JAPAN INTERNATIONAL COOPERATION AGENCY

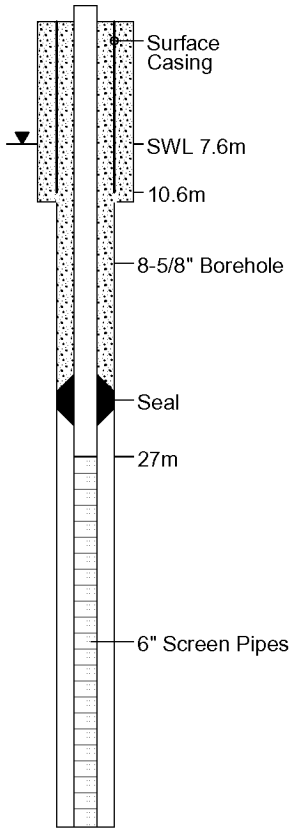
LOG OF BORING M-2 (2) Additional Bodagama

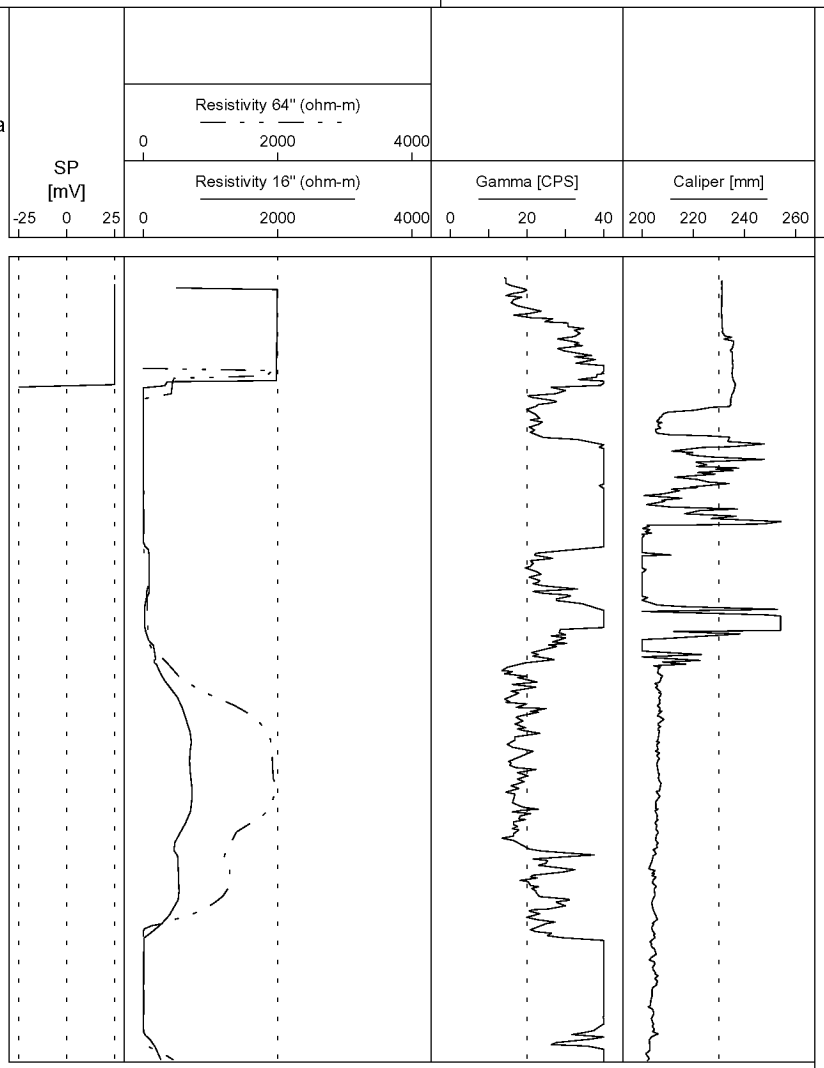
(Page 1 of 2)

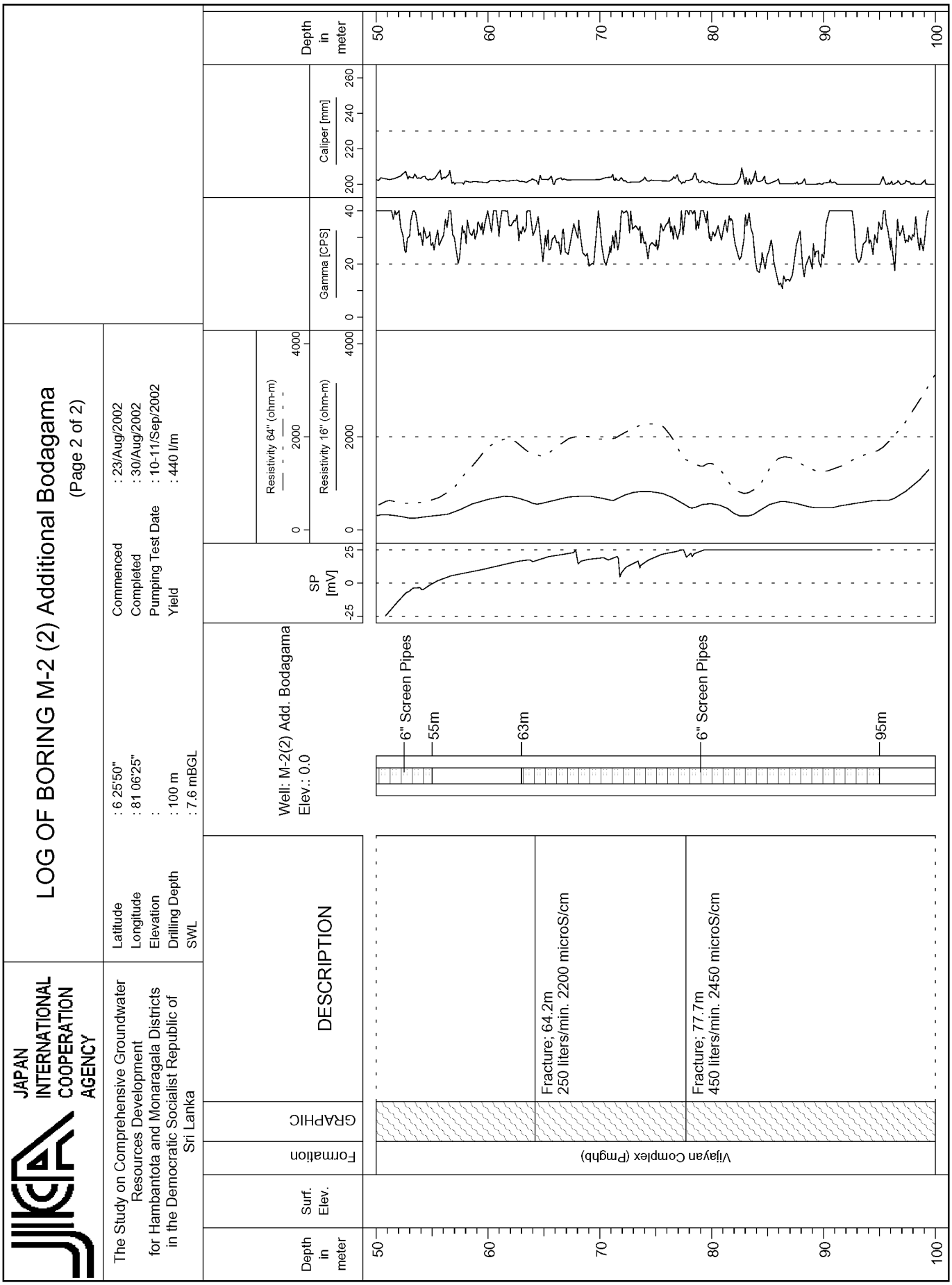
The Study on Comprehensive Groundwater Resources Development for Hambantota and Monaragala Districts in the Democratic Socialist Republic of Sri Lanka

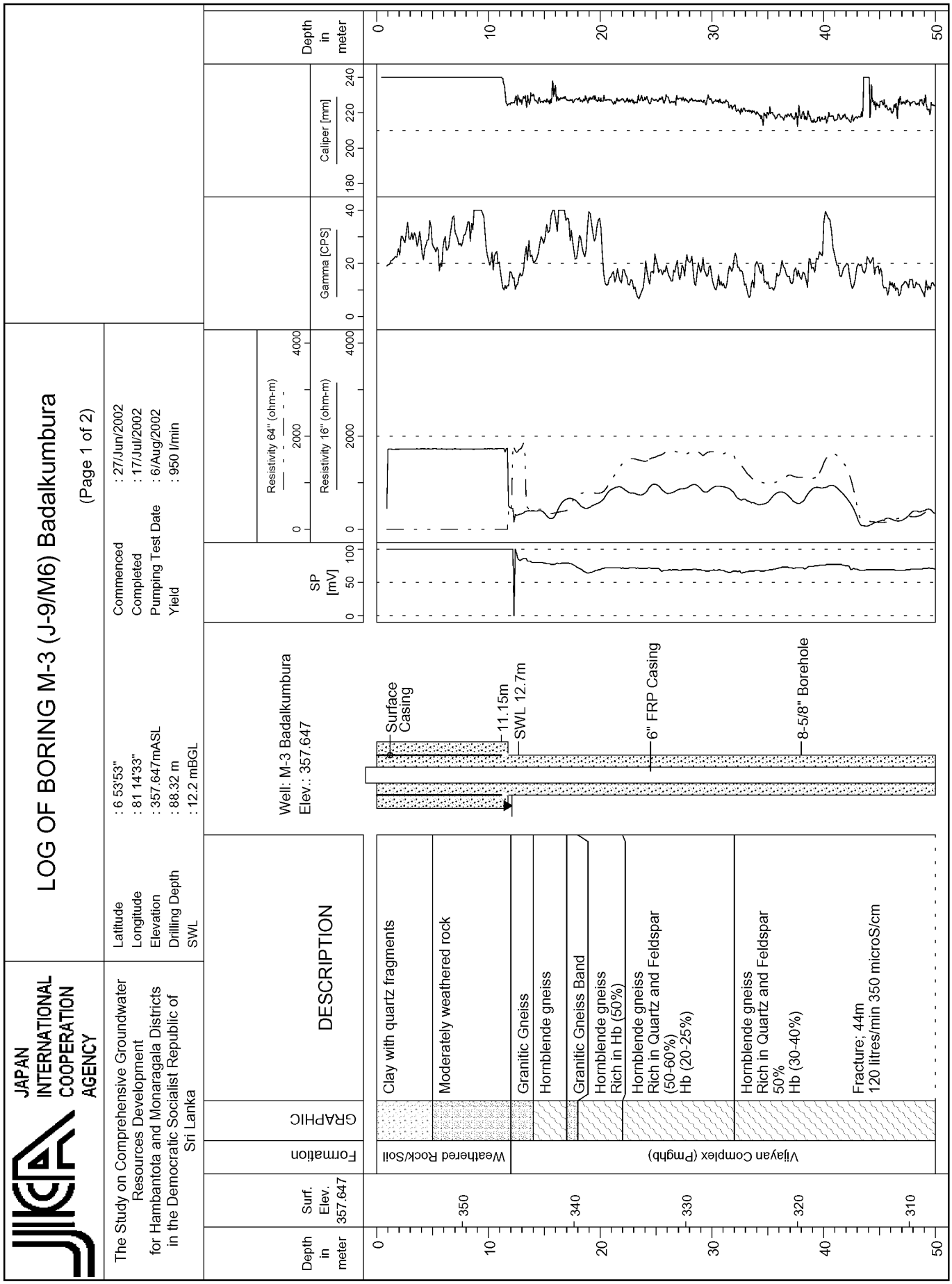
Latitude	: 6 25'50"	Commenced	: 23/Aug/2002
Longitude	: 81 06'25"	Completed	: 30/Aug/2002
Elevation	:	Pumping Test Date	: 10-11/Sep/2002
Drilling Depth	: 100 m	Yield	: 440 l/m
SWL	: 7.6 mBGL		

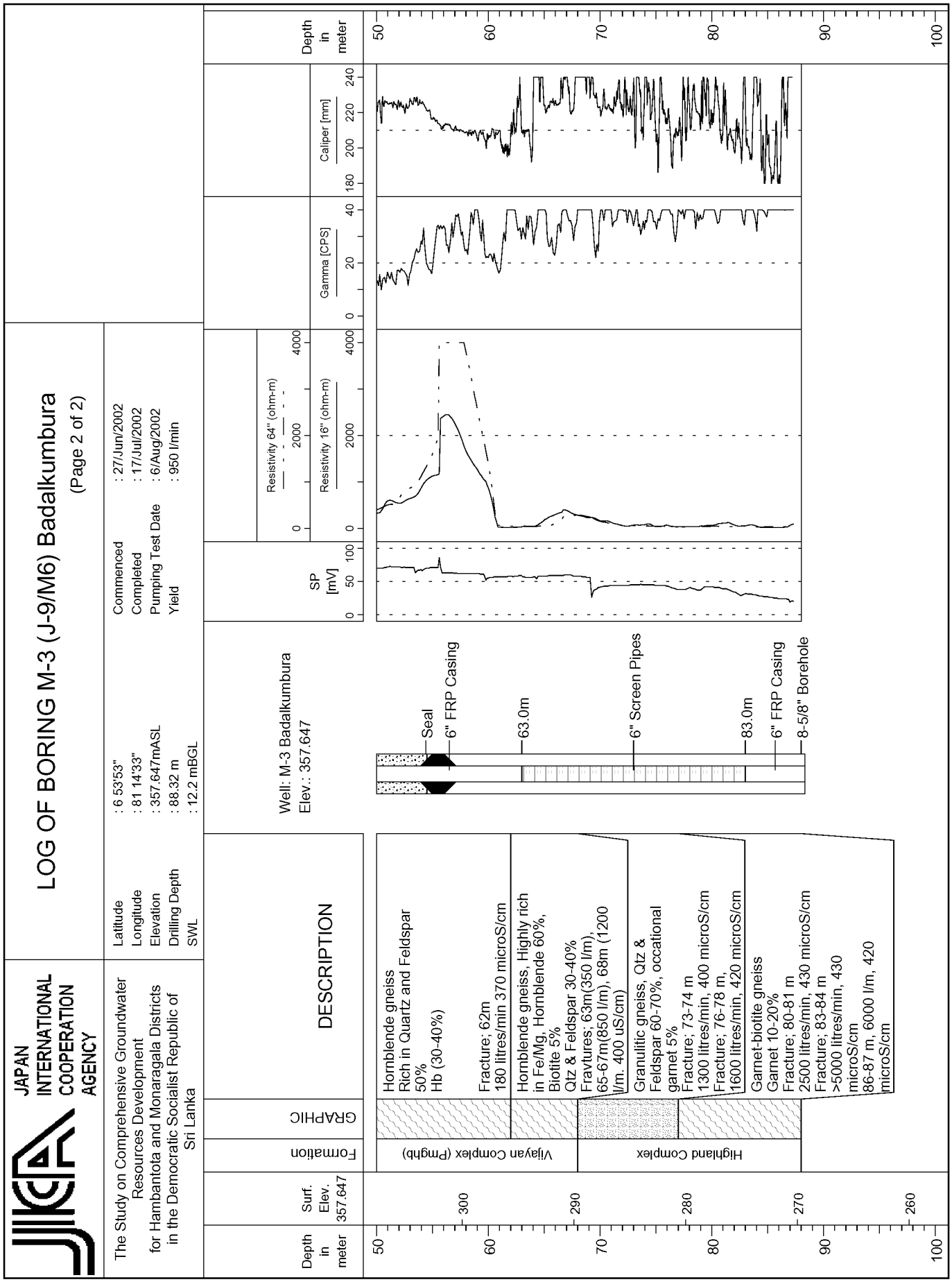
Depth in meter	Surf. Elev.	Formation	GRAPHIC	DESCRIPTION
0		Vijayan Complex (Pmghb)		Overburden, sand with clay
				Weathered rock
10				Moderately-slightly weathered rock
				Fracture; 17.9-18.1m, 50 liters/min. 3380 microS/cm
20				Fracture; 21.3-21.6m 175 litres/min. 2270 microS/cm
				Fracture; 24.7-24.9m 275 litres/min. 2350 microS/cm
30				
40				Fracture; 42.7m 275 litres/min. 2400 microS/cm
50				

