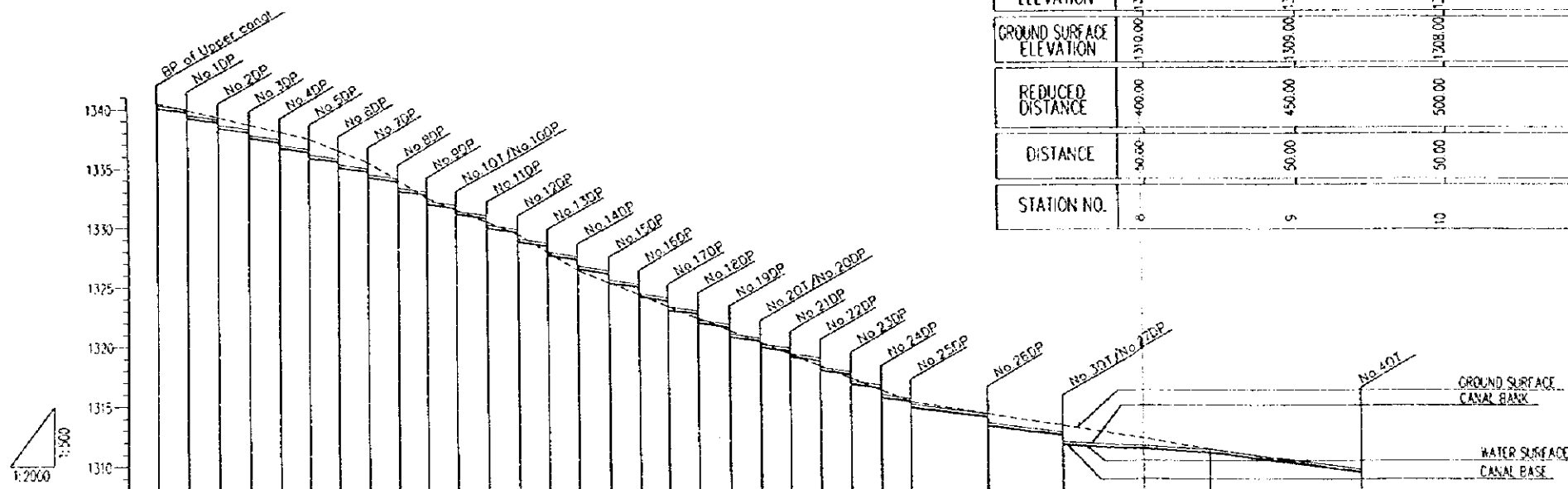
THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGETA SCHEME (MINDU SYSTEM) INTAKE	
Date		Drawing No.	210
JAPAN INTERNATIONAL COOPERATION AGENCY			

Upper canal of Mindu system (1/2)

Upper canal of Mindu system (2/2)

ABBREVIATIONS

- BP : Beginning Point
- EP : End Point
- DP : Drop
- OT : Offtake



CANAL TYPE	0=0.013 B=0.25 I=1/30 h=0.085 H=0.3 V=0.54							
CANAL BANK ELEVATION	1340.82	1340.60	1340.82	1340.82	1340.82	1340.82	1340.82	1340.82
WATER SURFACE ELEVATION	1340.82	1340.60	1340.82	1340.82	1340.82	1340.82	1340.82	1340.82
CANAL BASE ELEVATION	1340.82	1340.60	1340.82	1340.82	1340.82	1340.82	1340.82	1340.82
GROUND SURFACE ELEVATION	1341.00	1340.52	1340.60	1340.82	1340.82	1340.82	1340.82	1340.82
REDUCED DISTANCE	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00
DISTANCE	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00
STATION NO.	BP	+10	+20	+30	+40	1	2	+10