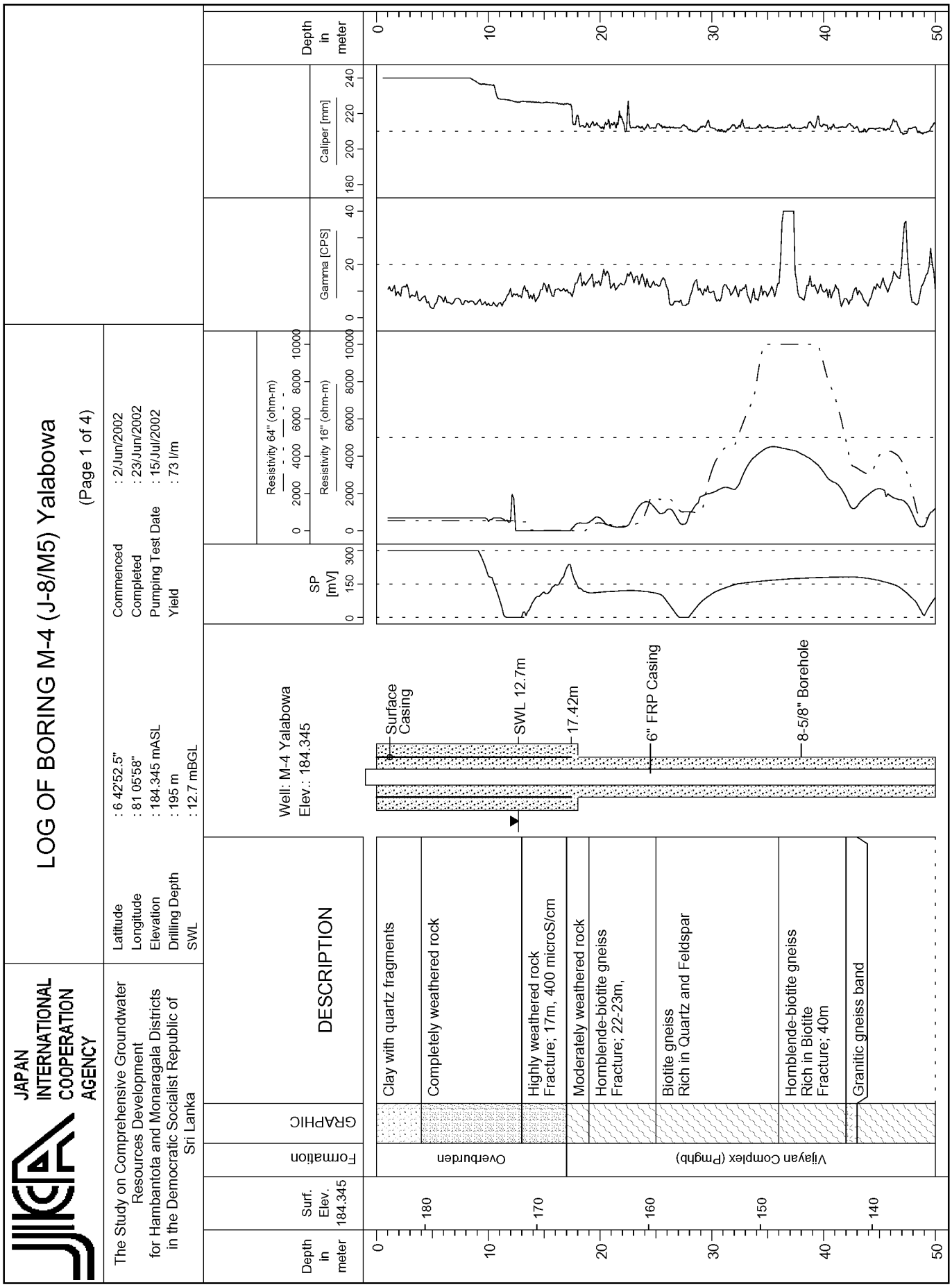


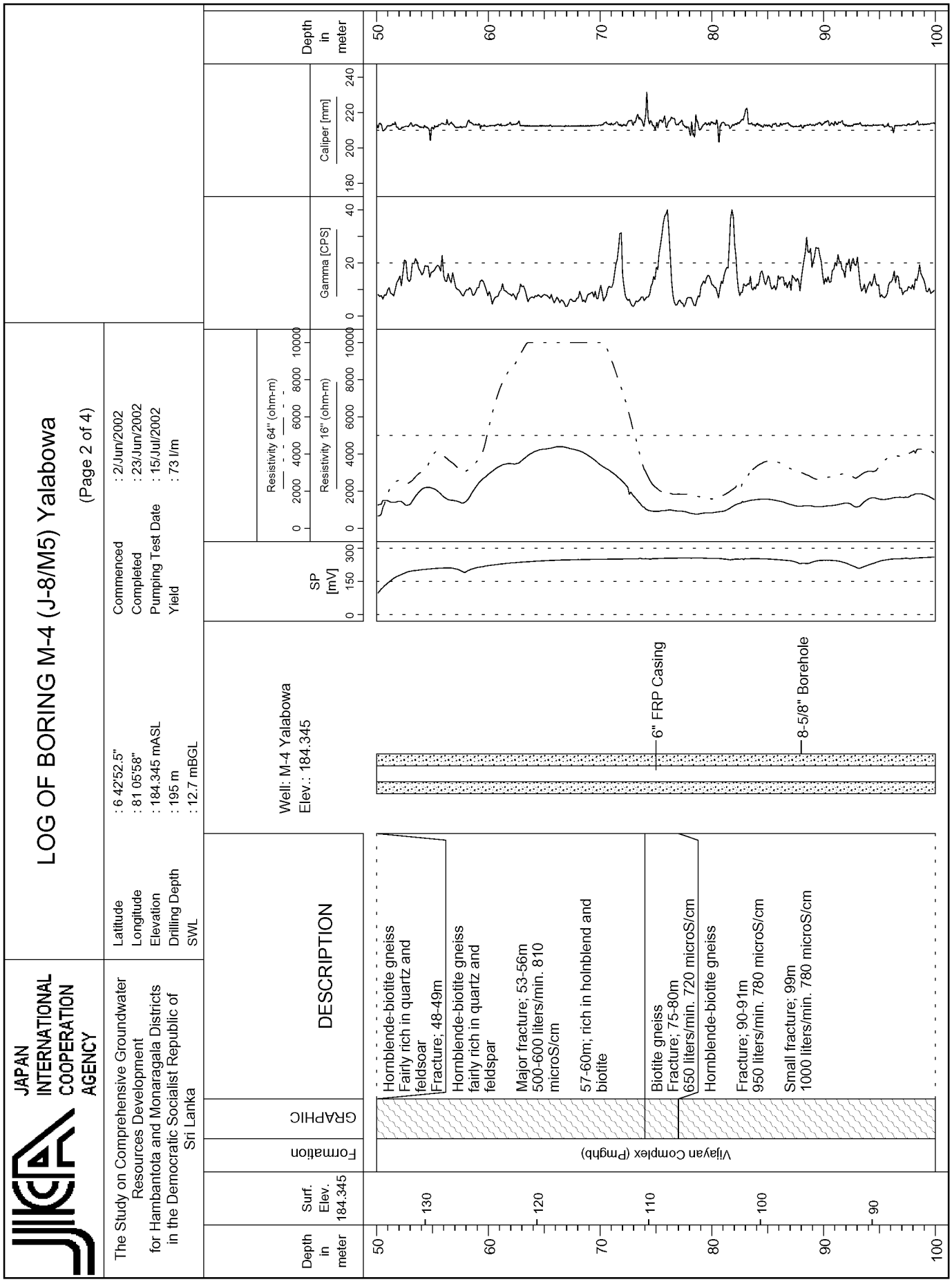


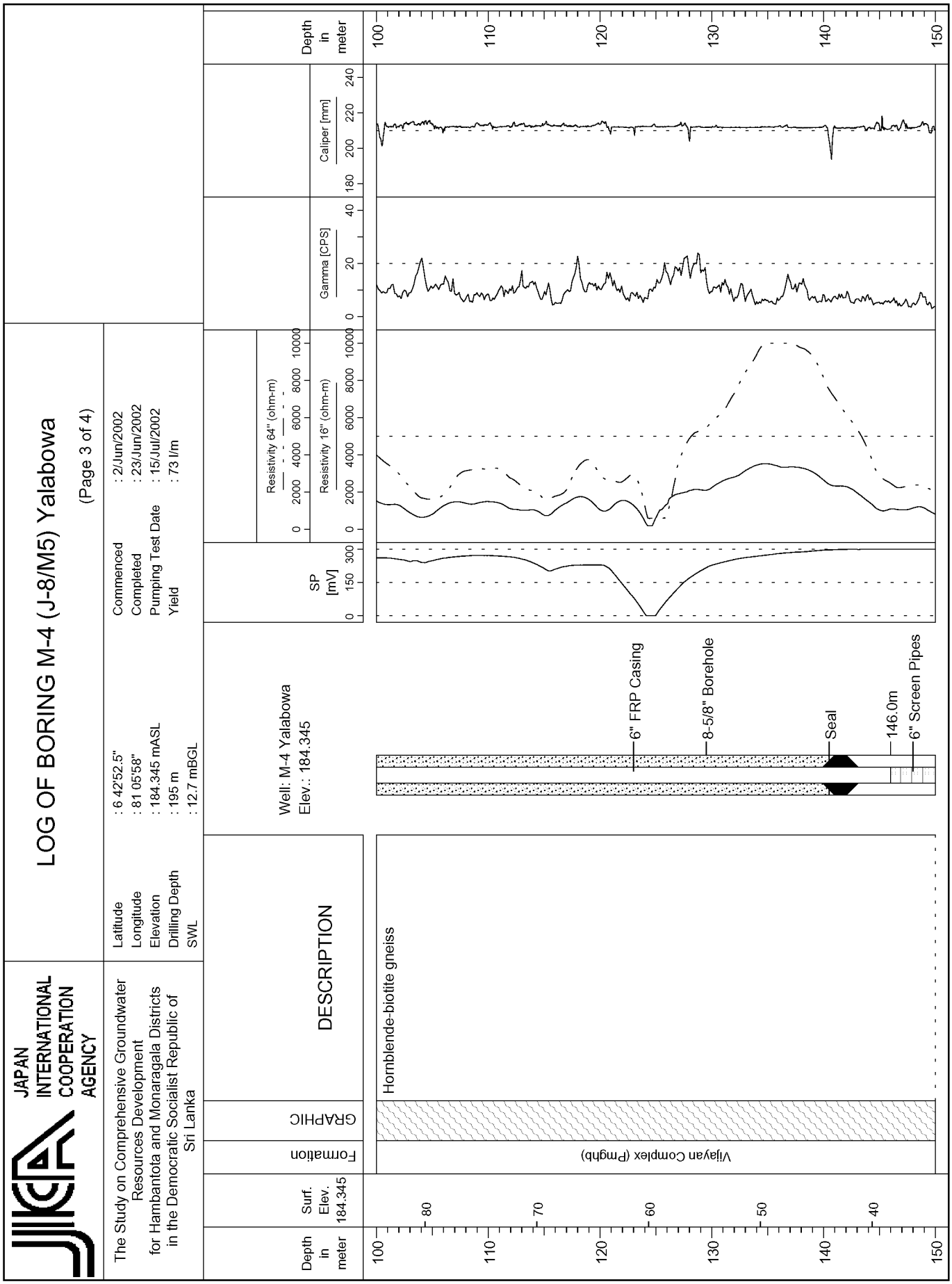

JAPAN INTERNATIONAL COOPERATION AGENCY
The Study on Comprehensive Groundwater Resources Development for Hambantota and Monaragala Districts in the Democratic Socialist Republic of Sri Lanka
LOG OF BORING M-2 (2) Additional Bodagama
(Page 2 of 2)
Latitude : 6 25'50"
Longitude : 81 06'25"
Elevation :
Drilling Depth : 100 m
SWL : 7.6 mBGL
Commenced : 23/Aug/2002
Completed : 30/Aug/2002
Pumping Test Date : 10-11/Sep/2002
Yield : 440 l/m
Well: M-2(2) Add. Bodagama
Elev.: 0.0
Depth in meter
Surf. Elev.
Formation
GRAPHIC
DESCRIPTION
Vijayan Complex (Pmgbh)
Fracture; 64.2m
250 liters/min. 2200 microS/cm
Fracture; 77.7m
450 liters/min. 2450 microS/cm
6" Screen Pipes
55m
63m
6" Screen Pipes
95m
SP [mV]
Resistivity 16" (ohm-m)
Resistivity 64" (ohm-m)
Gamma [CPS]
Caliper [mm]

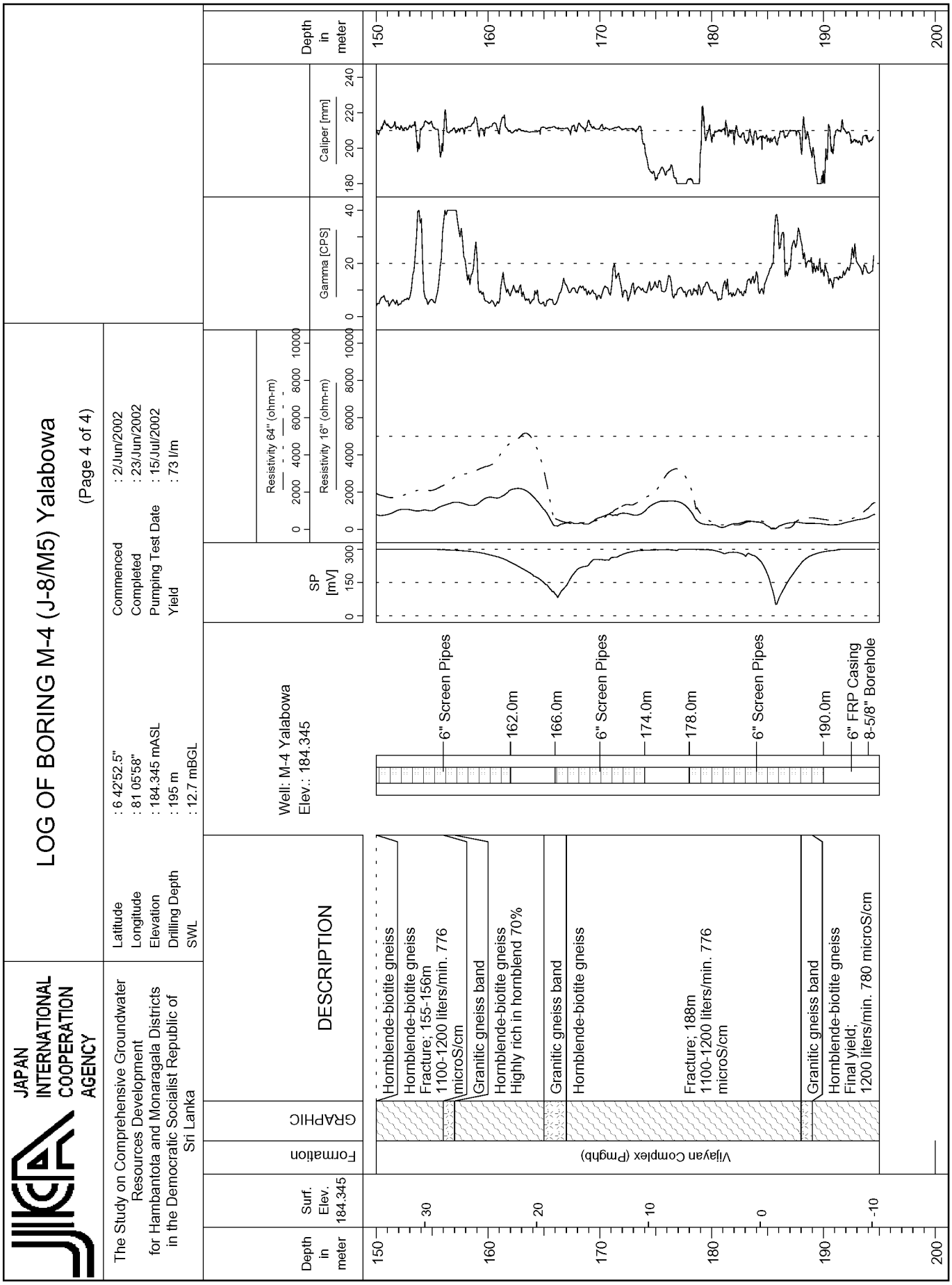

JAPAN INTERNATIONAL COOPERATION AGENCY
LOG OF BORING M-3 (J-9/M6) Badalkumbura
(Page 1 of 2)
The Study on Comprehensive Groundwater Resources Development for Hambantota and Monaragala Districts in the Democratic Socialist Republic of Sri Lanka
Latitude : 6 53'53"
Longitude : 81 14'33"
Elevation : 357.647mASL
Drilling Depth : 88.32 m
SWL : 12.2 mBGL
Commenced : 27/Jun/2002
Completed : 17/Jul/2002
Pumping Test Date : 6/Aug/2002
Yield : 950 l/min
Depth in meter
Surf. Elev. 357.647
Formation
GRAPHIC
DESCRIPTION
Well: M-3 Badalkumbura
Elev.: 357.647
SP [mV]
Resistivity 16" (ohm-m)
Resistivity 64" (ohm-m)
Gamma [CPS]
Caliper [mm]
Surface Casing
11.15m SWL 12.7m
6" FRP Casing
8-5/8" Borehole
Weathered Rock/Soil
Clay with quartz fragments
Moderately weathered rock
Vijayan Complex (Pmgbh)
Granitic Gneiss
Hornblende gneiss
Granitic Gneiss Band
Hornblende gneiss Rich in Hb (50%)
Hornblende gneiss Rich in Quartz and Feldspar (50-60%) Hb (20-25%)
Hornblende gneiss Rich in Quartz and Feldspar 50% Hb (30-40%)
Fracture; 44m 120 litres/min 350 microS/cm


JAPAN INTERNATIONAL COOPERATION AGENCY
LOG OF BORING M-3 (J-9/M6) Badalkumbura
(Page 2 of 2)
The Study on Comprehensive Groundwater Resources Development for Hambantota and Monaragala Districts in the Democratic Socialist Republic of Sri Lanka
Latitude : 6 53'53"
Longitude : 81 14'33"
Elevation : 357.647mASL
Drilling Depth : 88.32 m
SWL : 12.2 mBGL
Commenced : 27/Jun/2002
Completed : 17/Jul/2002
Pumping Test Date : 6/Aug/2002
Yield : 950 l/min
Well: M-3 Badalkumbura
Elev.: 357.647
Depth in meter
Surf. Elev. 357.647
Formation
GRAPHIC
DESCRIPTION
Vijayan Complex (Pmgnb)
Highland Complex
Hornblende gneiss Rich in Quartz and Feldspar 50% Hb (30-40%)
Fracture; 62m 180 litres/min 370 microS/cm
Hornblende gneiss, Highly rich in Fe/Mg, Hornblende 60%, Biotite 5% Qtz & Feldspar 30-40%
Fravtures; 63m(350 l/m), 65-67m(850 l/m), 68m (1200 l/m. 400 uS/cm)
Granulitic gneiss, Qtz & Feldspar 60-70%, occational garnet 5%
Fracture; 73-74 m 1300 litres/min, 400 microS/cm
Fracture; 76-78 m, 1600 litres/min, 420 microS/cm
Garnet-biotite gneiss Garnet 10-20%
Fracture; 80-81 m 2500 litres/min, 430 microS/cm
Fracture; 83-84 m >5000 litres/min, 430 microS/cm
86-87 m, 6000 l/m, 420 microS/cm
Seal
6" FRP Casing
63.0m
6" Screen Pipes
83.0m
6" FRP Casing
8-5/8" Borehole
SP [mV]
Resistivity 16" (ohm-m)
Resistivity 64" (ohm-m)
Gamma [CPS]
Caliper [mm]


JAPAN INTERNATIONAL COOPERATION AGENCY
The Study on Comprehensive Groundwater Resources Development for Hambantota and Monaragala Districts in the Democratic Socialist Republic of Sri Lanka
LOG OF BORING M-4 (J-8/M5) Yalabowa
(Page 1 of 4)
Latitude : 6 42'52.5"
Longitude : 81 05'58"
Elevation : 184.345 mASL
Drilling Depth : 195 m
SWL : 12.7 mBGL
Commenced : 2/Jun/2002
Completed : 23/Jun/2002
Pumping Test Date : 15/Jul/2002
Yield : 73 l/m
Depth in meter
Surf. Elev. 184.345
Formation
GRAPHIC
DESCRIPTION
Overburden
Vijayan Complex (Pmgbh)
Clay with quartz fragments
Completely weathered rock
Highly weathered rock
Fracture; 17m, 400 microS/cm
Moderately weathered rock
Hornblende-biotite gneiss
Fracture; 22-23m,
Biotite gneiss
Rich in Quartz and Feldspar
Hornblende-biotite gneiss
Rich in Biotite
Fracture; 40m
Granitic gneiss band
Well: M-4 Yalabowa
Elev.: 184.345
Surface Casing
SWL 12.7m
17.42m
6" FRP Casing
8-5/8" Borehole
SP [mV]
Resistivity 16" (ohm-m)
Resistivity 64" (ohm-m)
Gamma [CPS]
Caliper [mm]


JAPAN INTERNATIONAL COOPERATION AGENCY
LOG OF BORING M-4 (J-8/M5) Yalabowa
(Page 2 of 4)
The Study on Comprehensive Groundwater Resources Development for Hambantota and Monaragala Districts in the Democratic Socialist Republic of Sri Lanka
Latitude : 6 42'52.5"
Longitude : 81 05'58"
Elevation : 184.345 mASL
Drilling Depth : 195 m
SWL : 12.7 mBGL
Commenced : 2/Jun/2002
Completed : 23/Jun/2002
Pumping Test Date : 15/Jul/2002
Yield : 73 l/m
Well: M-4 Yalabowa
Elev.: 184.345
Depth in meter
Surf. Elev. 184.345
Formation
GRAPHIC
DESCRIPTION
Vijayan Complex (Pmgbb)
Hornblende-biotite gneiss
Fairly rich in quartz and feldsoar
Fracture; 48-49m
Hornblende-biotite gneiss
fairly rich in quartz and feldspar
Major fracture; 53-56m
500-600 liters/min. 810 microS/cm
57-60m; rich in holnblend and biotite
Biotite gneiss
Fracture; 75-80m
650 liters/min. 720 microS/cm
Hornblende-biotite gneiss
Fracture; 90-91m
950 liters/min. 780 microS/cm
Small fracture; 99m
1000 liters/min. 780 microS/cm
6" FRP Casing
8-5/8" Borehole
SP [mV]
Resistivity 16" (ohm-m)
Resistivity 64" (ohm-m)
Gamma [CPS]
Caliper [mm]


JAPAN INTERNATIONAL COOPERATION AGENCY
The Study on Comprehensive Groundwater Resources Development for Hambantota and Monaragala Districts in the Democratic Socialist Republic of Sri Lanka
LOG OF BORING M-4 (J-8/M5) Yalabowa
(Page 3 of 4)
Latitude : 6 42'52.5"
Longitude : 81 05'58"
Elevation : 184.345 mASL
Drilling Depth : 195 m
SWL : 12.7 mBGL
Commenced : 2/Jun/2002
Completed : 23/Jun/2002
Pumping Test Date : 15/Jul/2002
Yield : 73 l/m
Depth in meter
Surf. Elev. 184.345
Formation
GRAPHIC
DESCRIPTION
Hornblende-biotite gneiss
Vijayan Complex (Pmgnb)
Well: M-4 Yalabowa
Elev.: 184.345
6" FRP Casing
8-5/8" Borehole
Seal
146.0m
6" Screen Pipes
SP [mV]
Resistivity 16" (ohm-m)
Resistivity 64" (ohm-m)
Gamma [CPS]
Caliper [mm]


JAPAN INTERNATIONAL COOPERATION AGENCY
LOG OF BORING M-4 (J-8/M5) Yalabowa
(Page 4 of 4)
The Study on Comprehensive Groundwater Resources Development for Hambantota and Monaragala Districts in the Democratic Socialist Republic of Sri Lanka
Latitude : 6 42'52.5"
Longitude : 81 05'58"
Elevation : 184.345 mASL
Drilling Depth : 195 m
SWL : 12.7 mBGL
Commenced : 2/Jun/2002
Completed : 23/Jun/2002
Pumping Test Date : 15/Jul/2002
Yield : 73 l/m
Well: M-4 Yalabowa
Elev.: 184.345
Depth in meter
Surf. Elev. 184.345
Formation
GRAPHIC
DESCRIPTION
Vijayan Complex (Pmgbh)
Hornblende-biotite gneiss
Hornblende-biotite gneiss
Fracture; 155-156m
1100-1200 liters/min. 776
microS/cm
Granitic gneiss band
Hornblende-biotite gneiss
Highly rich in hornblend 70%
Granitic gneiss band
Hornblende-biotite gneiss
Fracture; 188m
1100-1200 liters/min. 776
microS/cm
Granitic gneiss band
Hornblende-biotite gneiss
Final yield;
1200 liters/min. 780 microS/cm
6" Screen Pipes
162.0m
166.0m
6" Screen Pipes
174.0m
178.0m
6" Screen Pipes
190.0m
6" FRP Casing
8-5/8" Borehole
SP [mV]
Resistivity 16" (ohm-m)
Resistivity 64" (ohm-m)
Gamma [CPS]
Caliper [mm]

JAPAN INTERNATIONAL COOPERATION AGENCY

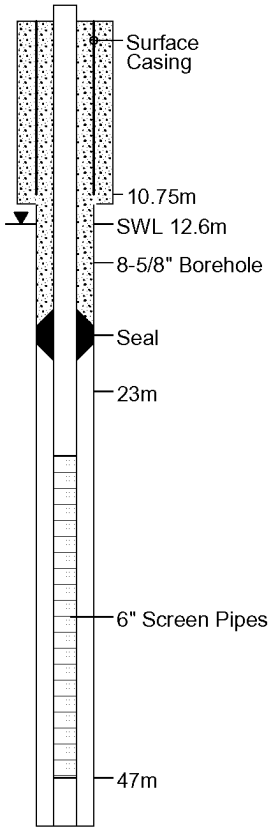
LOG OF BORING M-4 (2) Additional Yalabowa

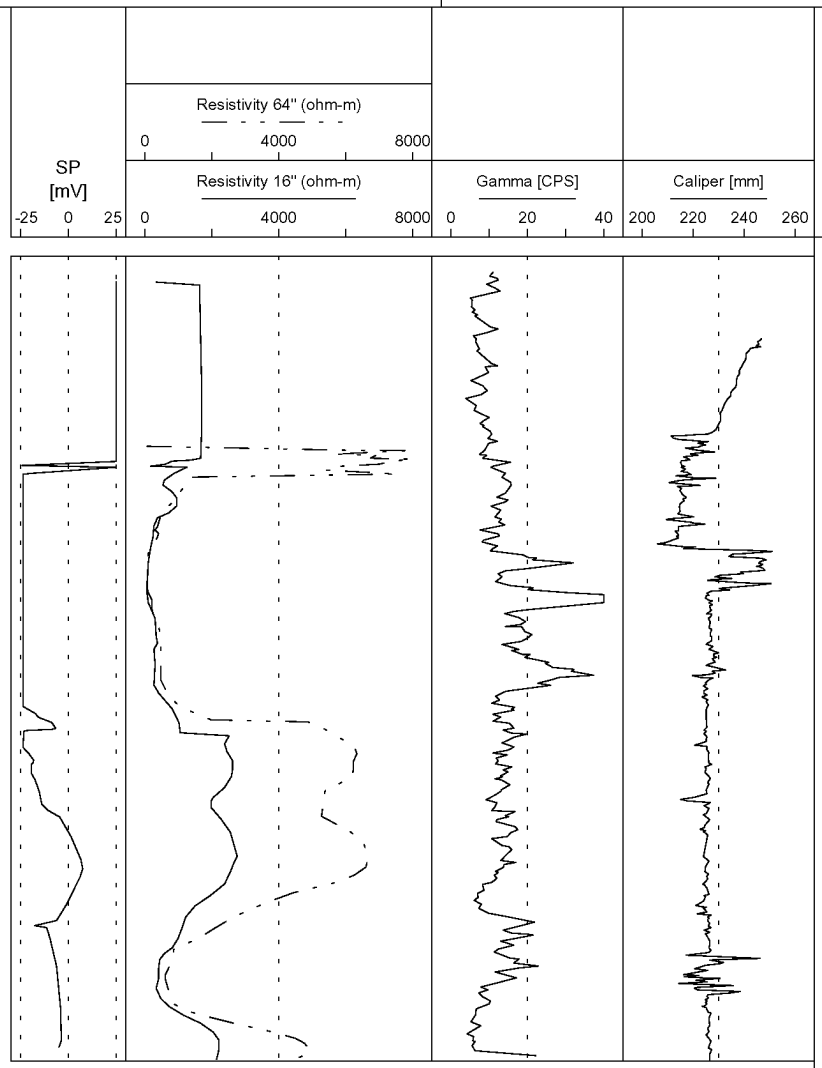
(Page 1 of 2)

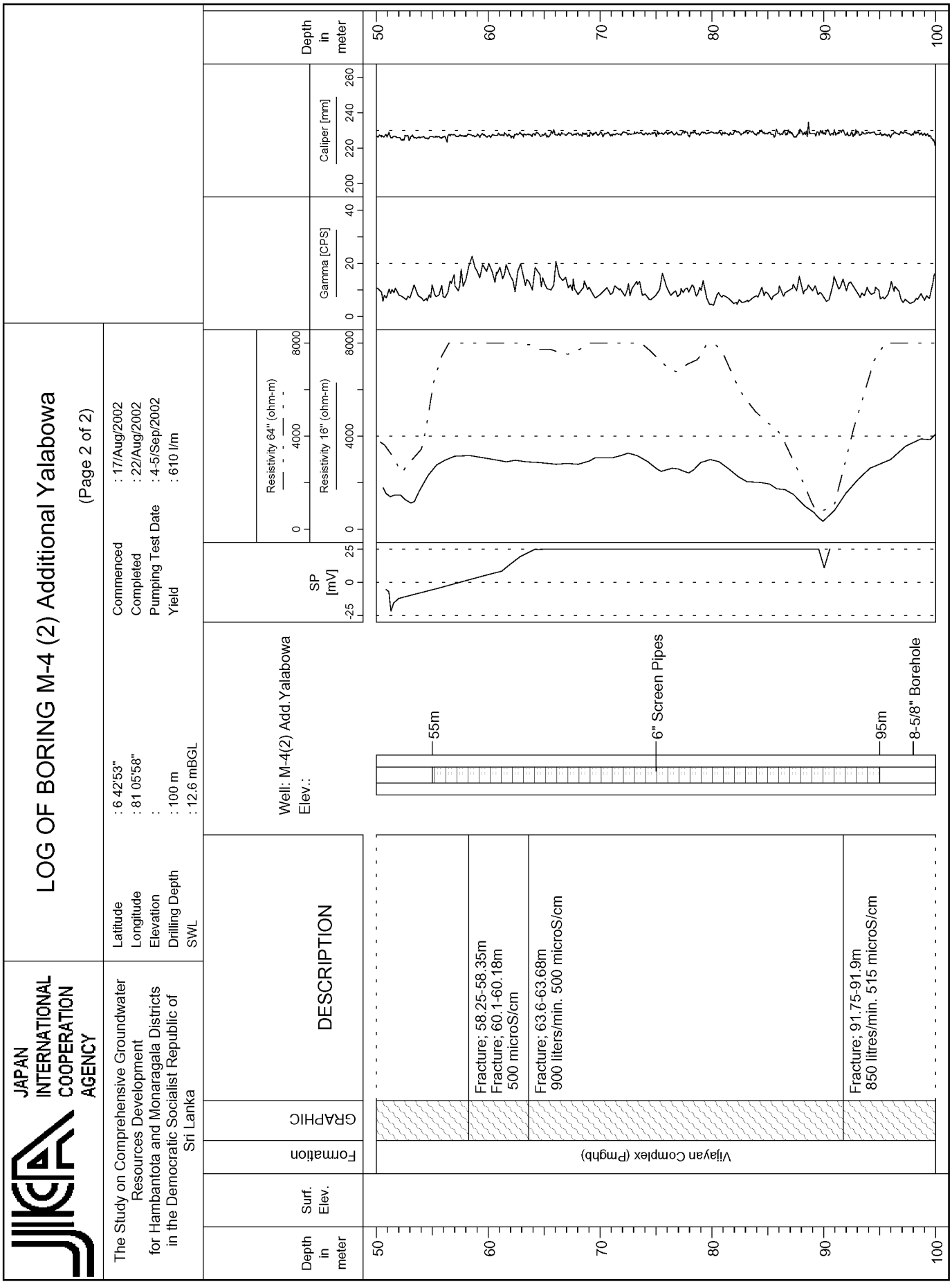
The Study on Comprehensive Groundwater Resources Development for Hambantota and Monaragala Districts in the Democratic Socialist Republic of Sri Lanka

Latitude	: 6 42'53"	Commenced	: 17/Aug/2002
Longitude	: 81 05'58"	Completed	: 22/Aug/2002
Elevation	:	Pumping Test Date	: 4-5/Sep/2002
Drilling Depth	: 100 m	Yield	: 610 l/m
SWL	: 12.6 mBGL		

Depth in meter	Surf. Elev.	Formation	GRAPHIC	DESCRIPTION
0–10				Clay with top soil, Weathered rock
10–12		Vijayan Complex (Pmghb)		Hard rock; Mainly hornblend-biotite gneiss
12–25		Vijayan Complex (Pmghb)		Fracture; 14.0-14.7m, 5 liters/min. 410 microS/cm Fracture; 16.5-16.7m, Fracture; 18.12-20.12m 10 litres/min. 410 microS/cm Fracture; 20.6-20.68m
25–27		Vijayan Complex (Pmghb)		Fracture; 25.6-25.85m
27–43		Vijayan Complex (Pmghb)		Fracture; 30.1-30.25m 300 liters/min. 463 microS/cm Fracture; 32.75-32.85m
43–50		Vijayan Complex (Pmghb)		Fracture; 43.28-43.45m 700 liters/min. 475 microS/cm Fracture; 44.25-44.35m 900 liters/min. 490 microS/cm






JICA
JAPAN INTERNATIONAL COOPERATION AGENCY
The Study on Comprehensive Groundwater Resources Development for Hambantota and Monaragala Districts in the Democratic Socialist Republic of Sri Lanka
LOG OF BORING M-4 (2) Additional Yalabowa
(Page 2 of 2)
Latitude : 6 42'53"
Longitude : 81 05'58"
Elevation : -
Drilling Depth : 100 m
SWL : 12.6 mBGL
Commenced : 17/Aug/2002
Completed : 22/Aug/2002
Pumping Test Date : 4-5/Sep/2002
Yield : 610 l/m
Well: M-4(2) Add.Yalabowa
Elev.:
Depth in meter
Surf. Elev.
Formation
GRAPHIC
DESCRIPTION
Vijayan Complex (Pmgbb)
Fracture; 58.25-58.35m
Fracture; 60.1-60.18m
500 microS/cm
Fracture; 63.6-63.68m
900 liters/min. 500 microS/cm
Fracture; 91.75-91.9m
850 litres/min. 515 microS/cm
55m
6" Screen Pipes
95m
8-5/8" Borehole
SP [mV]
Resistivity 16" (ohm-m)
Resistivity 64" (ohm-m)
Gamma [CPS]
Caliper [mm]

Appendix G

Distribution of Groundwater Quality

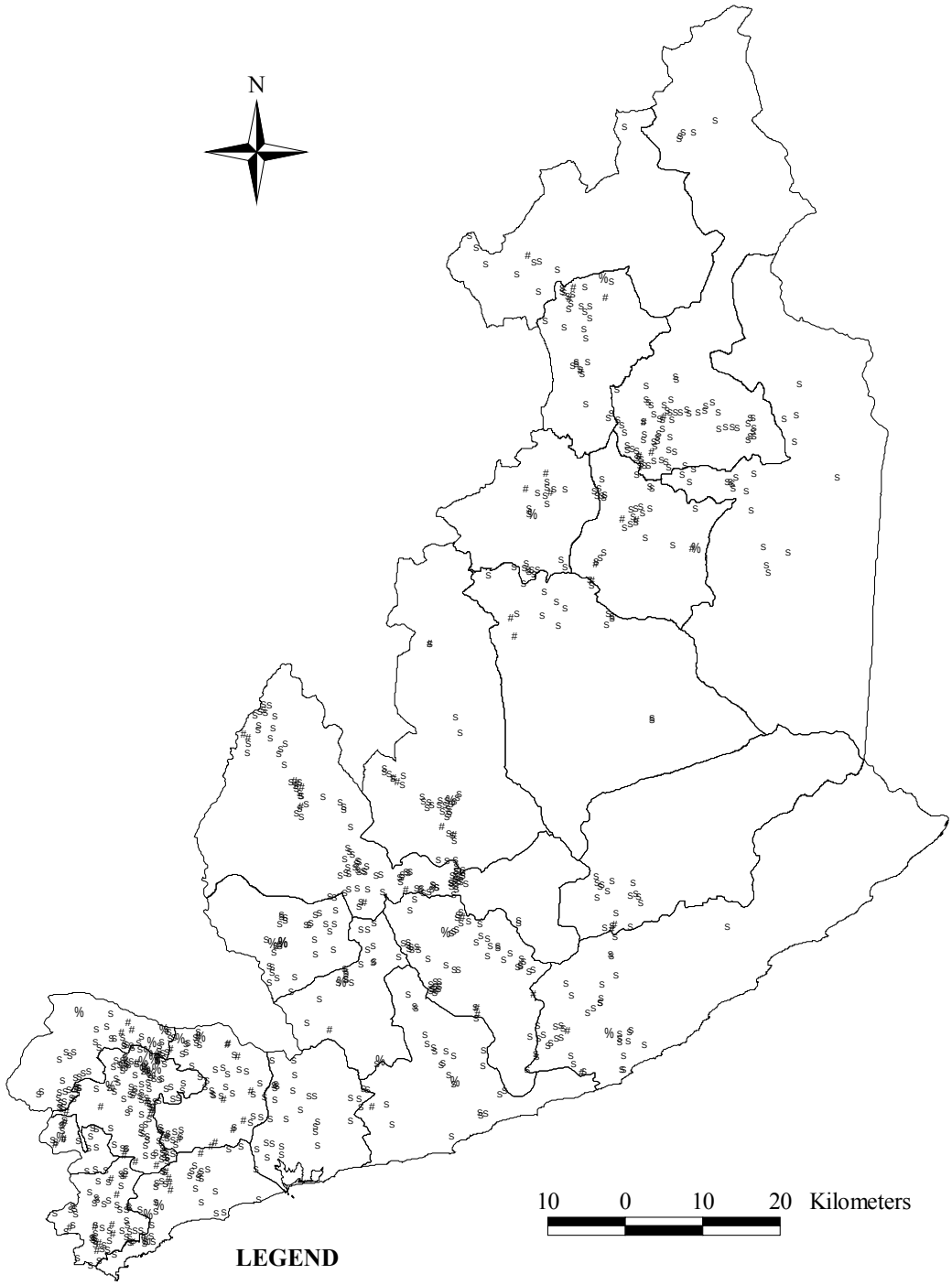
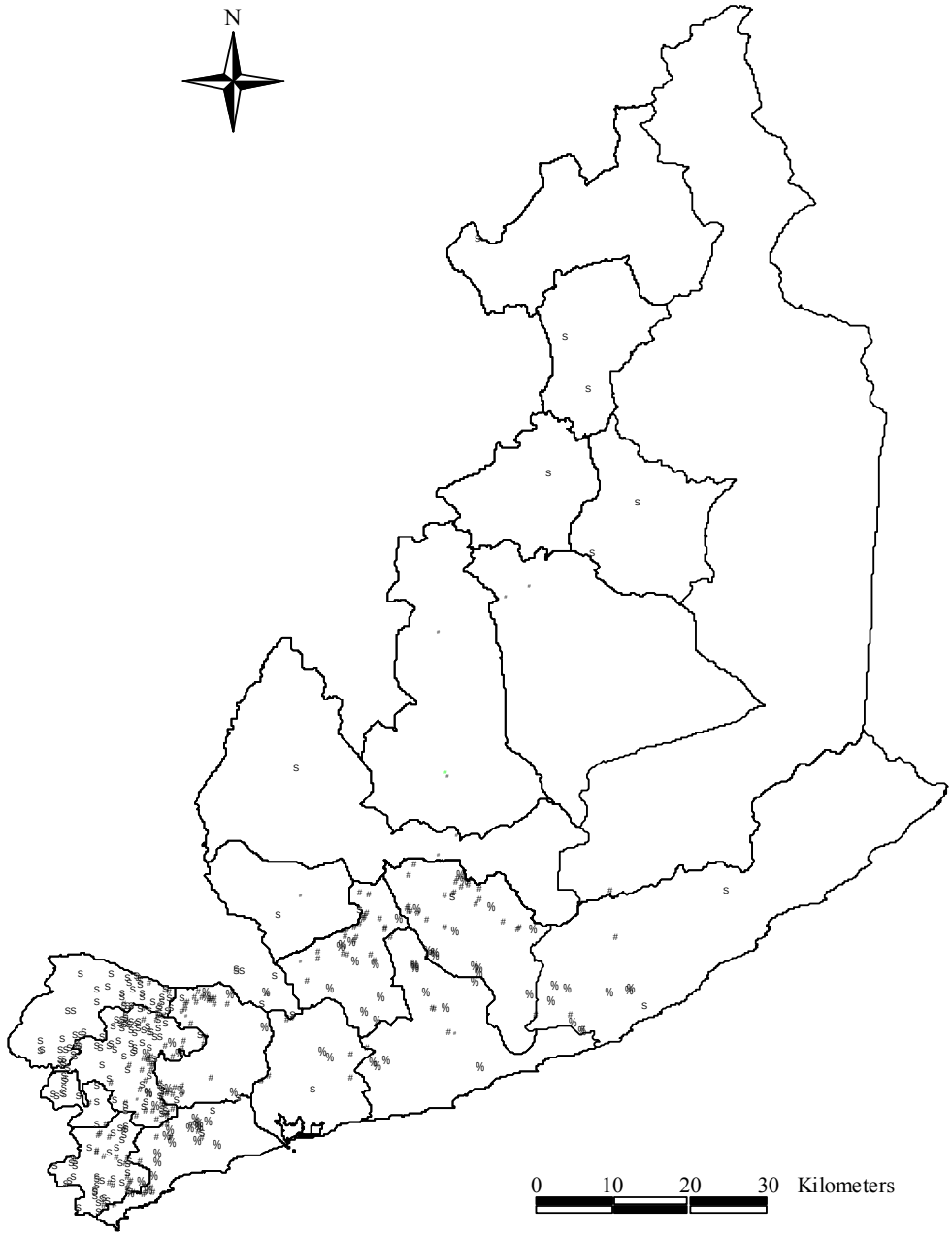


FIGURE G (1) REGIONAL DISTRIBUTION OF GROUNDWATER QUALITY (pH)

THE STUDY ON COMPREHENSIVE GROUNDWATER RESOURCES DEVELOPMENT | **JICA**



LEGEND

○ : TDS≦500 mg/l
(Maximum Desirable level)

● : 500mg/l <TDS≦2,000 mg/l
(Maximum permissible level)

■ : TDS>2,000 mg/l
(not satisfy the criteria for drinking water)

FIGURE G (2) REGIONAL DISTRIBUTION OF GROUNDWATER QUALITY (TDS)

THE STUDY ON COMPREHENSIVE GROUNDWATER RESOURCES DEVELOPMENT | **JICA**

LEGEND

○ : T-Hardness ≦250 mg/l as $CaCO_3$
(Maximum Desirable level)

● : 250 mg/l <T-Hardness ≦600 mg/l as $CaCO_3$
(Maximum permissible level)

■ : T-Hardness >600 mg/l as $CaCO_3$
(not satisfy the criteria for drinking water)

FIGURE G (3) REGIONAL DISTRIBUTION OF GROUNDWATER QUALITY (T-HARDNESS)

THE STUDY ON COMPREHENSIVE GROUNDWATER RESOURCES DEVELOPMENT | **JICA**

LEGEND

- ○ : Ca ≦100 mg/l
  (Maximum Desirable level)
- ● : 100 mg/l <Ca ≦240 mg/l
  (Maximum permissible level)
- ■ : Ca >240 mg/l
  (not satisfy the criteria for drinking water)

FIGURE G (4) REGIONAL DISTRIBUTION OF GROUNDWATER QUALITY (CALCIUM)

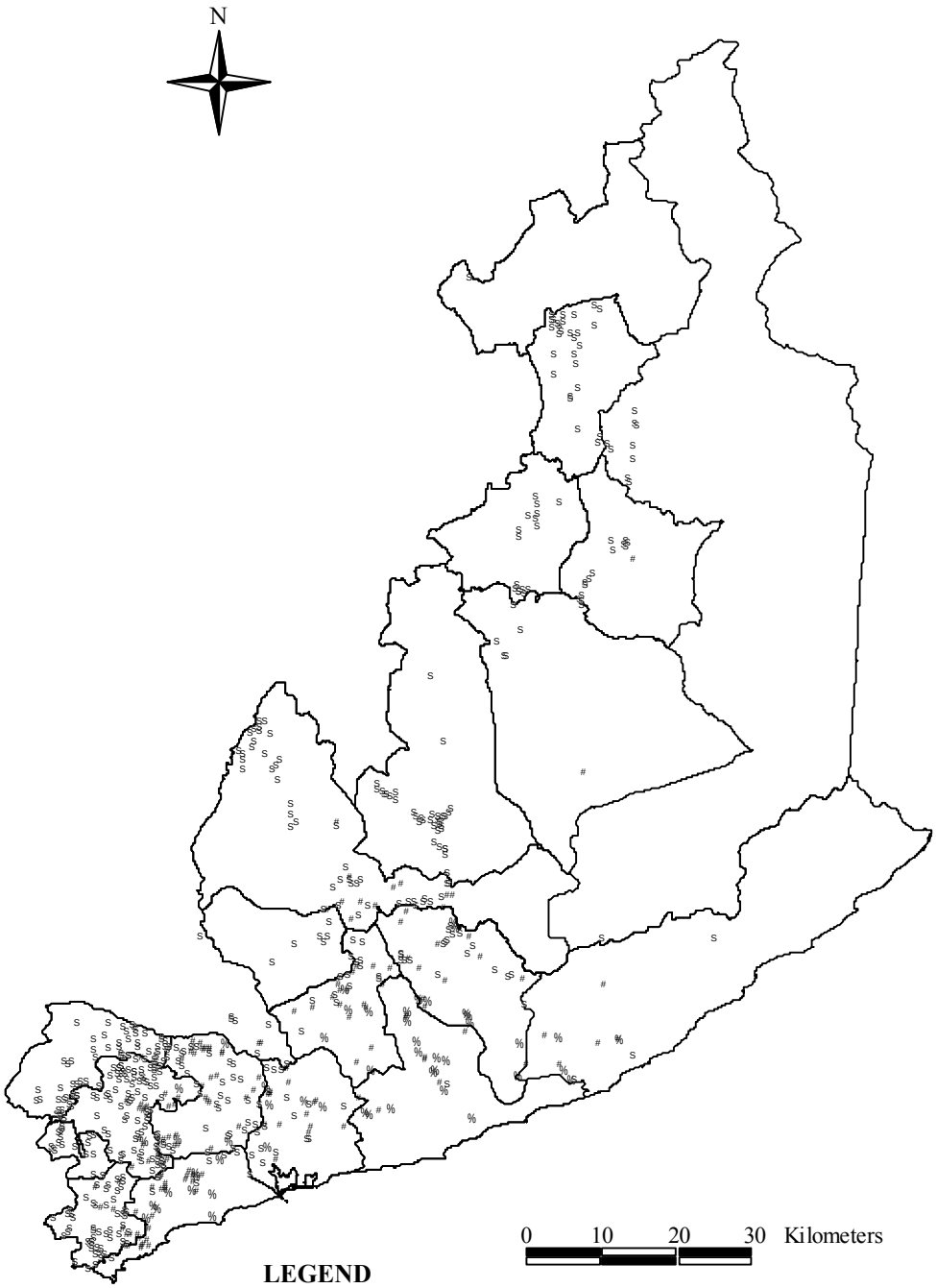
THE STUDY ON COMPREHENSIVE GROUNDWATER RESOURCES DEVELOPMENT | **JICA**

LEGEND

- ○ : Mg ≦30 mg/l
- ● : 30 mg/l <Mg ≦140 mg/l
- ■ : Mg >140 mg/l

FIGURE G (5) REGIONAL DISTRIBUTION OF GROUNDWATER QUALITY (MAGNESIUM)