CANAL TYPE	0=0.01 B=0.25 I=1/50 h=0.08 H=0.2 V=0.4				0=0.01 B=0.25 I=1/30 h=0.085 H=0.2 V=0.47			
CANAL BANK ELEVATION	1308.19	1308.19	1308.19	1308.19	1308.19	1308.19	1308.19	1308.19
WATER SURFACE ELEVATION	1308.19	1308.19	1308.19	1308.19	1308.19	1308.19	1308.19	1308.19
CANAL BASE ELEVATION	1308.19	1308.19	1308.19	1308.19	1308.19	1308.19	1308.19	1308.19
GROUND SURFACE ELEVATION	1310.00	1308.00	1308.00	1307.00	1306.00	1305.00	1304.00	1299.00
REDUCED DISTANCE	400.00	450.00	500.00	550.00	600.00	630.00	650.00	750.00
DISTANCE	400.00	450.00	500.00	550.00	600.00	630.00	650.00	750.00
STATION NO.	6	5	10	11	12	(P1)	13	14

THE UNITED REPUBLIC OF TANZANIA

FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO

TITLE OF DRAWING MGETA SCHEME (MINDU SYSTEM)
PROFILE OF UPPER CANAL

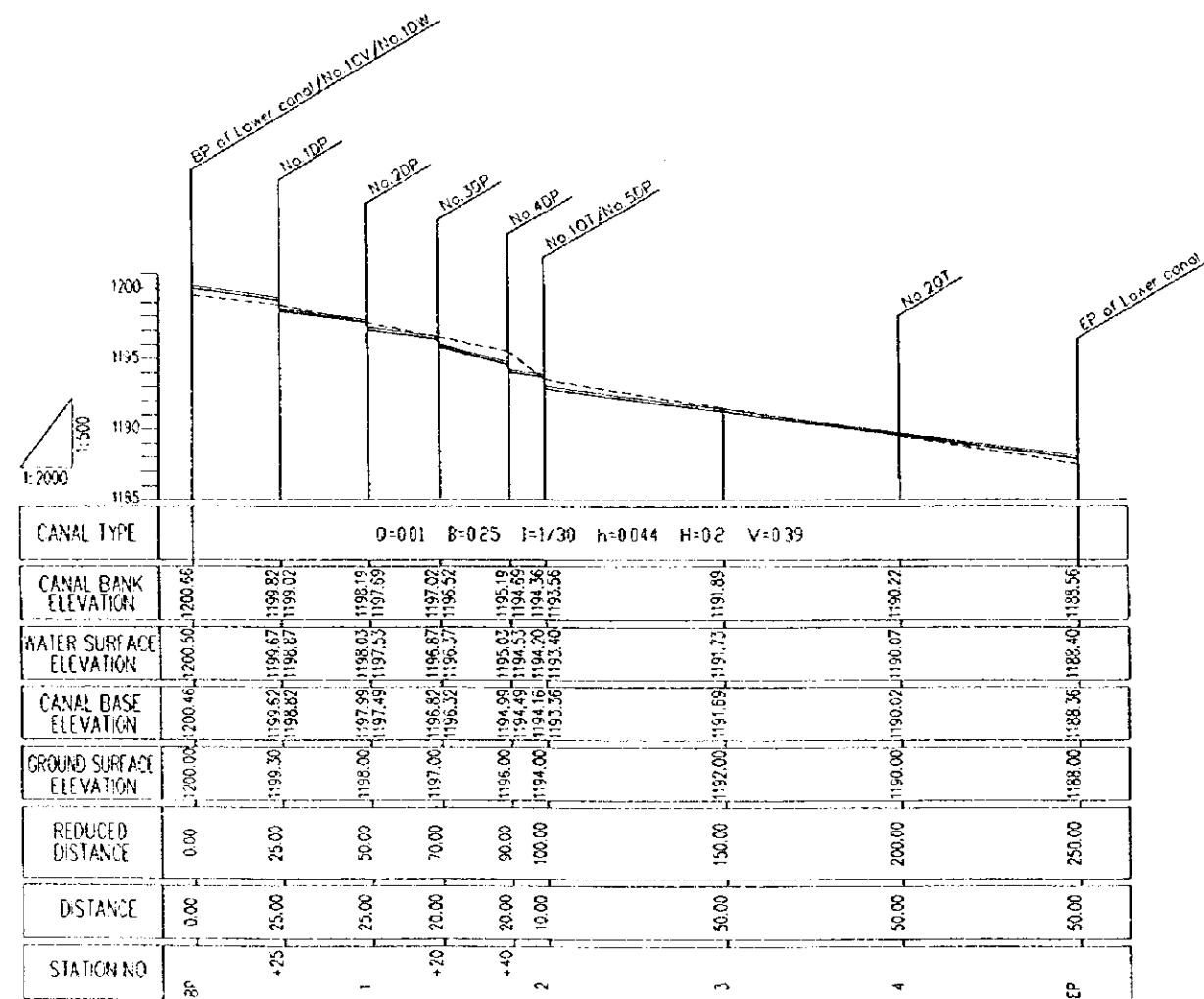
Date	Drawing No.	211
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JAPAN INTERNATIONAL COOPERATION AGENCY