THE STUDY ON COMPREHENSIVE GROUNDWATER RESOURCES DEVELOPMENT | **JICA**

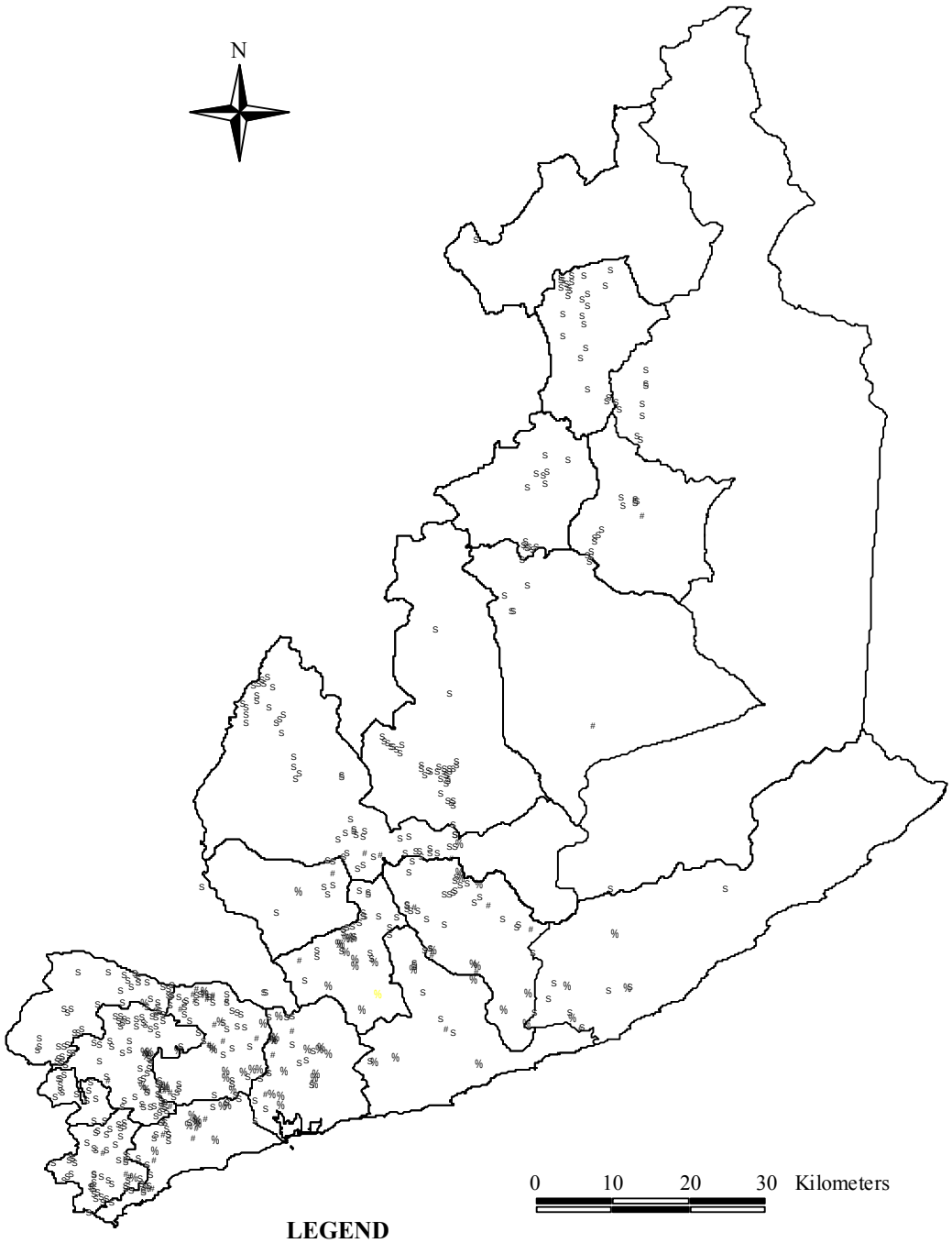


LEGEND

- o : Cl ≦200 mg/l
  (Maximum Desirable level)
- ● : 200 mg/l <Cl ≦1,200 mg/l
  (Maximum permissible level)
- ■ : Cl >1,200 mg/l
  (not satisfy the criteria for drinking water)

FIGURE G (6) REGIONAL DISTRIBUTION OF GROUNDWATER QUALITY (CHLORIDE)

THE STUDY ON COMPREHENSIVE GROUNDWATER RESOURCES DEVELOPMENT | **JICA**

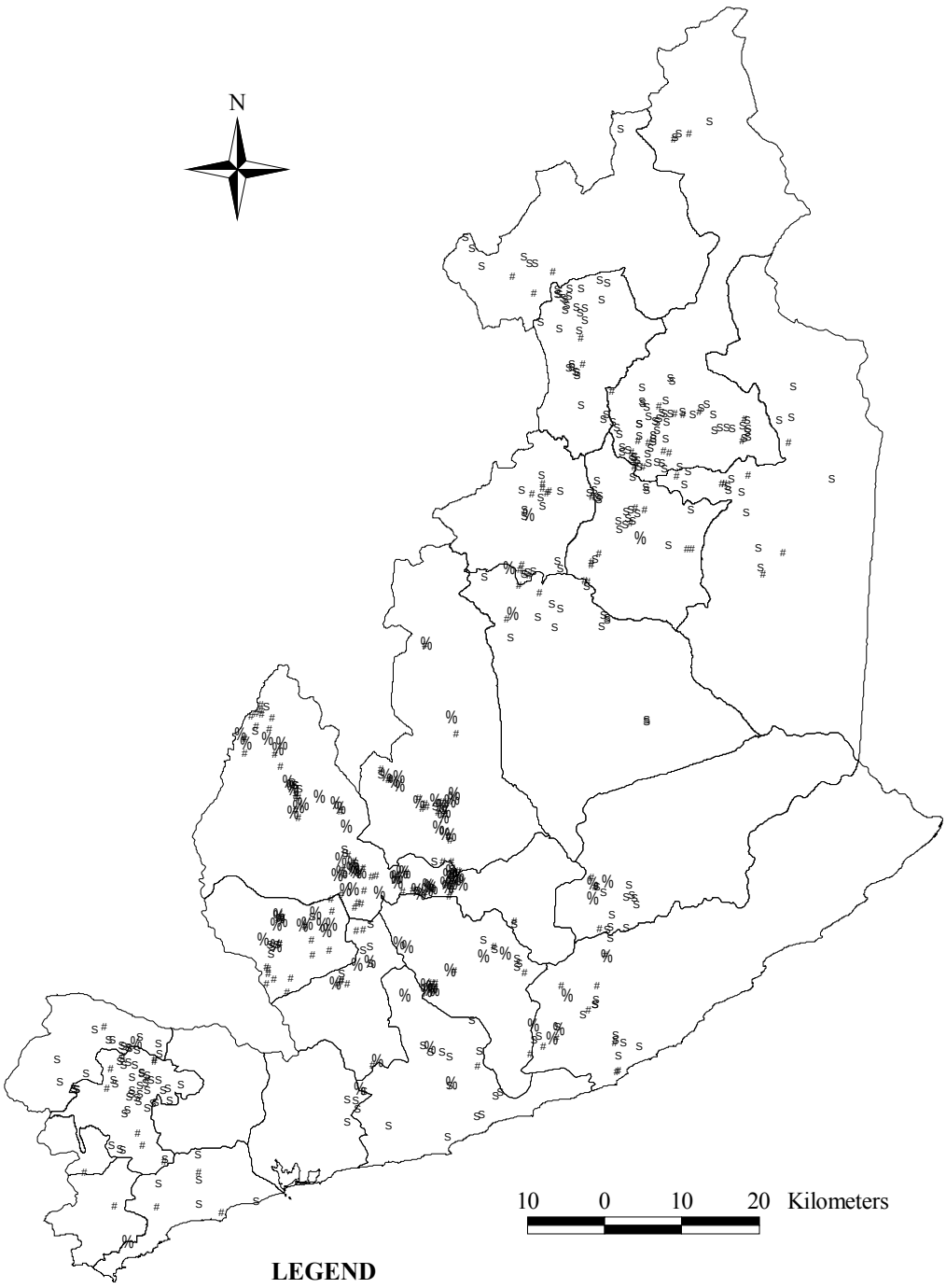


LEGEND

- ○ : SO_4 ≦200 mg/l as SO_4
  (Maximum Desirable level)
- ● : 200mg/l< SO_4 ≦400 mg/l as SO_4
  (Maximum permissible level)
- ■ : SO_4 >400 mg/l as SO_4
  (not satisfy the criteria for drinking water)

FIGURE G (7) REGIONAL DISTRIBUTION OF GROUNDWATER QUALITY (SULPHATE)

THE STUDY ON COMPREHENSIVE GROUNDWATER RESOURCES DEVELOPMENT | **JICA**



LEGEND

- o : T-Alkalinity ≦200 mg/l as $CaCO_3$ (Maximum Desirable level)
- ● : 200mg/l< T-Alkalinity ≦400 mg/l as $CaCO_3$ (Maximum permissible level)
- ■ : T-Alkalinity >400 mg/l as $CaCO_3$ (not satisfy the criteria for drinking water)

FIGURE G (8) REGIONAL DISTRIBUTION OF GROUNDWATER QUALITY (TOTAL ALKALINTY)

THE STUDY ON COMPREHENSIVE GROUNDWATER RESOURCES DEVELOPMENT | **JICA**

Appendix H

Stiff Diagrams of 30 Existing Wells

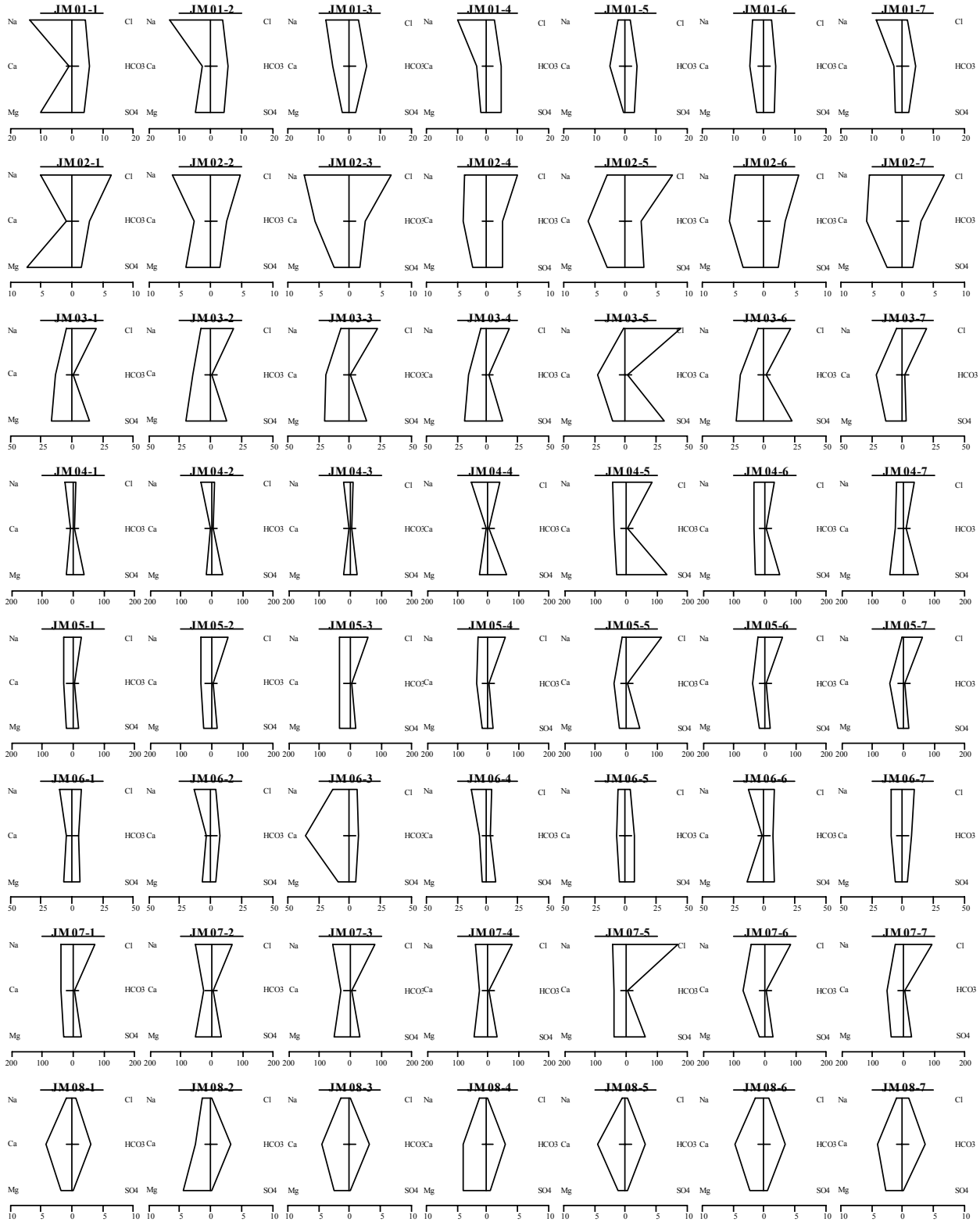


FIGURE H (1) STIFF DIAGRAMS OF 30 EXISTING WELLS

THE STUDY ON COMPREHENSIVE GROUNDWATER RESOURCES DEVELOPMENT | **JICA**

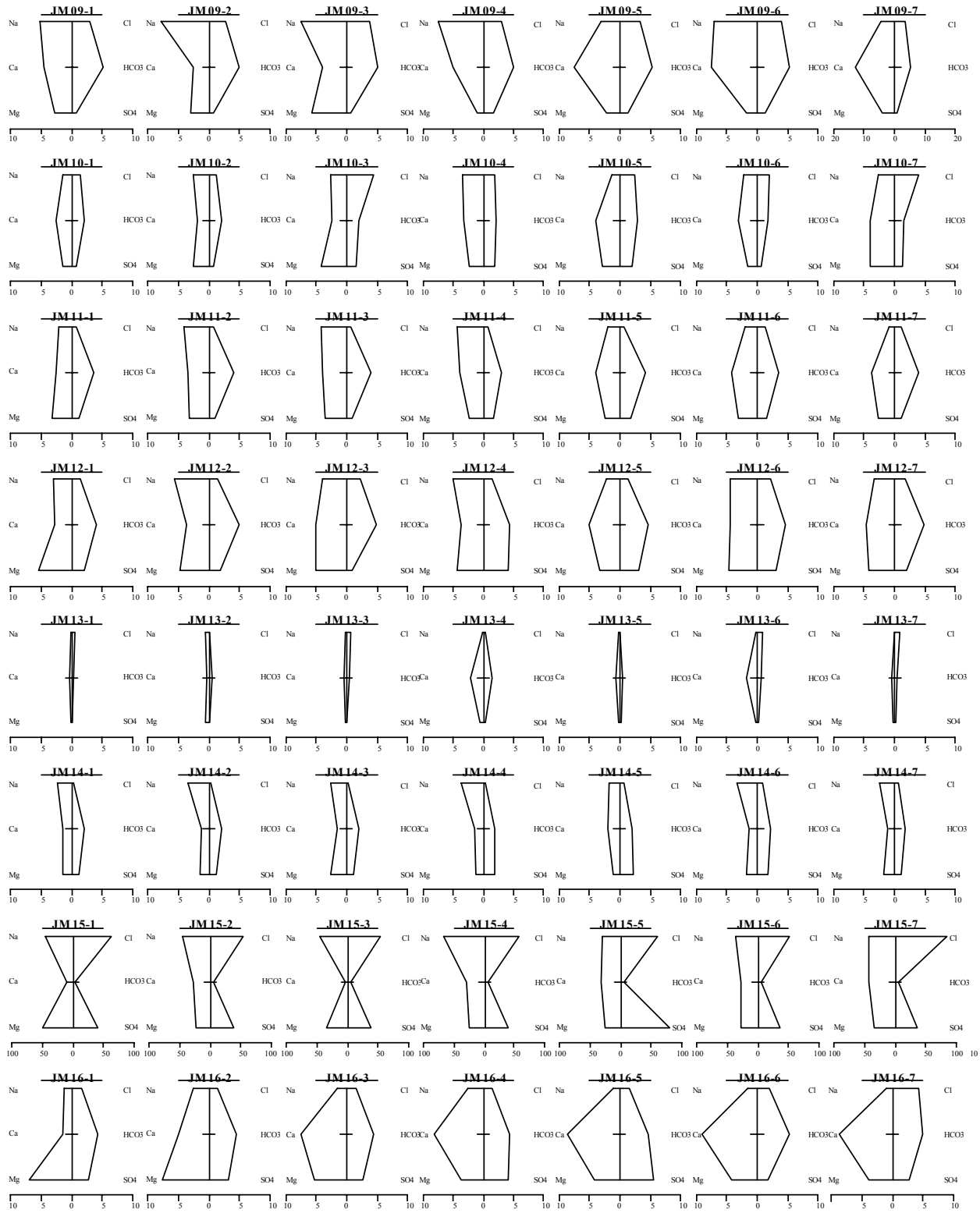


FIGURE H (2) STIFF DIAGRAMS OF30 EXISTING WELLS

THE STUDY ON COMPREHENSIVE GROUNDWATER RESOURCES DEVELOPMENT | **JICA**

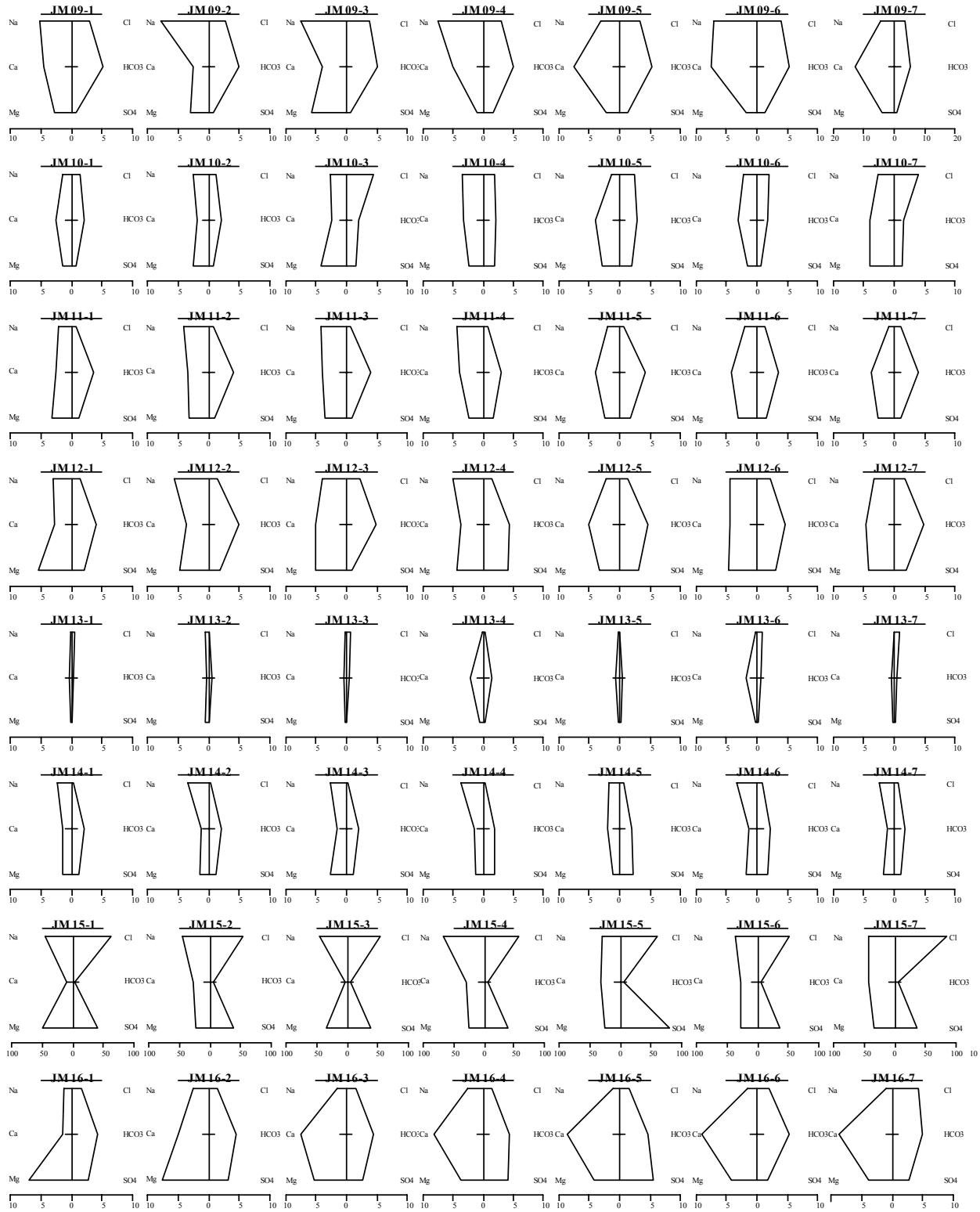
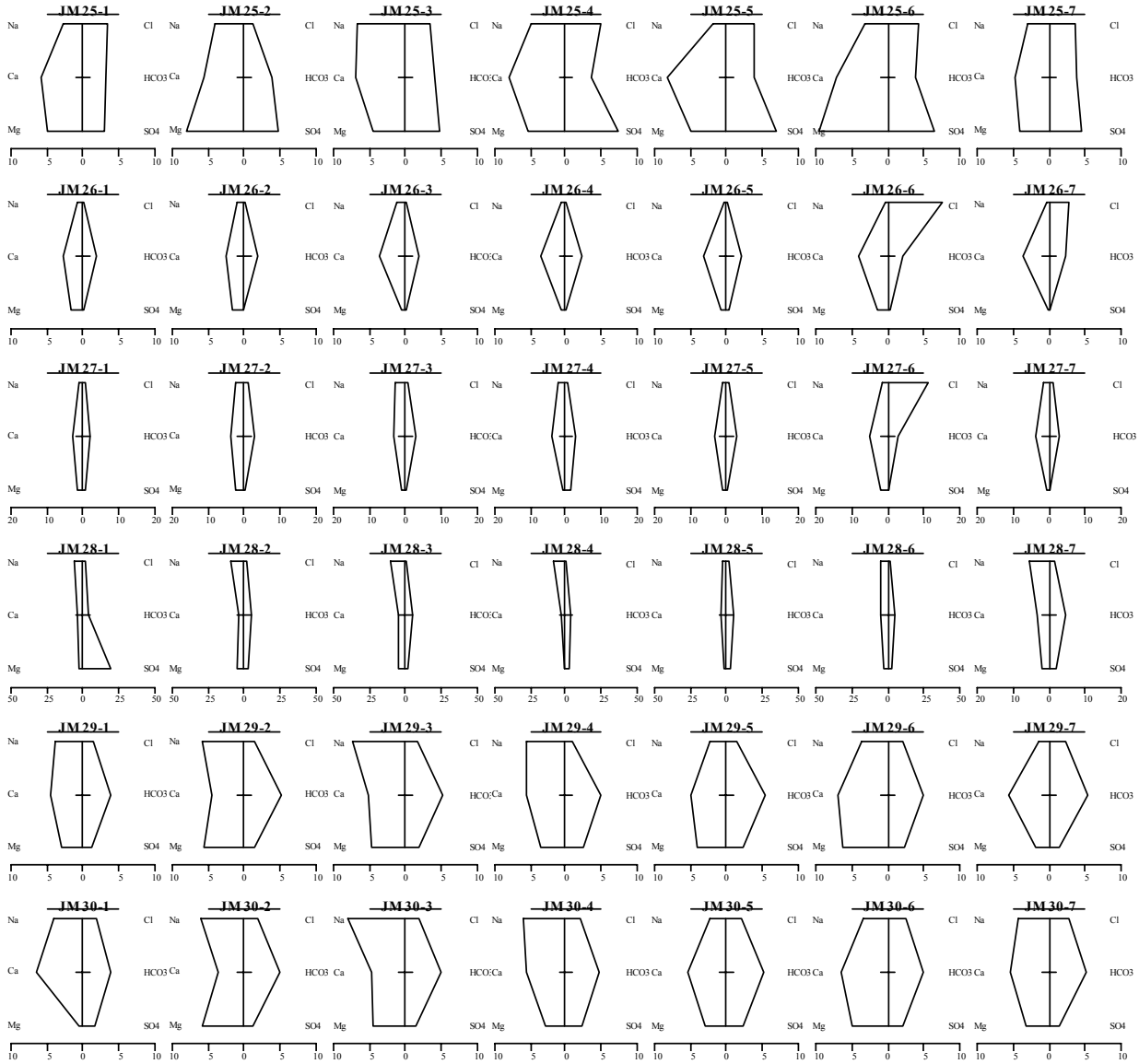


FIGURE H (3) STIFF DIAGRAMS OF30 EXISTING WELLS

THE STUDY ON COMPREHENSIVE GROUNDWATER RESOURCES DEVELOPMENT | **JICA**



LEGEND

Sample No.	Date of Sampling
JM No. - 1	18-21 /Sep/2001
JM No. - 2	1-4 /Nov/2001
JM No. - 3	12-14 /Dec/2001
JM No. - 4	17-21 /Jan/2002
JM No. - 5	9-12 /Mar/2002
JM No. - 6	20-25 /May/2002
JM No. - 7	8-11 /Jul/2002

FIGURE H (4) STIFF DIAGRAMS OF30 EXISTING WELLS

THE STUDY ON COMPREHENSIVE GROUNDWATER RESOURCES DEVELOPMENT | **JICA**

Appendix I

Properties of the Databases

Table I.1 (1) Properties of Tube Well Database (1/6) Well ID Table

Items	Name in WRB Database	Data Type	Data Length	Definition & Description
WELLNO	Non (created)	Text	9	999/9999? (Project Code/Well Number)
OLDWELLNO	OLD_NO	Text	25	
NWELLNO	NMCODE	Text	15	
PROJOFFICE_CODE	Non	Text	6	
PROVINCE_CODE	Non(created)	Text	3	
DISTRICT_CODE	DISTRICT	Text	5	
DSDIV_CODE	Non	Text	32	Full Name
GSDIV	Non	Text	18	Full Name
ELECT_CODE	ELECTO	Text	30	Full Name
VILLAGE	VILLAGE	Text	40	Full Name
LOCATION	LOCATION	Text	40	
X_COORDINATE	COODI	Number	Double	Entry must be between 793000 and 820000
Y_COORDINATE		Number	Double	Entry must be between 53000 and 100000
MAP_USED	TOPO_NAME	Text	14	
MAP_SCALE	Non(created)	Text	50	Apply scale in 1:63360
GEOLOGICAL_USED	Non	Text	50	
GEOLOGICAL_SCALE	Non	Text	50	
X_METRIC	Non (created)	Number	Double	Entry must be between 48000 and 328000
Y_METRIC	Non (created)	Number	Double	Entry must be between 75000 and 525000
ELEVATIONMSL	Non (created)	Number	Double	
USERTYPE	Purpose	Text	30	
SCHEMENAME	Non	Text	50	
SOURCE	Non(created)	Text	15	ex. MAP, MAGELLAN(L), (E)
ELV_METHOD	Non(created)	Text	50	Related to Method Lookup Table
DEP_SOIL	Non(created)	Number	Single	Depth to the bottom of soil layer
DEP_HW_ROCK	Non(created)	Number	Single	Depth to the bottom of highly weathered rock
DEP_W_ROCK	Non(created)	Number	Single	Depth to the bottom of weathered rock

Note:
Number : Numerical value
Double : Double precision floating Point

Table I.1 (2) Properties of Tube Well Database (2/6) Chemical Data Table

Items	Name in WRB Database	Data Type	Data Length	Definition & Description
WELLNO	Non (created)	Text	9	999/9999? (Project Code/Well Number)
SAMPLEDATE	DATES	Date/Time		Date - sample collected
SAMPLEDEPTH	Non	Number	Double	Depth - sample collected in meters
SAMPLETIME	Non	Date/Time	Short time	Time - sample collected
COLOR	COLOUR	Number	Double	Color - Hazen scale
TURBIDITY	TURBIDITY	Number	Double	Turbidity - NTU
PH	PH	Number	Double	pH
ELECON	ELECON	Number	Double	Electrical conductivity in micro Siemens per
CHLORIDES	CL	Number	Double	Chlorides as Cl - mili grams per liter
TOTALK	TOTALK	Number	Double	Total alkalinity as Calcium Carbonate - mili
FREEAMONIA	NH4	Number	Double	Free ammonia - mili grams per liter
ALBAMONIA	Non	Number	Double	Albuminoid ammonia - mili grams per liter
NITRATES	NO3	Number	Double	Nitrates as N - mili grams per liter
NITRITE	NO2	Number	Double	Nitrites as N - mili grams per liter
FLUORIDES	F	Number	Double	Fluorides as F - mili grams per liter
PHOSPHATE	Non	Number	Double	Phosphates as PO4 - mili grams per liter
TOTDISSOL	TDS	Number	Double	Total dissolved solids - mili grams per liter
TOTHARD	TOTHARD	Number	Double	Total hardness as Calcium Carbonate - mili
CALCHARD	CALCHARD	Number	Double	Calcium hardness as Calcium Carbonate - mili
TOTIRON	TOTIRON	Number	Double	Total iron as Fe - mili grams per liter
MAGNESIUM	MG	Number	Double	Magnesium as Mg - mili grams per liter
SULPHATE	SO4	Number	Double	Sulphates as SO4 - mili grams per liter
MANGANESE	MN	Number	Double	Manganese as Mn - mili grams per liter
DISSIRON	Non	Number	Double	dissolved iron as Fe - mili grams per liter
TOTCOLI	TOTCOLI	Number	Double	Total colliform - count
FAECALCOLI	FAECALCOLI	Number	Double	Facial colliform - count
FILTIRON	Non	Number	Double	Filtered iron as Fe - mili grams per liter
TOTRESIDUE	Non	Number	Double	Total residue - mili grams per liter
CALCIUM	CA	Number	Double	Calcium as Ca - mili grams per liter
OXYGEN	Non	Number	Double	Dissolved Oxygen as O - mili grams per liter
HYSUL	Non	Number	Double	Hydrogen sulphate - mili grams per liter
FIXEDIRON	Non	Number	Double	Fixed Iron
SODIUM	Na	Number	Double	Na-mili grams per liter
POTASSIUM	K	Number	Double	Na-mili grams per liter
HYDRO-CARBON	HCO3	Number	Double	Na-mili grams per liter
APPEARANCE	APPEARANCE	Text	50	
TEMPERATURE	TEMPERATURE	Number	Double	Centigrade degree

Note:
Number : Numerical value
Double : Double precision floating Point

Table I.1 (3) Properties of Tube Well Database (3/6) Well Construction Table

Items	Name in WRB Database	Data Type	Data Length	Definition & Description
WELLNO	Non (created)	Text	9	999/9999? (Project Code/Well Number)
SWL	W_LEVEL	Number	Double	Static water level (below ground) in meters after construction
BEGDATE	DATE_C	Date/Time		Beginning date of drilling
ENDDATE	DATE_E	Date/Time		End date of drilling
CASEDIA_CODE	CASE_DIA	Number	Double	Diameter of casing pipe in millimeters
CASELENGTH	Non	Number	Double	Casing length in meters
ROCKDIA	Non	Number	Double	Diameter in the rock in millimeters
TOTAL_DEPTH	TOTAL_DEPTH	Number	Double	Total depth of well in meters
FINAL YIELDLPM	YIELD	Number	Double	Final flushing yield of well in litres per minute
FINAL FIELD_COND	Non	Number	Double	Final field conductivity in micro Mohos per cubic centimeters
WELLSTATUS_CODE	Non	Text	10	Well status
REASON_ABN_CODE	Non	Text	25	Reason for abandonment
WATER STRUCK DEPTH	Non	Number	Double	Water struck depth in meters
DRILLTYPE_OB	METHOD_OF	Text	10	Type of drilling-ob
DRILLTYPE_ROCK		Text	50	Type of drilling-Code
DAYS_DRILL	Non	Number	Double	Number of days spent for drilling
OB_DEPTH	OVER_DEP	Number	Double	Overburden depth in meters
TIME_OB	Non	Number	Double	Time taken for drilling overburden
TIME_ROCK	Non	Number	Double	Time taken for drilling rock
DRILLINGCOST	Non	Currency		Cost for drilling & well construction
CASE TYPE	Non	Text	12	Type of casing
TYPE_OF_AQUIFER	Non	Text	50	Related to
NAME_OF_DRILLER	N_O_D	Text	50	
TRICON BIT DIA	T_B_OB_BIT	Number	Single	Tricon bit diameter in mili meter
BUTTON BIT DIA	B_B_ROCK_D	Number	Single	Button bit diameter in mili meter

Note:
Number : Numerical value
Double : Double precision floating Point
Single : Single precision floating Point

Table I.4 (4) Properties of Tube Well Database (4/6) Drilling Case Data Table

Items	Name in WRB Database	Data Type	Data Length	Definition & Description
WELLNO	Non (created)	Text	9	999/9999? (Project Code/Well Number)
NO	Numbering	Text	7	
TYPE	Non	Text	15	
SLOTSIZE	Non	Number	Double	
CASE_FROM	BLANK_DEP	Number	Double	Casing top depth in meter
CASE_TO	SCREEN_DEP	Number	Double	Casing top depth in meter
DIAMETER	CASE_DIA	Number	Double	Diameter of casing in millimeter

Note:
Number : Numerical value
Double : Double precision floating Point

Table I.1 (5) Properties of Tube Well Database (5/6) Lithology Table

Items	Name in WRB Database	Data Type	Data Length	Definition & Descriptions
WELLNO	Non (created)	Text	9	999/9999? (Project Code/Well Number)
ROCKNO	Numbering	Number	Integer	
FROM	Lithology	Number	Double	
TO	Lithology	Number	Double	
ROCKTYPE	Lithology	Text	40	
COLOUR	Non	Text	30	
GRAINSIZE	Non	Text	15	
WEATHERING	Non	Text	25	

Note:
Number : Numerical value
Double : Double precision floating Point

Table I.1 (6) Properties of Tube Well Database (6/6) Fracture Log Table

Items	Name in WRB Database	Data Type	Data Length	Definition & Descriptions
WELLNO	Non (created)	Text	9	999/9999? (Project Code/Well Number)
FRAC_NO	Numbering	Number	Double	
FRAC_DEPTH	Fracture_Z	Number	Double	Top of fracture in meter
FRAC_YIELD	Fracture_Z	Number	Double	Litter/min
FRAC_EC	Non	Number	Double	
LOSS CIRCULATION DEPTH	Non	Number	Double	

Note:
Number : Numerical value
Double : Double precision floating Point

Table I.2 Items of Population Database

Field Items	Specification	Remark
AREA	GND area in cubic meter	Occurred automatically
PERIMETER	GND perimeter in meter	Occurred automatically
DIVSEC		From survey department data
DIVSEC_ID	DSD code number	From survey department data
DIV_SEC	DSD name	From survey department data
DISTRICT	District name	From survey department data
G_N_CODE	GND code	Created by Study Team
G_N_NAME	GND name	District Office
POP_T	Total population	Data from Census
POP_M	Population of Male	Data from Census
POP_F	Population of Female	Data from Census

Table I.3 Properties of Observation Database

Database Name	Field Items	Data Type	Field Size	Definition/Description
Rainfall	ST_CODE	Text	255	Cord of ADM + Number
	ST_NAME	Text	255	Station Name
	JAN	Number	Double	mm
	FEB－NOV(abbreviate)	Number	Double	mm
	DEC	Number	Double	mm
Pan-Evaporation	ST_CODE	Text	255	Cord of ADM + Number
	ST_NAME	Text	255	Station Name
	JAN	Number	Double	mm
	FEB－NOV(abbreviate)	Number	Double	mm
	DEC	Number	Double	mm
River Discharge	ST_NAME	Text	255	Station Name
	OCT	Number	Double	Million Cubic Meter
	NOV－NOV(abbreviate)	Number	Double	Million Cubic Meter
	DEC	Number	Double	Million Cubic Meter
Irrigation Water Volume	Name of Tank	Text	255	Station Name
	Basin	Text	255	Name of River basin
	Capa (MCM)	Number	Double	Million Cubic Meter
	1998 (MCM)	Number	Double	Million Cubic Meter
	1999 (MCM)	Number	Double	Million Cubic Meter
	2000 (MCM)	Number	Double	Million Cubic Meter
	Average (MCM)	Number	Double	Million Cubic Meter
Temperature	Station Name	Text	255	Station Name
	JAN	Number	Double	degrees centigrade
	FEB – NOV (abbreviate)	Number	Double	degrees centigrade
	DEC	Number	Double	degrees centigrade
	ANNUAL	Number	Double	degrees centigrade