Lower canal of Mindu system

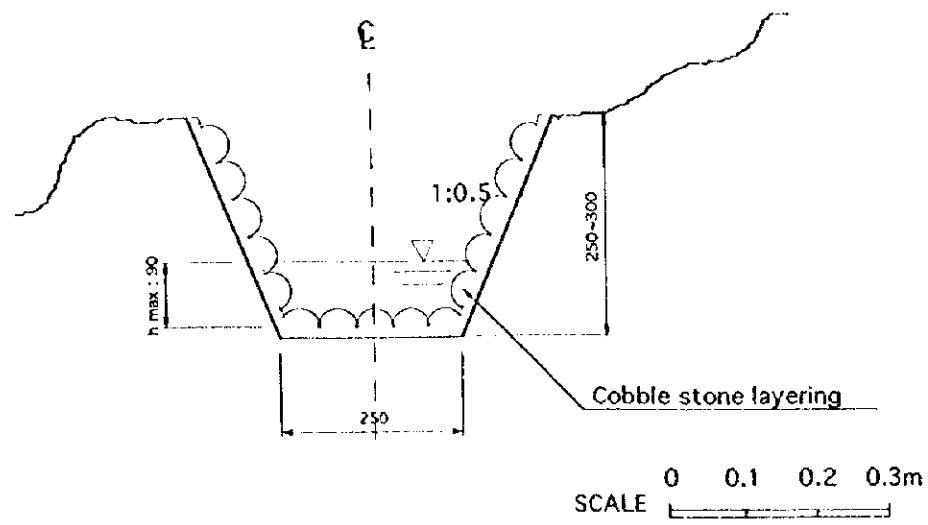
ABBREVIATIONS

- BP : Beginning Point
- EP : End Point
- DP : Drop
- OT : Offtake
- DW : Diversion Weir
- CV : Culvert

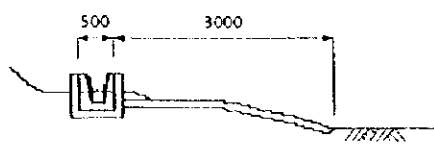
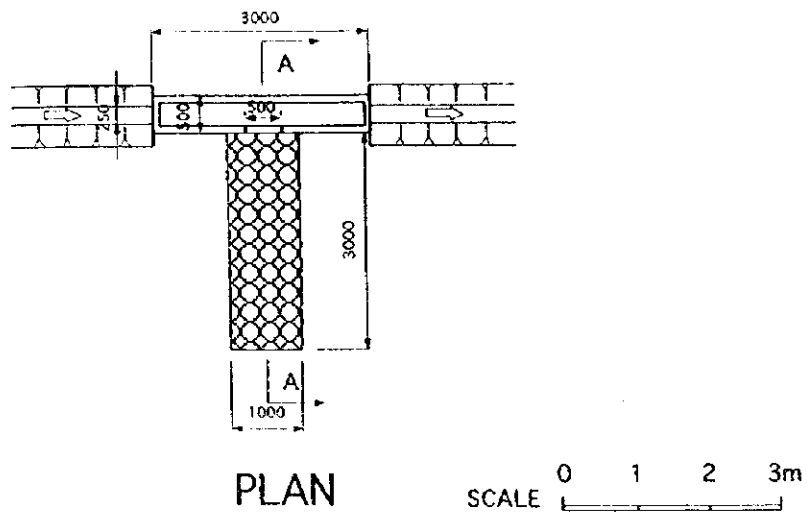


THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGETA SCHEME (MINDU SYSTEM)	
PROFILE OF LOWER CANAL			
Date		Drawing No.	212
JAPAN INTERNATIONAL COOPERATION AGENCY			

TYPICAL CROSS SECTION OF IRRIGATION CANAL

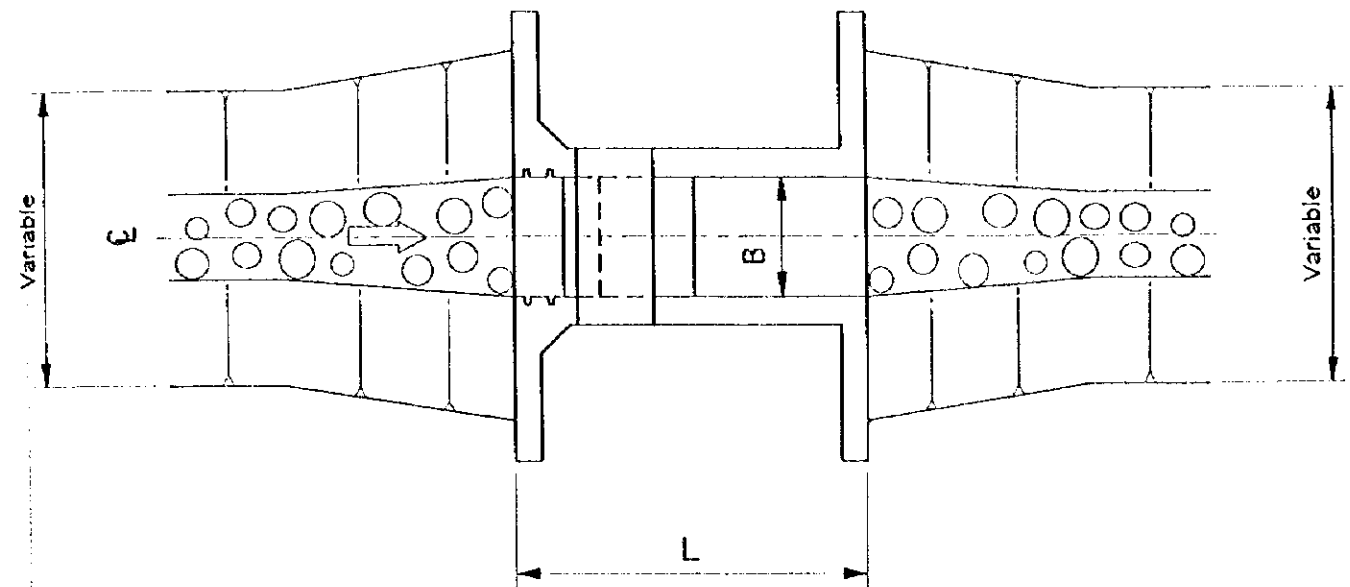


OFFTAKE

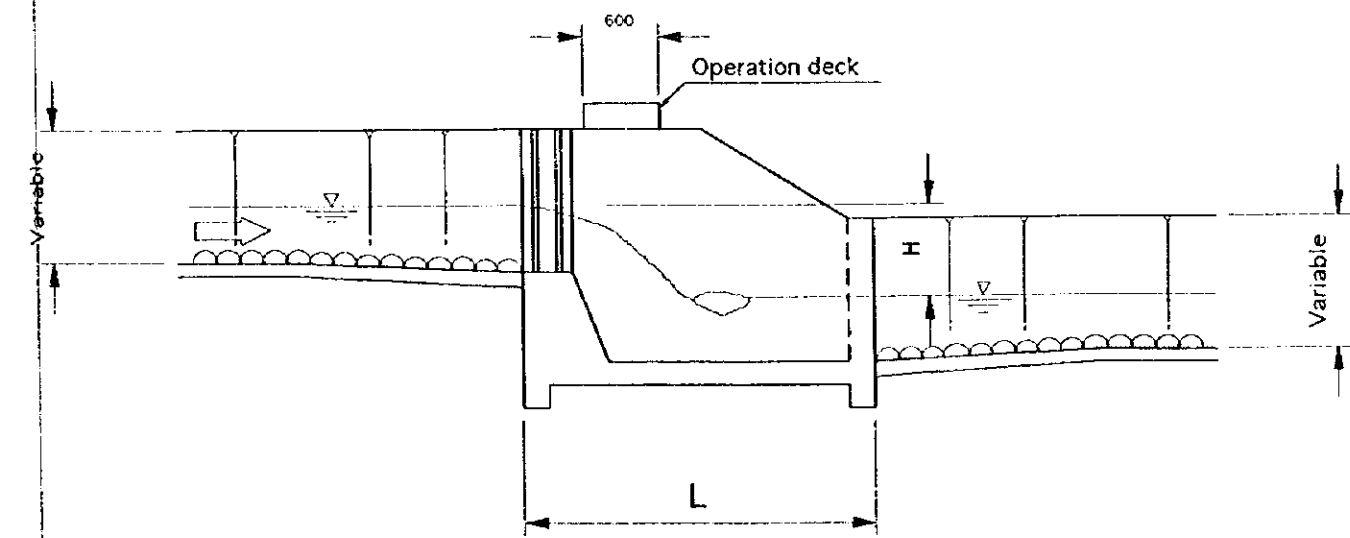