Note:
Number : Numerical value
Double : Double precision floating Point

Appendix J

Procedure of the Database Conversion

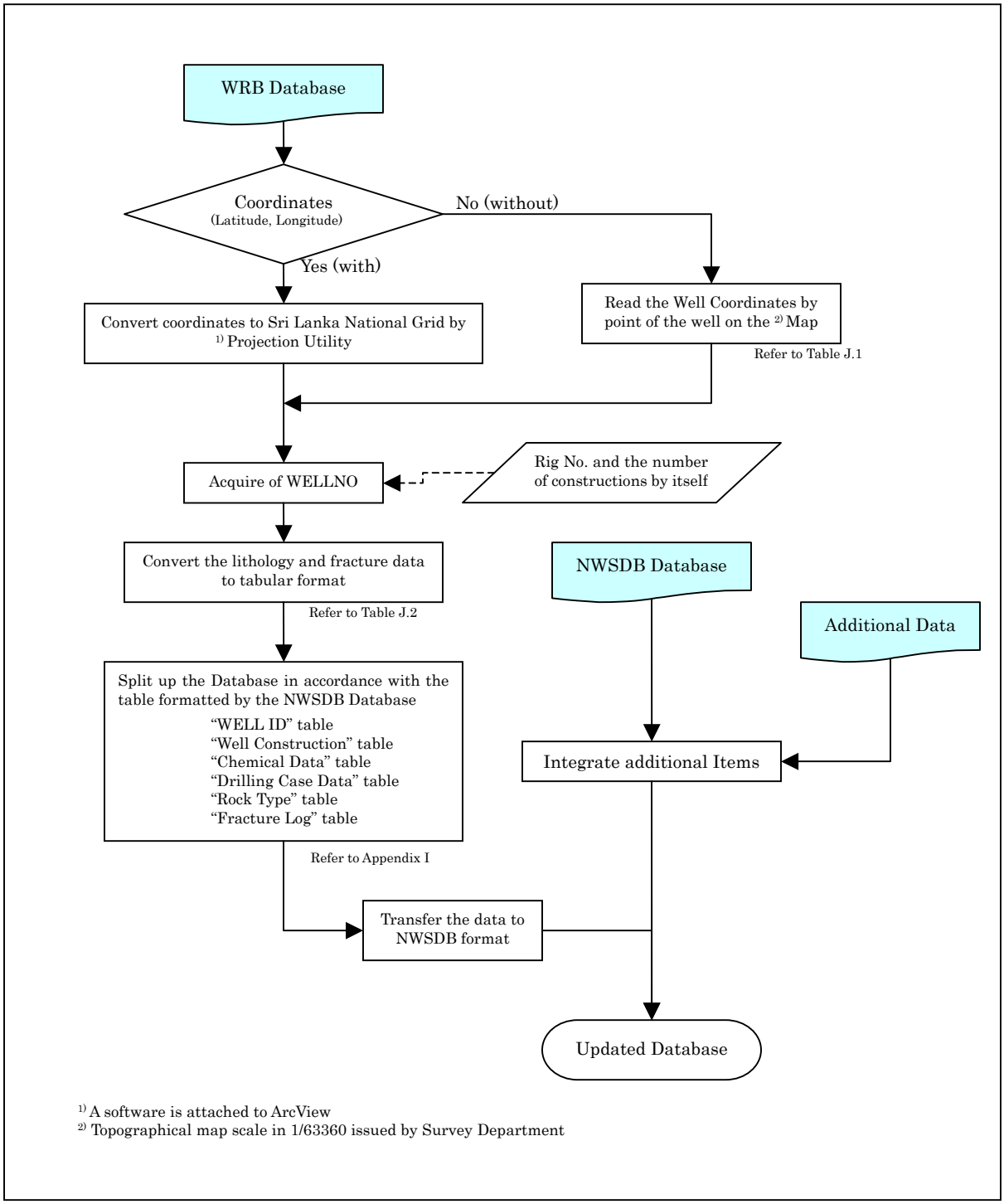


Figure J.1 Flowchart of the Tube Well Database Conversion

Table J.1 Coordinates of the Southwest Edge of the Maps Scale in 1:63360

No.	Map Name	Coordinates (m)		No.	Map Name	Coordinates (m)	
		X	Y			X	Y
1	JAFNA	84450	490980	37	RUKAM	237820	264386
2	POINTPEDRO	128250	490980	38	BATTICALOA	281457	264386
3	DELFT	62531	462600	39	CHILAW	62531	236024
4	POONERYN	106340	462600	40	DANDAGAMUWA	106340	236024
5	ELEPHANTPASS	150151	462600	41	KURUNEGALA	150151	236024
6	TUNUKKAI	106340	434311	42	RANGALA	193873	236024
7	IRANAMADU	150151	434311	43	MAHA OYA	237820	236024
8	MULLAITTIVU	193873	434311	44	KALMUNAI	281457	236024
9	TALAIMANANAR	62531	406097	45	NEGAMBO	62531	207691
10	MATAI	106340	406097	46	GAMPAHA	106340	207691
11	PULIYANKULAM	150151	406097	47	KANDY	150151	207691
12	KOKKAILAI	193873	406097	48	HANGURANKETA	193873	207691
13	MURUNKAN	106340	377709	49	NILGALA	237820	207691
14	VAVUNIYA	150151	377709	50	TIRRRUKKOVIL	281457	207691
15	PADAWIYA	193873	377709	51	COLOMBO	62531	179444
16	NILAVELI	237820	377709	52	AVISSAWELLA	106340	179444
17	KUDREMALAI	62531	349381	53	HATTON	150151	179444
18	MARICHCHUKKADDI	106340	349381	54	NUWAEA ELIYA	193873	179444
19	MADAWACHCHIYA	150151	349381	55	PASSARA	237820	179444
20	HOROWUPOTANA	193873	349381	56	POTTUVIL	281457	179444
21	TRINCOMALEE	237820	349381	57	PANADURA HORANA	99397	151100
22	KALPITIYA	62531	321092	58	RATNAPURA	150151	151100
23	KALA OYA	106340	321092	59	HAPUTALE	193873	151100
24	ANURADHAPURA	150151	321092	60	BUTTALA	237820	151100
25	KAUDULLA	193873	321092	61	PANNAMA	281457	151100
26	KATHIRAVELI	237820	321092	62	ALUTHGAMA	106340	122758
27	PUTTALAM	62531	292791	63	RAKWANA	150151	122758
28	GALGAMUWA	106340	292791	64	TIMBOLKETITA	193873	122758
29	DAMBULLA	150151	292791	65	KATARAGAMA	237820	122758
30	POLONNARUWA	193873	292791	66	YALA	281457	122758
31	VAKANERI	237820	292791	67	AMBALANGODA	106340	94458
32	KALKUDAH	281457	292791	68	MORAWAKA	150151	94458
33	BATTULU OYA	62531	264386	69	AMBALANTOTA	193873	94458
34	WARIYAPOLA	106340	264386	70	HAMBANTOTA	237820	94458
35	NALANDA	150151	264386	71	GALLE	128850	80278
36	ELAHERA	193873	264386	72	MATARA	172013	80278

A example in case of below figure (Map number 66)

Coordination of the objective well is calculated by below formula

Coordinates of the Southwest Edge of the Map: (237820, 122758)

x = 237820 + 0.425 * 63360 = 264748 m

y = 122758 + 0.233* 63360 = 137521 m

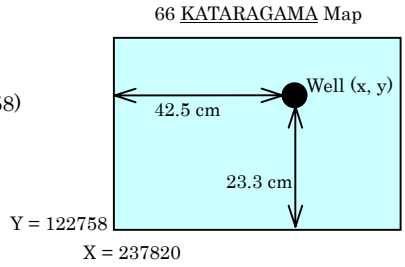


Table J.2 Examples of the Data Conversion of the Lithology and Fracture

Lithology					
WRB original description	0-1.25(Clay), 1.25-2.75(Clay with gravel), 2.75-5.75(Weathered rock), 5.75-28.15(Rock)				
Converted	WELLNO	ROCKNO	FROM	TO	ROCKTYPE
	101/0001	1	0.00	1.25	Clay
	101/0001	2	1.25	2.75	Clay with gravel
	101/0001	3	2.75	5.75	Weathered rock
	101/0001	4	5.75	28.15	Rock
Fracture					
WRB original description	16.75-16.8(60), 17.5-17.55(80), 18.5-18.55(120)				
Converted	WELLNO	FRAC_NO	FRAC_DEPTH	FRAC_YIELD	FRAC__EC
	101/0001	1	16.75	60	-
	101/0001	2	17.50	80	-
	101/0001	3	18.50	120	-
	-	-	-	-	-

Appendix K

List of GND Code

Table K (1) Lists of the GND Codes (Hambantota)

DSD	GND Code	GND Name
AMBALATHOTA (HAMBANTOTA)	AMB129	Ridiyagama
	AMB130	Punchihenayagama
	AMB131	Poliyarwatta
	AMB133	Liyangastota
	AMB134	Koggala
	AMB135	Modarapilwala
	AMB138	Godakoggala
	AMB139	Bolana North
	AMB140	Bolana South
	AMB141	Kuda Bolana
	AMB142	Waduruppa
	AMB143	Ambalantota South
	AMB144	Ambalantota North
	AMB145	Tawaluwila
	AMB146	Puhulyaya
	AMB147	Palugahagodella
	AMB148	Malpettawa
	AMB149	Ekkassa
	AMB150	Welipatanvila
	AMB151	Lunama North
	AMB152	Lunama South
	AMB153	Kivula North
	AMB154	Kivula South
	AMB155	Nonagama
	AMB156	Hatagala
	AMB157	Bata Ata North
	AMB158	Bata Ata South
	AMB159	Beminiyanvila
	AMB160	Uhapitagoda
	AMB161	Elegoda East
	AMB162	Elagoda West
	AMB163	Walalawatta East
	AMB164	Walawawatta West
	AMB165	Rotawala
	AMB166	Mamadala North
	AMB167	Mamadala South
	AMB168	Jansagama
	AMB169	Hadavinna
	AMB170	Siyambalakote
	AMB171	Barawakumbuka
	AMB172	Taligala
	AMB173	Wetiya
	AMB174	Miniettiliya
	AMB175	Pingama
	AMB176	Deniya
	AMB177	Pallegama
	AMB178	Hungama
	AMB179	Ihalagama
	AMB180	Etbatuwa
	AMB181	Mulana
	AMB182	Eraminiyaya
	AMB183	Handunkatuwa
	AMB184	Rote
	AMB185	Mahajandura
	AMB186	Murawesihena
ANGUNAKOLAPELESSA (HAMBANTOTA)	ANG187	Angunakolapelessa
	ANG188	Acharigama
	ANG189	Yakagala
	ANG190	Aluthwewa
	ANG191	Kankanamgama
	ANG192	Binkama
	ANG193	Helekade
	ANG194	Dandenigama
	ANG195	Karagahawela
	ANG196	Julamulla
	ANG197	Jandura
	ANG198	Paharagama
	ANG199	Guruwela
	ANG200	Indigetawila
	ANG201	Talamporuwa
	ANG202	Gurunnehege Ara
	ANG203	Dahaamuna
	ANG204	Kotawaya
	ANG205	Hakuruwela
	ANG206	Netolporuwa
	ANG207	Udayala
	ANG208	Medayala
	ANG209	Bogamuwa
	ANG210	Weeragaswewa
	ANG211	Heenbunna
	ANG212	Makuledeniya
	ANG213	Medagoda
	ANG214	Dimbulgoda
	ANG215	Gajanayakagama
	ANG216	Wakamulla
	ANG217	Attanayala West
	ANG218	Attanayala East
	ANG219	Debokkawa North
	ANG220	Debokkawa South
	ANG221	Suriyapokuna
	ANG222	Amaratungama
	ANG223	Meda Ara
	ANG224	Kohombagaswewa
	ANG225	Uswewa
	ANG226	Kailawelpootawa
	ANG227	Metigatwela
	ANG228	Abesekaragama
	ANG229	Dikwewa
	ANG230	Kalawelwala
	ANG231	Kendeketiya
	ANG232	Ratmalwala
	ANG233	Dambarella North
	ANG234	Dambarella South
	ANG235	Kariyamaditta
	ANG236	Talawa North
	ANG237	Talawa South

DSD	GND Code	GND Name
BELIATTA (HAMBANTOTA)	BEL310	Nugewela
	BEL311	Ihala Beligalla East
	BEL312	Ihala Beligalla West
	BEL313	Wadiya
	BEL314	Beligalla North
	BEL315	Beligalla South
	BEL316	Angulmaduwa
	BEL317	Kosgahagoda
	BEL318	Dammulla West
	BEL319	Dammula East
	BEL320	Pallattara East
	BEL321	Pallattara West
	BEL322	Pallattara South
	BEL323	Taraperiya
	BEL324	Udagalmotegama
	BEL325	Maligatenna
	BEL326	Indiketiyagoda
	BEL327	Nihiluwa West
	BEL328	Pattiyawela
	BEL329	Nihiluwa East
	BEL330	Waharakgoda North
	BEL331	Waharakgoda South
	BEL332	Godawela
	BEL333	Panamulla
	BEL334	Aranwela North
	BEL335	Aranwela West
	BEL336	Getamanna South
	BEL337	Getamanna West
	BEL338	Nayakawatta
	BEL339	Getamanna North
	BEL340	Getamanna East
	BEL341	Ambagasdeniya
	BEL342	Eldeniya
	BEL343	Mahaheela East
	BEL344	Mahaheela West
	BEL345	Mahaheela North
	BEL346	Kambussawala East
	BEL347	Kambussawala West
	BEL348	Kahawata
	BEL349	Galwewa
	BEL350	Karambaketiya
	BEL351	Beliatta Town
	BEL352	Beliatta South
	BEL353	Beliatta West
	BEL354	Puwakdandawa North
	BEL355	Medagoda
	BEL356	Pahalagoda
	BEL357	Puwakdandawa East
	BEL358	Sitinamaluwa West
	BEL359	Sitinamaluwa North
	BEL360	Sitinamaluwa East
	BEL361	Sitinamaluwa South
	BEL362	Palapota West
	BEL363	Palapota East
	BEL364	Mihindupura
	BEL365	Owilana
	BEL366	Kudaheella East
	BEL367	Kudaheella South
	BEL368	Kudaheella North
	BEL369	Miriswatta
	BEL370	Ambala West
	BEL371	Ambala North
	BEL372	Dedduwawala
	BEL373	Dedduwawala East
	BEL374	Nakulugamuwa West
	BEL375	Nakulugamuwa North
	BEL376	Wewdatta
	BEL377	Galagama North
	BEL378	Galagama West
	BEL379	Galagama South
	BEL380	Galagama East
HAMBANTOTA (HAMBANTOTA)	HAM081	Bundala
	HAM082	Siriyagama
	HAM083	Pallemalala
	HAM084	Julgamuwa
	HAM085	Bandagiriya
	HAM086	Tammennawewa
	HAM087	Yahangala West
	HAM088	Yahangala East
	HAM089	Koholankala
	HAM090	Siribopura
	HAM091	Keliyapura
	HAM092	Samodagama
	HAM093	Hambantota East
	HAM094	Hambantota West
	HAM095	Gannoruwa
	HAM096	Ketanwewa
	HAM097	Elalla
	HAM116	Siyambalagasvila North
	HAM117	Siyambalagasvila South
	HAM118	Galwewa
	HAM119	Udaberagama
	HAM120	Bellagaswewa
	HAM121	Pahala Beragama
	HAM122	Arawanamulla
	HAM123	Mirijjavila
	HAM124	Sisilasagama
	HAM125	Walawa
	HAM126	Godawaya
	HAM127	Dehigahalanda
	HAM128	Manajjawa
SOORIYAWEWA (HAMBANTOTA)	SUR098	Weliwewa
	SUR099	Ranmuduwewa
	SUR100	Ihalakumbukwewa
	SUR101	Mahagalwewa
	SUR102	Meegahajandura
	SUR103	Sooriyawewa Town
	SUR104	Suruwirugama
	SUR105	Samajasewapura
	SUR106	Viharagala
	SUR107	Mahapelessa
	SUR108	Weniwelara
	SUR109	Andarawewa
	SUR110	Nambadagaswewa
	SUR111	Mahawelikada Ara
	SUR112	Beddewewa
	SUR113	Aliolu Ara
	SUR114	Hatpooruwa
	SUR115	Veeriyagama
	SUR132	Bedigantota
	SUR136	Wediwewa
	SUR137	Habarattawala

DSD	GND Code	GND Name
KATUWANA (HAMBANTOTA)	KAT493	Kudagoda East
	KAT494	Kudagoda West
	KAT495	Murungasyaya East
	KAT496	Murungasyaya West
	KAT497	Damberalawa
	KAT498	Middeniya North
	KAT499	Middeniya West
	KAT500	Middeniya East
	KAT501	Hellara
	KAT502	Sapugahayaya
	KAT503	Labuhengoda
	KAT504	Andalugoda
	KAT505	Melleketigoda
	KAT506	Welipitiya
	KAT507	Welipitiya East
	KAT508	Welipitiya West
	KAT509	Ulhitiyawa
	KAT510	Ulhitiyawa East
	KAT511	Ulhitiyawa West
	KAT512	Meemanakoladeniya
	KAT513	Ritigahayaya
	KAT514	Talwatta
	KAT515	Ambagasara
	KAT516	Gangulandeniya
	KAT517	Kohomporuwa
	KAT518	Siyarapitiya
	KAT519	Siyambalamuraya
	KAT520	Hingurakanda
	KAT521	Udawelmulla
	KAT522	Alupothdeniya pahala
	KAT523	Uda Alupothdeniy
	KAT524	Udagomadiya
	KAT525	Medakanda
	KAT526	Kehelwatta
	KAT527	Karawilakanda
	KAT528	Bengamukanda
	KAT529	Galliddamulla
	KAT530	Rukmalpitiya
	KAT531	Dangalakanda
	KAT532	Ranasinghagoda
	KAT533	Obadagahadeniya
	KAT534	Weerakuttigoda
	KAT535	Katuwana
	KAT536	Pangamwilayaya
	KAT537	Horawinna
	KAT538	Hediwatta
	KAT539	Bukendayaya
	KAT540	Araboda
	KAT541	Konkarahena
	KAT542	Ahaggitakanda North
	KAT543	Karametiya
	KAT544	Watukanda
	KAT545	Kongastenna
	KAT546	Galpotukanda
	KAT547	Ambagahahena
	KAT548	Puwakgasara
	KAT549	Bintenna
	KAT550	Walgamulla
	KAT551	Wellendagoda
	KAT552	Mapitakanda
	KAT553	Batagassa
	KAT554	Pahalawatta
	KAT555	Egodabedda
	KAT556	Kekiriobada
	KAT557	Kebellaketiya
	KAT558	Pissubedda
	KAT559	Warapitiya
	KAT560	Keradeniya
	KAT561	Saputantrikanda
	KAT562	Rammala
	KAT563	Dehigahahena
	KAT564	Pategama
	KAT565	Talapatkanda
	KAT566	Hadagala
	KAT567	Matuwakanda
	KAT568	Weedapola
	KAT569	Agalaboda
	KAT570	Radani Ara
	KAT571	Weedikanda
	KAT572	Namaneliya
	KAT573	Udahagoda
	KAT574	Horawila
	KAT575	Wattehengoda
	KAT576	Medagamgoda
OKEWELA (HAMBANTOTA)	OKE466	Kanumuldeniya West
	OKE467	Oluara
	OKE468	Sumihirigama
	OKE469	Kanumuldeniya East
	OKE470	Wijayasiripura
	OKE471	Kanumuldeniya East
	OKE472	Kurunduwatta
	OKE473	Rajapuragoda
	OKE474	Udadeniya
	OKE475	Kanumuldeniya South
	OKE476	Natuwela
	OKE477	Kahatellagoda
	OKE478	Kandebedda
	OKE479	Godawenna
	OKE480	Morakandegoda
	OKE481	Talahagamwaduwa Ihala
	OKE482	Talahagamwaduwa Pahala
	OKE483	Kadigamuwa East
	OKE484	Kadigamuwa West
	OKE485	Modarawana North
	OKE486	Modarawana South
	OKE487	Okewela
	OKE488	Yatigala Ihala
	OKE489	Yatigala Pahala
	OKE490	Pallewauwa
	OKE491	Wauwa
	OKE492	Heenatihatamuna

DSD	GND Code	GND Name
TANGALLE (HAMBANTOTA)	TAN238	Gurupokuna
	TAN239	Kahandamodara
	TAN240	Nidahasgama East
	TAN241	Nidahasgama West
	TAN242	Wellaodaya
	TAN243	Kahandawa
	TAN244	Wadiyagala
	TAN245	Vigamuwa
	TAN246	Kadiragoda
	TAN247	Andupelena
	TAN248	Talunna
	TAN249	Kattakaduwa North
	TAN250	Gotaimbaragama
	TAN251	Kattakaduwa South
	TAN252	Ranna West
	TAN253	Ranna East
	TAN254	Rekawa East
	TAN255	Rekawa West
	TAN256	Netolpitiya North
	TAN257	Netolpitiya South
	TAN258	Medagama
	TAN259	Marakolliya
	TAN260	Medilla
	TAN261	Pattiyapola West
	TAN262	Pattiyapola South
	TAN263	Pattiyapola East
	TAN264	Godawanagoda
	TAN265	Walgameliya
	TAN266	Aluthgoda
	TAN267	Palatuduwa
	TAN268	Medaketiya
	TAN269	Danketiya
	TAN270	Indipokunagoda North
	TAN271	Indipokunagoda South
	TAN272	Kotuwegoda
	TAN273	Pallkkudawa Town
	TAN274	Pallkkudawa Rural
	TAN275	Unakuruwa East
	TAN276	Unakuruwa West
	TAN277	Kadurupokuna East
	TAN278	Kadurupokuna West
	TAN279	Kadurupokuna West
	TAN280	Kadurupokuna South
	TAN281	Pollonmmaruwa South
	TAN282	Pollonmmaruwa North
	TAN283	Mahawela
	TAN284	Pahjjawa
	TAN285	Nakulugamuwa South
	TAN286	Ihalagoda
	TAN287	Kudawella East
	TAN288	Kudawella West
	TAN289	Kudawella North
	TAN290	Kudawella Center
	TAN291	Kudawella South
	TAN292	Mawella North
	TAN293	Mawella South
	TAN294	Moraketiara West
	TAN295	Moraketiara East
	TAN296	Seenimodara East
	TAN297	Seenimodara West
	TAN298	Siyambalagoda
	TAN299	Nalagama West
	TAN300	Wagegoda
	TAN301	Nalagama East
	TAN302	Udawilagoda
	TAN303	Ethgalmulla
	TAN304	Talapitiyagama
	TAN305	Tenagama North
	TAN306	Tenagama South
	TAN307	Sudarsanagama
	TAN308	Vitarandeniya North
	TAN309	Vitarandeniya South
TISSAMAHARAMA (HAMBANTOTA)	TIS001	Tissamaharama
	TIS002	Medawelena
	TIS003	Kachcheriyagama
	TIS004	Gangasiripura
	TIS005	Rohanapura
	TIS006	Senapura
	TIS007	Rubberwatta
	TIS008	Sudda Nagaraya
	TIS009	Ratnelumawalayaya
	TIS010	Sandagiripura
	TIS011	Mahasenpura
	TIS012	Gotabayapura
	TIS013	Ranketiya
	TIS014	Uddagandara
	TIS015	Yodhakandiya
	TIS016	Welipotewela
	TIS017	Halmillawa
	TIS018	Viharamahadevipura
	TIS019	Kirinda
	TIS020	Magama
	TIS021	Andaragasyaya
	TIS022	Nedigamvila
	TIS023	Koonwelena
	TIS024	Vijayapura
	TIS025	Uduvila
	TIS026	Saliyapura
	TIS027	Gonagamuwa
	TIS028	Tissapura
	TIS029	Pannagamuwa
	TIS030	Dambewelena
	TIS031	Anjaligala
	TIS032	Ellagala
	TIS033	Mahindapura
	TIS034	Moolakepupatana
	TIS035	Randunuwatta
	TIS036	Polgahawelena
	TIS037	Debarawewa
	TIS038	Gemunupura
	TIS039	Sandungama
	TIS040	Vijitapura
	TIS041	Ekamutugama
	TIS042	Kawantissapura
	TIS043	Jullpallama
	TIS044	Weerahela

DSD	GND Code
WEERAKETIYA (HAMBANTOTA)	WEE381
	WEE382
	WEE383
	WEE384
	WEE385
	WEE386
	WEE387
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	WEE389
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LUNUGAMVEHERA (HAMBANTOTA)	LUN045
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	LUN079
	LUN080

GND Name
Bedigama South
Bedigama East
Bedigama North
Medagoda
Bedigama West
Kudabedigama
Weeraketiya East
Weeraketiya West
Mandaduwa
Aggrahera
Buddiyagama East
Buddiyagama West
Mulgirigala Sout
Mulkirigala West
Mulgirigala East
Mulgirigala Nort
Udukirivila
Yaggasmulla
Medamulana
Degampota
Siyambalaheddewa
Kinchigune East
Kinchigune South
Kinchigune West
Kemegala
Morayaya South
Morayaya North
Wekandawala North
Wekandawela South
Debokkawa East
Debokkawa West
Telmbuyaya
Gonadeniya Ihala
Gonadeniya Pahala
Ambakolawewa North
Ambakolawewa South
Kudabibula South
Kudabigula North
Galpottayaya South
Galpottayaya North
Heellageaina
Handapangalaaina
Malhewageaina
Kandamaditta
Mulanyaya
Kudagalaara
Kaluwagahayaya
Okandayaya North
Okandayaya West
Udajulampitiya
Pallejulampitiya
Galwadiya
Julampitiya
Murutawela Ihala
Murutawela Pahal
Raluwa
Obada Pahala
Keppetipawa South
Keppetipawa North
Buddiyagama Nort
Meegasara
Medagama
Ittademaliya South
Ittademaliya West
Ittademaliya North
Atubode East
Atubode West
Galahitiya East
Galahitiya North
Galahitiya South
Omara West
Omara East
Walasmulla South
Walasmulla East
Walasmulla North
Koholana
Walassmulla Ihal
Walasmulla
Walasmulla West
Ethpitiya
Yahalmulla
Bowala West
Bowala South
Bowala North
Daluwakgoda
Agunakolawewa
Weheragala
Maha Alutgam Ara
Uda Mattala
Pahala Mattala
Weeravil Ara
Padawgama
Punchiappu Jandura
Deuramwehera
Boogahawewa
Ranawaranawa
Lunugamvehera
Seenimunna
Kendagasmankada
Mahanagapura
Muwanwewa
Ittanawekada
Abayapura
Mihindupura
Singhapura
Senapura
Weeravila
Ranasiripura
Samanpura
Karambawewa
Agbopura
Dutugemunupura
Jayagama
Beralihela
Parakkramapura
Saddatissapura
Saddatissapura New Town
Saliyapura
Weligatta
Rambukwewa
Keertipura

Table K (2) Lists of the GND Codes (Monaragala)

DSD	GND Code	GND Name
BADALKUMBURA (MONARAGALA)	BAD001	Yakurawa
	BAD002	Madukotan Arawa
	BAD003	Pussellawa
	BAD004	Therappahuwa
	BAD005	Alupotha
	BAD006	Madugasmulla
	BAD007	Wasipotha
	BAD008	Karandagama
	BAD009	Badalkumbura
	BAD010	Maligathenna
	BAD011	Madamagama
	BAD012	Wekumbura
	BAD013	Karawila
	BAD014	Thalawagama
	BAD015	Maiyokka Watta
	BAD016	Gedawila
	BAD017	Pallegama
	BAD018	Ella
	BAD019	Mailagasthenna
	BAD020	Waradola
	BAD021	Kotamuduna
	BAD022	Ranugalla
	BAD023	Ankada
	BAD024	Miyana Kandura
	BAD025	Ethpattiya
	BAD026	Dewatura
	BAD027	Hingurukanduwa
	BAD028	Dambagahawela
	BAD029	Keliwessa
	BAD030	Bogahapelessa
	BAD031	Moratuwagama
	BAD032	Lunugala Kolany
	BAD033	Naranwatta
	BAD034	Athala
	BAD035	Punsisigama
	BAD036	Mutukeliyawa
	BAD037	Ettalamulla
	BAD038	Meegahayaya
	BAD039	Madugahapattiya
	BAD040	Kalagaha Kivula
	BAD041	Katugaha Galge
BIBILE (MONARAGALA)	BIB001	Ambagolla
	BIB002	Ambelanda
	BIB003	Badulla Gammana
	BIB004	Bibila
	BIB005	Boka Gonna
	BIB006	Bulupitiya
	BIB007	Dehiyattawela
	BIB008	Dodamgolla
	BIB009	Egoda Kotagama
	BIB010	Ithana Watta
	BIB011	Hamapola
	BIB012	Hewelwela
	BIB013	Kanuwegalla
	BIB014	Kanulwela
	BIB015	Karagahawela East
	BIB016	Karagahawela West
	BIB017	Karandugala
	BIB018	Kavudella
	BIB019	Kehel Attawela
	BIB020	Kokunnewa
	BIB021	Kotagama
	BIB022	Kuruwamba
	BIB023	Linda Kumbura
	BIB024	Mallehewa
	BIB025	Medipitiya
	BIB026	Morathnumulla
	BIB027	Mudiyala
	BIB028	Nagala
	BIB029	Nilgala
	BIB030	Pilakumbura
	BIB031	Radaliyadda
	BIB032	Rathupasketiya
	BIB033	Thanayamgama
	BIB034	Thotilla Ketiya
	BIB035	Uda Mallehawa
	BIB036	Uraula
	BIB037	Ussagala
	BIB038	Wegama
	BIB039	Wegama South
	BIB040	Yalkumbura
BUTTALA (MONARAGALA)	BUT001	Udagama
	BUT002	Medagama
	BUT003	Yudhadaganawa
	BUT004	Pettagamwela
	BUT005	Mahagodayaya
	BUT006	Dikyaya
	BUT007	Horabokka
	BUT008	Maligawila
	BUT009	Konketiya
	BUT010	Yatiyallathota
	BUT011	Veheragala
	BUT012	Gonaganara
	BUT013	Mahasenpura
	BUT014	Unawatuna
	BUT015	Pelwatta
	BUT016	Puhulkotuwa
	BUT017	Kumarapura
	BUT018	Okkampitiya
	BUT019	Uda Arawa
	BUT020	Rahathangalagama
	BUT021	Kumaragama
	BUT022	Waguruwela
	BUT023	Gaminipura
	BUT024	Ulugala
	BUT025	Galtemmandiya
	BUT026	Paharagama
	BUT027	Buruthagolla
	BUT028	Kukurampola
	BUT029	Minipuragama

DSD	GND Code	GND Name
KATHARAGAMA (MONARAGALA)	KTH001	Karawila
	KTH002	Sella Kataragama
	KTH003	Kataragama
	KTH004	Kandasurudu Gama
	KTH005	Detagamuwa
MADULLA (MONARAGALA)	MAD001	Elpitiya
	MAD002	Aratugaswela
	MAD002	Alugalge
	MAD004	Baduluwela
	MAD005	Bandarawadiya
	MAD006	Dambagolla
	MAD007	Deliwa
	MAD008	Ellekone
	MAD009	Galbokka
	MAD010	Galgamuwa
	MAD011	Gangoda Arawa
	MAD012	Gangodagama
	MAD013	Gonathalawa
	MAD014	Ehawa
	MAD015	Iluklanda
	MAD016	Inginiyagala
	MAD017	Kahagolla
	MAD018	Kollandeniya
	MAD019	Kottagala
	MAD020	Magandana
	MAD021	Magandana Oya Colany
	MAD022	Makulla
	MAD023	Mari Arawa
	MAD024	Mullegama
	MAD025	Namaloya Colany
	MAD026	Neelawabedda
	MAD027	Nelliyadda
	MAD028	Obbegoda
	MAD029	Pangura
	MAD030	Panguwa
	MAD031	Polgahagama
	MAD032	Ritigahawatta
	MAD033	Ruwalwela
	MAD034	Talkotayaya
	MAD035	Thampalawela
	MAD036	Therela
	MAD037	Udumulla
	MAD038	Watawanagama
MEDAGAMA (MONARAGALA)	MED001	Nannapurawa
	MED002	Kotabowa
	MED003	Bendiyawa
	MED004	Dahamgama
	MED005	Senpathigama
	MED006	Yakunnawa
	MED007	Pothubandana
	MED008	Godigamuwa
	MED009	Senapathiya
	MED010	Aiwela
	MED011	Bibilamulla
	MED012	Kongolla
	MED013	Monarawana
	MED014	Diviyapola
	MED015	Dahagoniya
	MED016	Kohukumbura
	MED017	Elhena
	MED018	Nugahamura
	MED019	Ellekona
	MED020	Bakinigahawela
	MED021	Pitadeniya
	MED022	Kandavinna
	MED023	Medagama
	MED024	Thimbiriya
	MED025	Alana
	MED026	Ilukkumbura
	MED027	Polgahapitiya
	MED028	Kinnarabowa
	MED029	Pubbara
	MED030	Rattanadeniya
	MED031	Mellagama
	MED032	Thambana
	MED033	Kinagoda
	MED034	Amune Kandura
	MED035	Kalugaha Wadiya
MONARAGALA (MONARAGALA)	MON001	Kahambana
	MON002	Marawa
	MON003	Thenagallanda
	MON004	Kolonwinna
	MON005	Weliyaya
	MON006	Veheragala
	MON007	Bohitiya
	MON008	Kaudawa
	MON009	Muppane
	MON010	Hulandawa South
	MON011	Monaragala
	MON012	Viharamulla
	MON013	Hulandawa
	MON014	Hindikivula
	MON015	Magandanamulla
	MON016	Hulandawa Left
	MON017	Aliyawatte
	MON018	Batugammana
	MON019	Debeddakivula
	MON020	Nakkala
	MON021	Rattanapitiya
	MON022	Tanwatte
	MON023	Guruhela
	MON024	Kumbukkana
	MON025	Maduruketiya
	MON026	Horombuwa

DSD	GND Code	GND Name
SEVANAGALA (MONARAGALA)	SEV001	Muthumingama
	SEV002	Mahagama
	SEV003	Katupilagama
	SEV004	Sevanagala
	SEV005	Bahirawa
	SEV006	Haburugala
	SEV007	Nugegalayaya
	SEV008	Habarattawela
	SEV009	Kiri Ibbanwewa
	SEV010	Indikolapelessa
	SEV011	Samagipura
	SEV012	Habaraluwewa
	SEV013	Weli Ara
	SEV014	Punchiwewa
SIYAMBALANDUWA (MONARAGALA)	SIY001	Ambagahapitiya
	SIY002	Barawaya
	SIY003	Beraliyapola
	SIY004	Buddama
	SIY005	Dombagahawela
	SIY006	Ethimale
	SIY007	Ethimale Colany
	SIY008	Gal Amuna
	SIY009	Gemunupura
	SIY010	Govindupura
	SIY011	Guruhela
	SIY012	Hellamulla
	SIY013	Indigas Ella
	SIY014	Kalugollayaya
	SIY015	Karambagoda
	SIY016	Kimbulawela
	SIY017	Kivulayaya
	SIY018	Kodayana
	SIY019	Kurugammana
	SIY020	Kotagoda
	SIY021	Kotiyagala
	SIY022	Kotiyagoda
	SIY023	Liyangolla
	SIY024	Madugama
	SIY025	Maha Kalugolla
	SIY026	Manabaranagama
	SIY027	Meeyagala
	SIY028	Minipura
	SIY029	Muthukandiya
	SIY030	Nape
	SIY031	Navgala
	SIY032	Nugagaha Kivula
	SIY033	Pata Arawa
	SIY034	Pallegama
	SIY035	Pallewela
	SIY036	Perakumpura
	SIY037	Ruhunu Danawwa
	SIY038	Samanala Bedda
	SIY039	Siripura
	SIY040	Siyambalanduwa
	SIY041	Sri Wijithapura
	SIY042	Thissapura
	SIY043	Wilaoya
	SIY044	Waragama
	SIY045	Wattegama
	SIY046	Weragoda
	SIY047	Wijayapura
	SIY048	Yakkandurawa
THANAMALWILA (MONARAGALA)	THA001	Sittarama
	THA002	Sinukkuwa
	THA003	Nikawewa
	THA004	Kivul Ara
	THA005	Bodagama
	THA006	Sooriyaara
	THA007	Mahawewa
	THA008	Usgala
	THA009	Hambegamuwa
	THA010	Hambegamuwa Colany
	THA011	Kahakurulan Pelassa
	THA012	Kotavehera Mankada
	THA013	Aluthwewa
	THA014	Kandiyapitawawa
WELLAWAYA (MONARAGALA)	WEL001	Kurugama
	WEL002	Siyambalagune
	WEL003	Randeniya
	WEL004	Kotikanbokka
	WEL005	Sudupanawela
	WEL006	Galbokka
	WEL007	Dimbulamure
	WEL008	Wellawaya
	WEL009	Warunagama
	WEL011	Anapallama
	WEL012	Yalabowa
	WEL013	Nugayaya
	WEL014	Buduruwagala
	WEL015	Andawelayaya
	WEL016	Handapanagala
	WEL017	Randenigoda Yaya
	WEL018	Pubuduwewa
	WEL019	Weherayayagama
	WEL020	Weherayaya Colany
	WEL021	Siripuragama
	WEL022	Ethiliwewa
	WEL023	Thelulla Colany
	WEL025	Thelulla
	WEL026	Neluwagala
	WEL027	Uva Kudaoya
	WEL028	Kitulkote
	WEL029	Debaraara
	WEL030	Balahuruwa
	WEL031	Maha Ara Gama

Appendix L

Folder Structure of the Database and GIS system

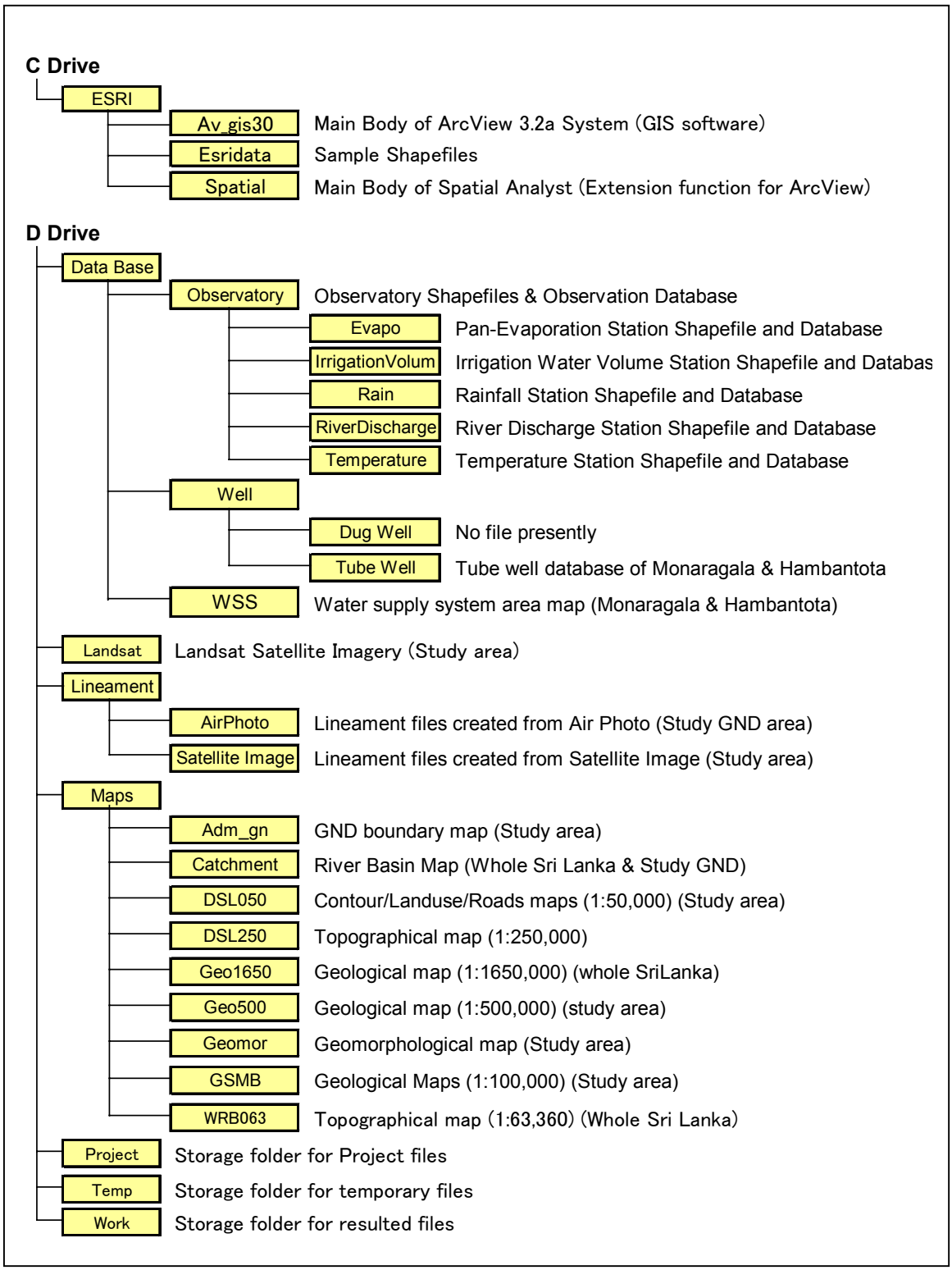


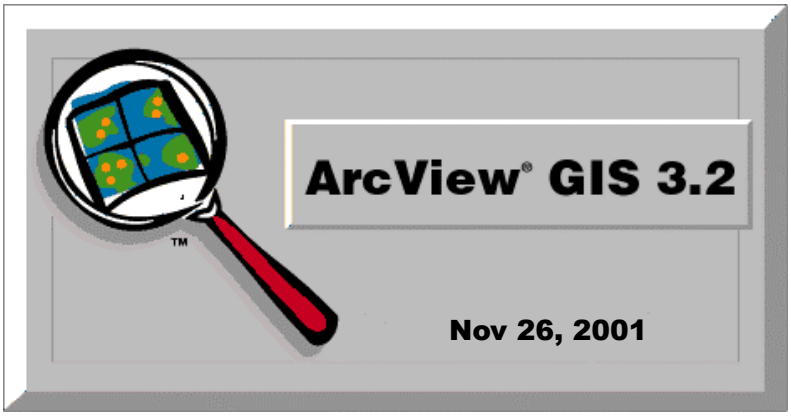
Figure L The Structure of the Folder and Recorded Contents

Appendix M

Handout for the GIS Workshop

Usage of ArcView3.2

(Part 1 : Basic usage)



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What is GIS (Geographic Information System)

GIS is a system that can be presented and analyzed with the geographic information in relation among the data such as the social economic, natural environment, resources and other spatial items.
GIS is a system that can be analyzed with tabular data such as Access/dBASE, on the established map. The system is to make an analysis by linking various kinds of spatial data.
The usage of GIS for groundwater planning has not been developed. The usage of this system could be considered to be of high importance for the groundwater development plan in the future.

Marks used in this document.

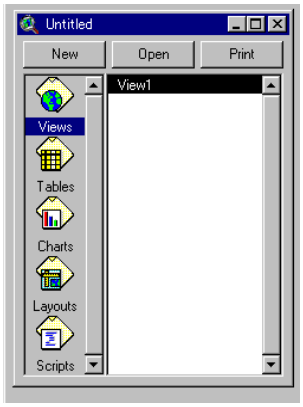
Operation item : [****]
Folder name : {*****}
File name : "*****"

Operating Procedure (about window)

ArcView has a Project window which gives us icons of **Views**, **Tables**, **Charts**, **Layouts** and **Scripts** for easy accessibility.

Thus to commence the program, press

[Start]-[Programs]-[ESRI]-[ArcView GIS3.2]-[ArcView GIS3.2]



Open the View window.

Push [New] button or double click [Views] icon.

1. Views

1.1 Theme

"Theme" is known as the main item of GIS system. It is equal to the layer. We can use three types features for the theme.

- Point Feature (well, hospital, station, etc)
- Line Feature (road, river, water supply system, lineament, etc)
- Polygon Feature (Administrate boundary, catchment, etc)

A table that can record optional information (ID, coed No, area, population, rain fall, etc) is attached on each feature. Only one feature can be use for one theme (we cannot mix different features in the same theme).

Theme files, which is called Shape files, consist of three or five files as follows.

*.shp : Coordination of the feature is written in this file

*.shx : Information of the feature diagram is written in this file

*.dbf : Attribute data of the feature is in this file normally these three files

*.sbn , *.sbx : It is made after spatial unification

*.ain , *.aih : It is made after linking tables

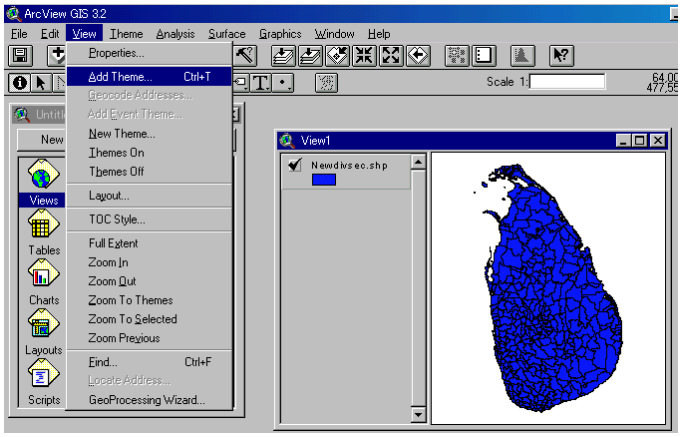
Let's check on shape files. Please open the {AViewUsage} folder. We need to put these files in the same folder.