SECTION A-A

DROP



PLAN



PROFILE

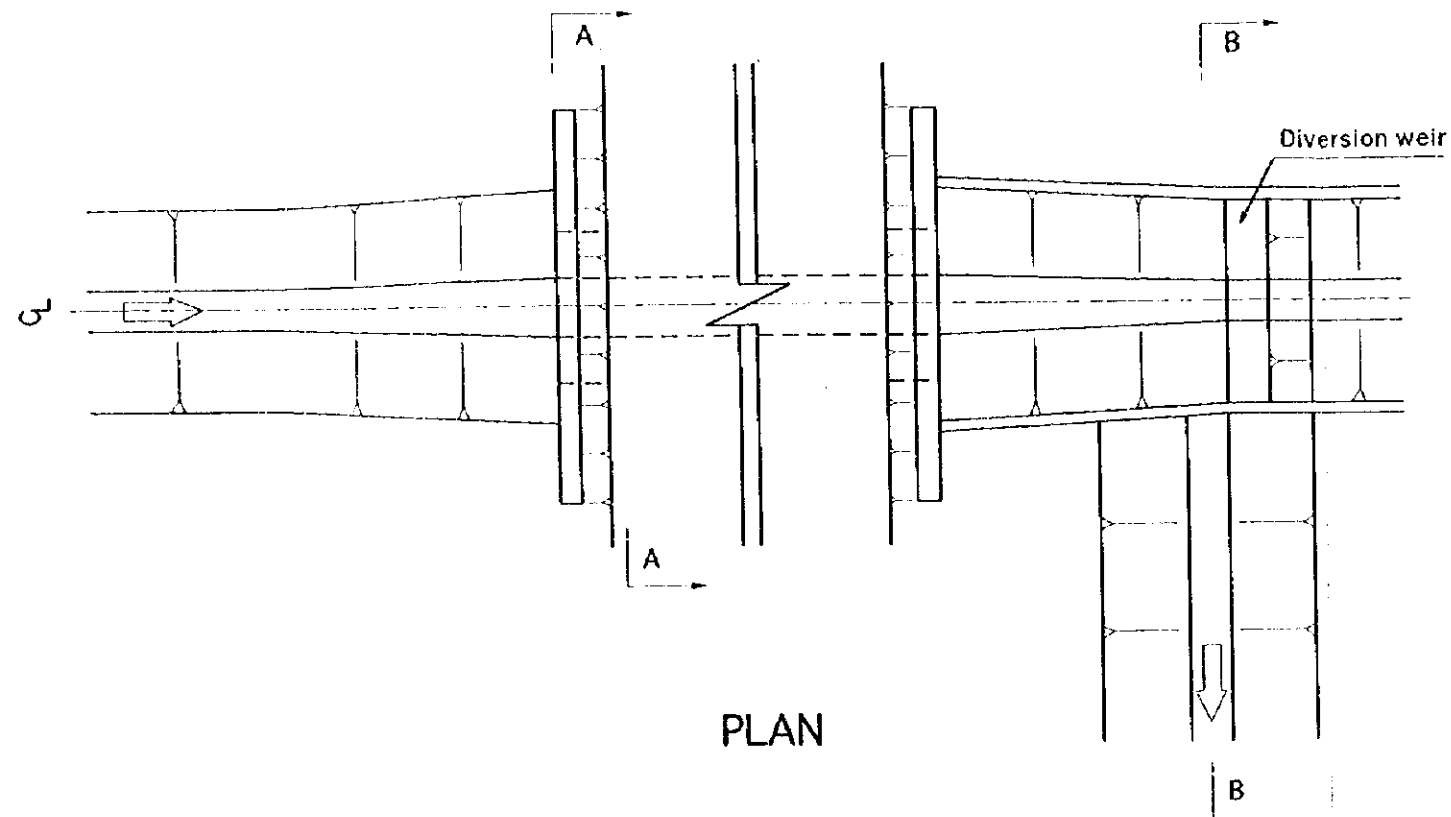
DIMENSION OF DROP

(Unit:m)						
Name of Canal	Name of structure	Drop No.	Qi (m ³ /sec)	H	L	B
Upper Canal	Drop 0.5m	1-7,10,20-21,25-27	0.013	0.50	1.50	0.30
	Drop 0.5m	28-29	0.01	0.50	1.50	0.30
	Drop 0.8m	8-9,11-12,22-24	0.013	0.80	2.40	0.30