C: Drive - {AViewUsage} We can see "all_gn" files.

1.2 Operation of the Views window (By using "newdivsec" file)

You can open and show many Themes on Views window. You can operate the show/hide command on each opened Theme. You can select the Theme in anyway you desire.

1) Indication of Views (from Project window)



[Views]-[New] or

Double click of [Views] icon

2) Addition of Theme (open "newdivsec")

[Views Window]-[Views]-[Add Theme],

(You can use Add Theme Icon normally)

and browse

c:Drive – {AViewUsage} - "newdivsec"

<u>Show/hide Theme</u>

Show : click the check box

Hide : one more again click the check box

<u>Delete Theme</u>

Select objective Theme on View1

And, [Edit]-[Delete Theme]

3) Delete View1

Select objective View on Project Window

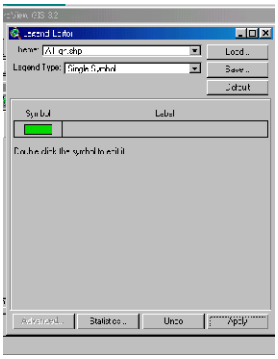
And, [Project]-[Delete Theme]

4) Customizing the Theme (How to use the Legend Editor)

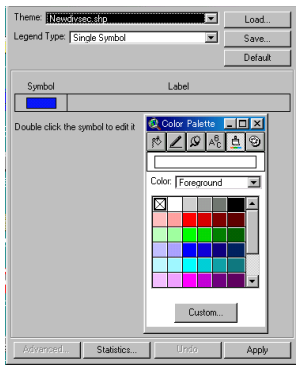
Add Theme of "all_gn" and show this Theme

a) Start up the Legend Editor

Double click the legend area (exclude check box) ----------→



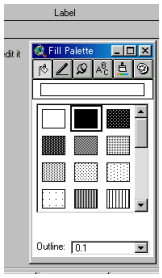
b) Operation of the Pallet



- Change color

  Double click the symbol color area then start up the Pallet window.

  Select the color pallet and select color.



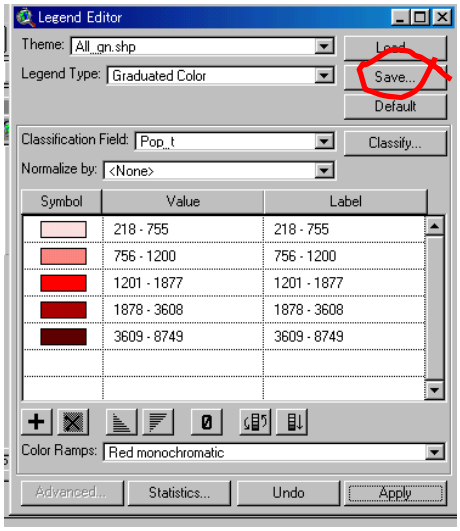
- Change outline

  Select the Fill pallet and select the no mesh symbol.

  Select outline thickness.

c) Changing the Legend type (Type of default is single symbol)

- Single symbol
- Graduated Color or Symbol (refer p103 Using ArcView GIS)
- Unique Value
- Dot
- Chart



d) Saving the symbol label

You can save the legend of these labels.

If you want to get this legend primary, save legend file into same folder and use same name as shape file

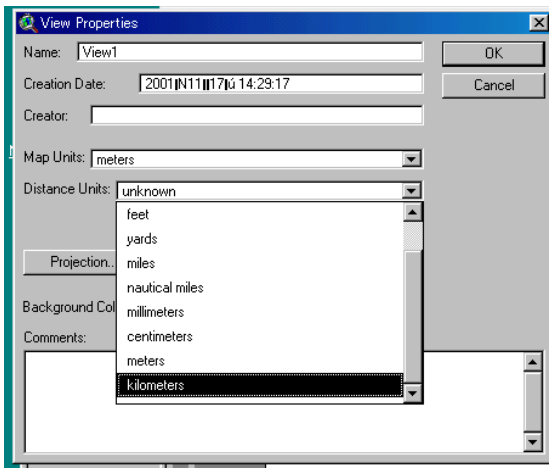
5) Views Properties

a) Map Units, Distance Units

Select [View] from menu – [Properties] – Select [meters] (all maps are used in meters unit)

Select Distance Unit (this unit is reflected to measure distance)

After this setting, you can see the map scale in menu bar.



b) Projection

We cannot use this function

6) Usage of Theme Properties

a) Usage of Definition

This function is used to select limited feature.

Add the {newdivsec} shape file to Views window.

[Add Theme] – {AViewUsage} - “div_sec”

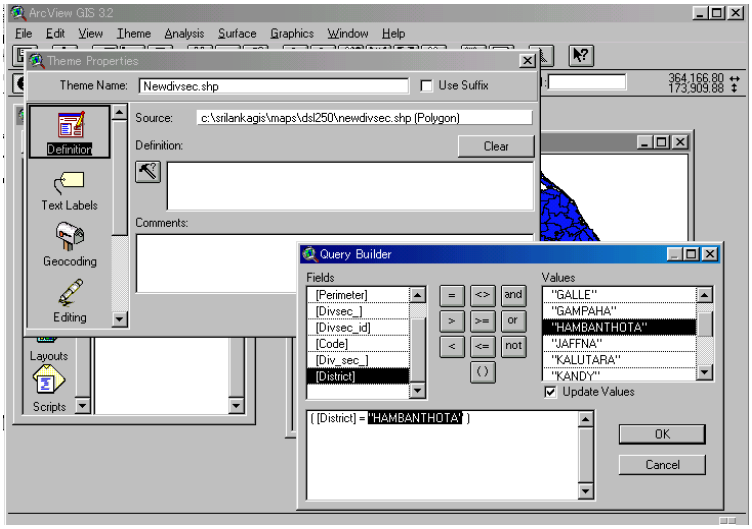
Open the Theme Properties

[Theme from Menu] – [Properties]

Definition

<Practice>

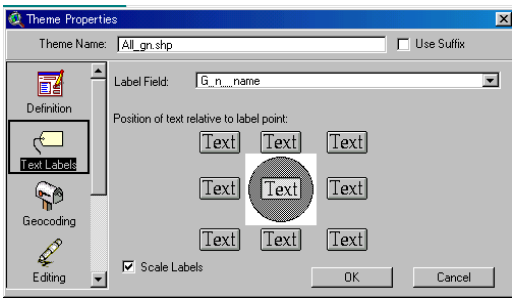
- Select Hambantotoa
- Select Monaragala
- Select Hambantota and Monaragala



b) Convert to Shapefile

Select objective Theme on Views window – [Theme] from menu – [Convert to Shapefile] – Select save folder and save name – [OK]

c) Setting of the Text Labels and put label onto map

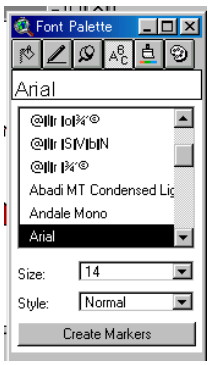


- Setting (1)---Label field, and position

  Select [Text Labels] – Select Label Field – Select Position (only point feature)

- Setting (2)---Font

  [Window] from menu – [Show Symbol window] – Select [ABC] button – Select Font and Size.



- Single Label

  Select Label Type form Label icon button – click objective feature

- Auto Label

  Select [Theme] form menu – [Auto Label] – Setup some items – [OK]

- Delete Label

  Select [Theme] form menu – [Remove Labels]

d) Show/Hide the Theme by map scale

Add road Theme

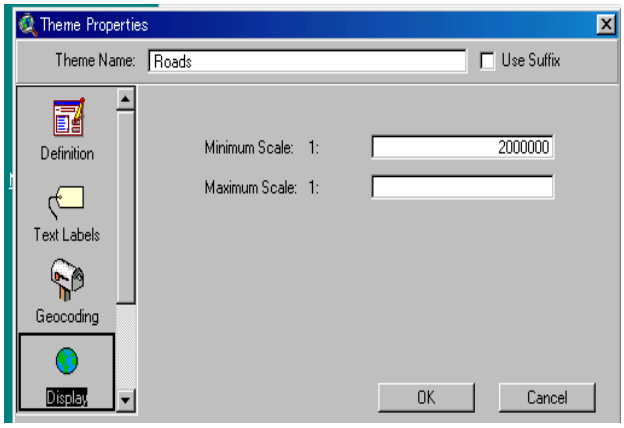
{AViewUsage} – "roads"

Show roads Theme and Select roads Theme

Setting of Scale

Select [Theme] from menu – [Properties] – [Display]

Set [Minimum Scale] : 2000000 – [OK]



1.3 Create Theme and Edit Table (New View)

1)Create Theme

Open New View Window

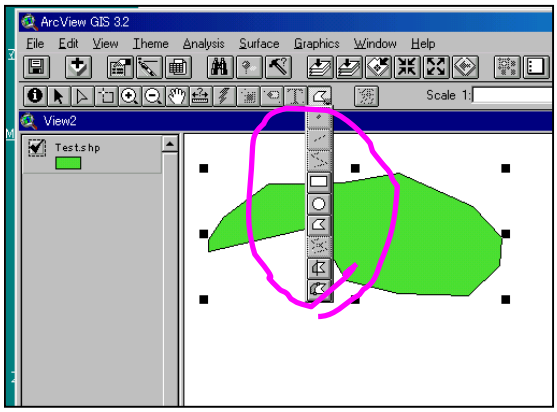
- Select[View] from Menu – [New Theme]
- Select [Feature Type] – Select save folder – Write file name

After this operation, new Theme is displayed Views window.

Dotted line around Check Box is the mark in editing

You can make features by Drawing tools

[Theme] from Menu – [Stop Editing]



2)Edit Table

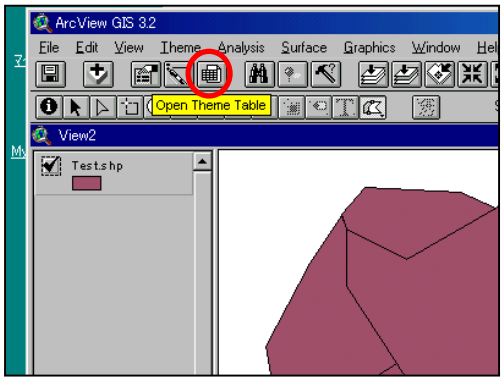
Showing the table

- Select Objective Theme
- Click icon of [Open Theme Table]

Primary, the table has two fields of the Shape and ID.

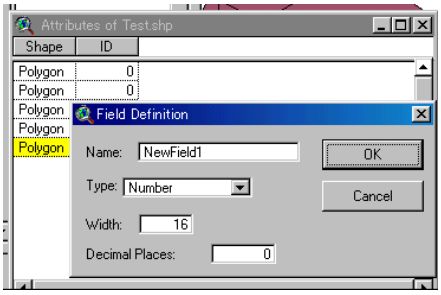
Addition of the Field

- Select [Table] form Menu – [Start Editing]
- Select [Edit] from Menu – [Add Field]
- Input [Name], [Type], [Width], [Decimal Places]



* The number of the letters of Name field is recommended under 10 bite.

-→ The number of the Export letters of Name field is 10 bite .



3. Usage of Image files (Image Warp) (refer to Appendix)

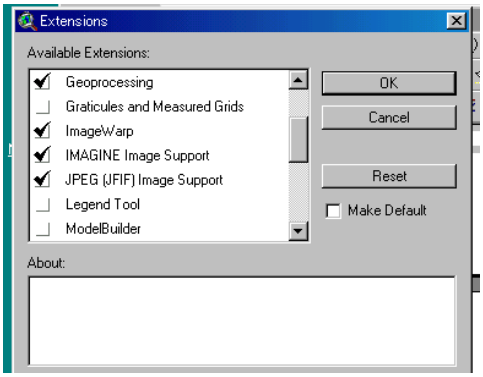
- Preparation of the Image data

  Scanning of the objective picture

- Add Extension

  Select [File] form Menu in Views window – [Extension]

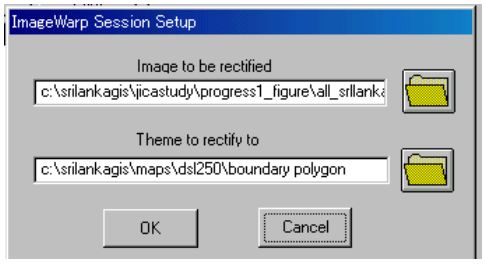
  Click check box of [Image Warp]



- Starting up Image Warp

  Select [Image Warp] from Menu Bar in Project Window - [Image Warp Session] → Open [ImageWarp Session Setup] window

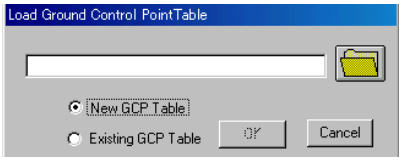
- Select image file and Select Theme



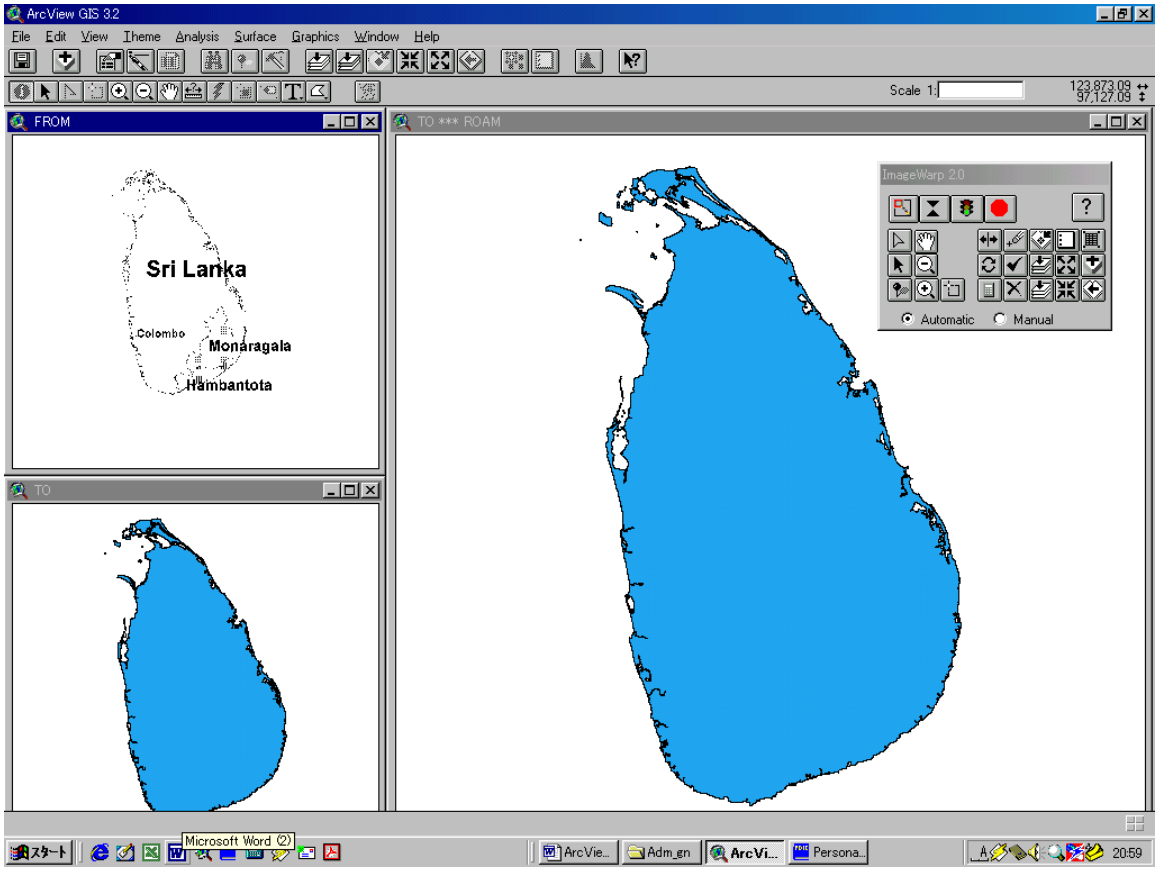
Message box (Do you want to set projection for the TO view)

→ [No]

- Select New GCP Table and select saving folder →



- The Image and Theme are displayed as follows

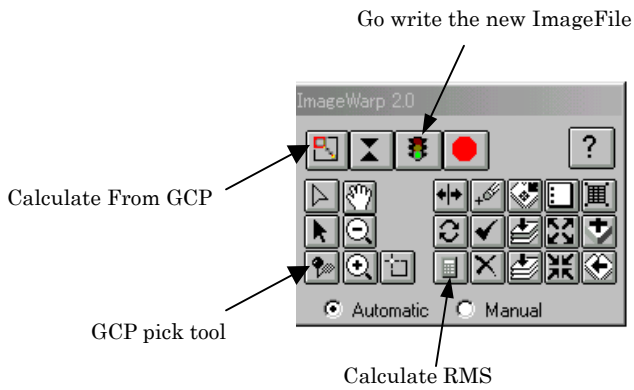


- Primary, select Ground Control Point (GCP) from "TO" view, after that select parallel GCP from "From" view (by GCP pick tool). You have to select 6 points at least.
- After selecting all GCP points

  a) Calculate From GCP

  b) Calculate RMS

  c) Go write the new ImageFile



- Create Shapefile

4. Layout

4.1 Preparation of the Layout

1) Setting of the Map Unit

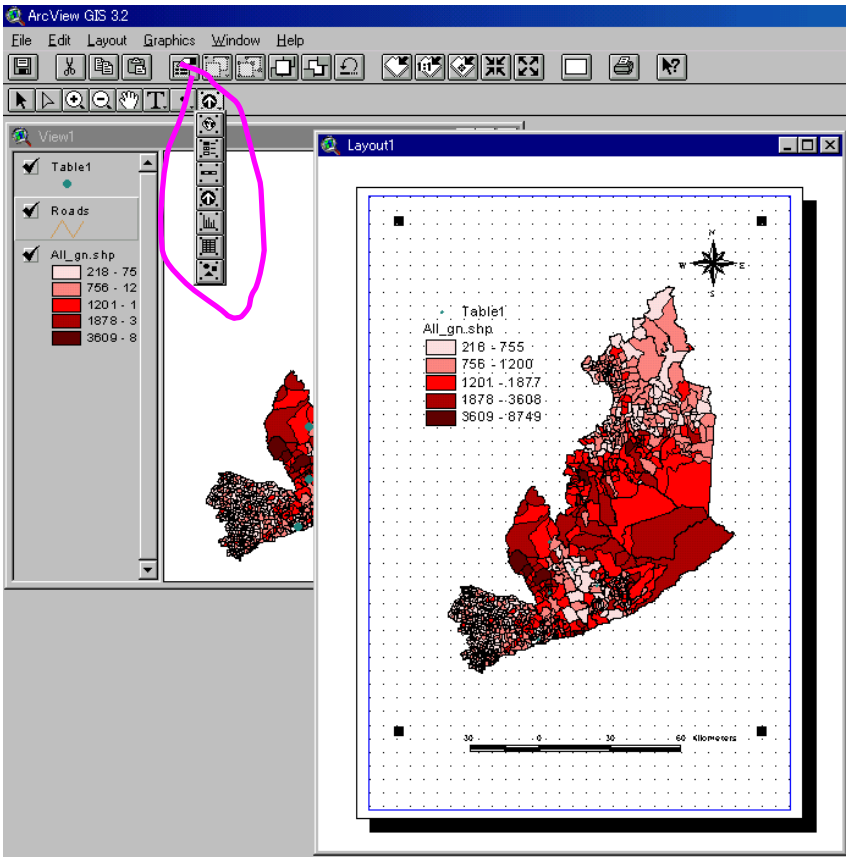
2) Arrangement of the objective View

3) Open the Layout window

Select the Layouts in Project window – [New]

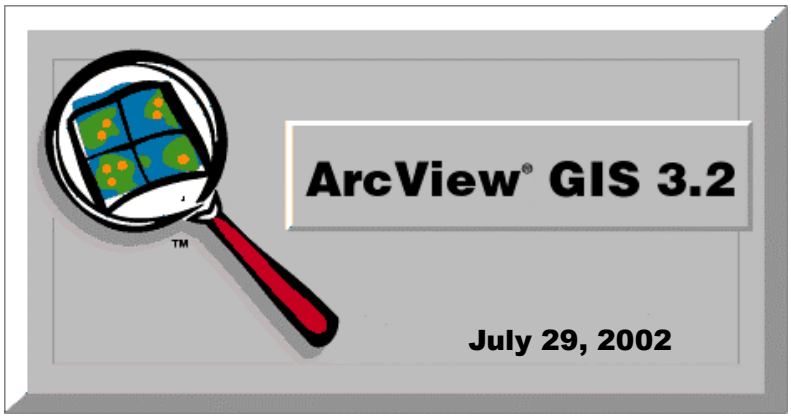
4) Allocation of the objective items

- View Frame
- Legend
- Scale
- North
- Text (Title etc.)



Usage of ArcView3.2

(Part 2 : Basic Analysis)



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ARCVIEW USAGE PART 2 (BASIC ANALYSIS)

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