Lower Canal	Drop 0.5m	2-4	0.01	0.50	1.50	0.30
	Drop 0.8m	15	0.01	0.80	2.40	0.30

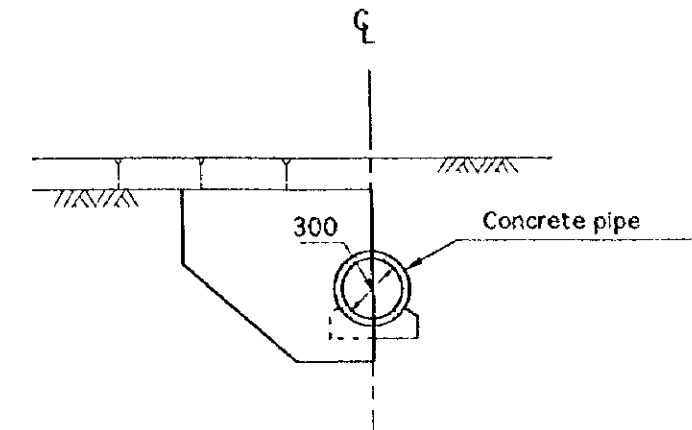
Qi : design discharge

THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGETA SCHEME (MINDU SYSTEM)	
CANAL , OFFTAKE & DROP			
Date		Drawing No.	213
JAPAN INTERNATIONAL COOPERATION AGENCY			

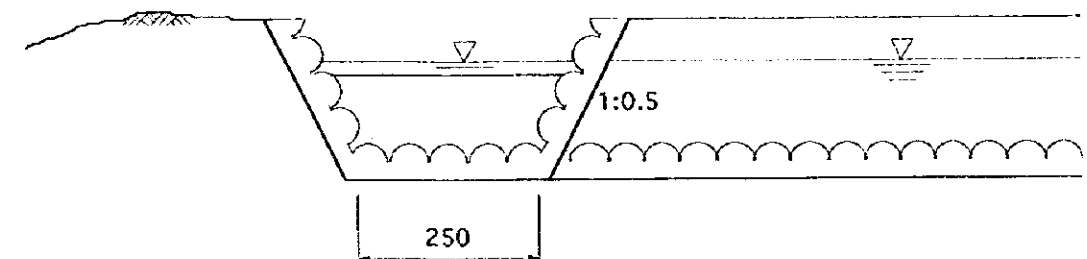
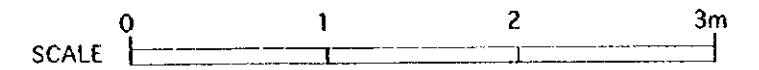
CULVERT & WEIR



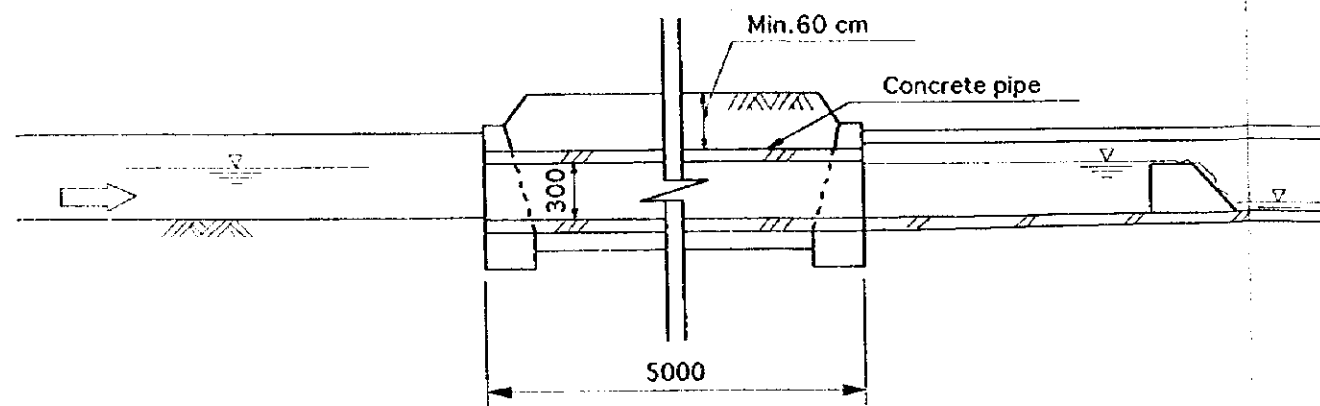
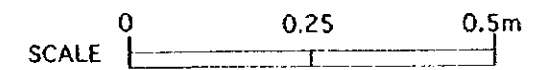
PLAN



SECTION A-A



SECTION B-B



PROFILE



THE UNITED REPUBLIC OF TANZANIA			
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECT IN CENTRAL WAMI RIVER BASIN, MOROGORO			
TITLE OF DRAWING		MGETA SCHEME (MINDU SYSTEM)	
CULVERT & WEIR			
Date		Drawing No.	214
JAPAN INTERNATIONAL COOPERATION AGENCY			