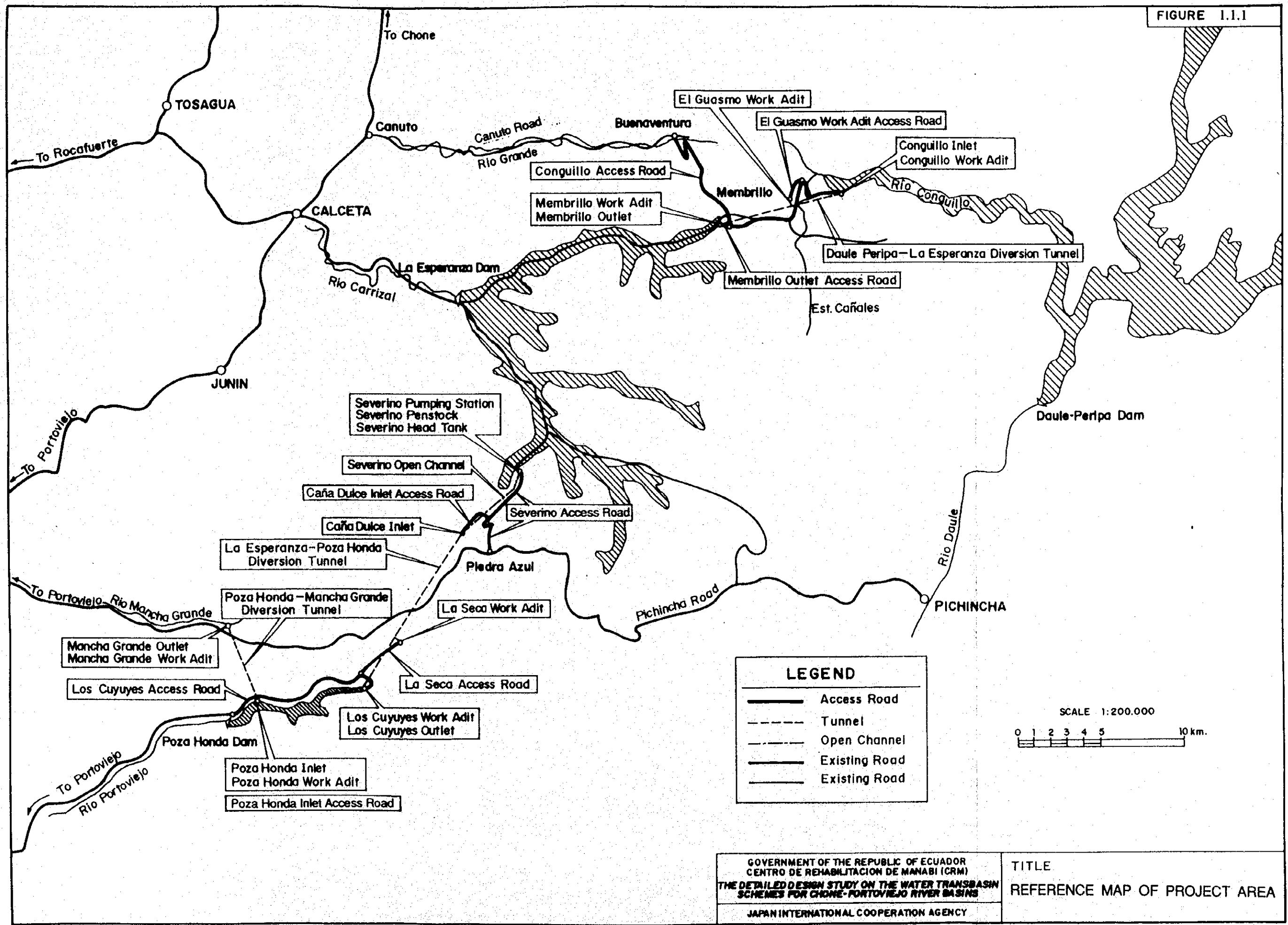
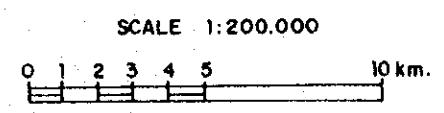


FIGURES

FIGURE 1.1.1



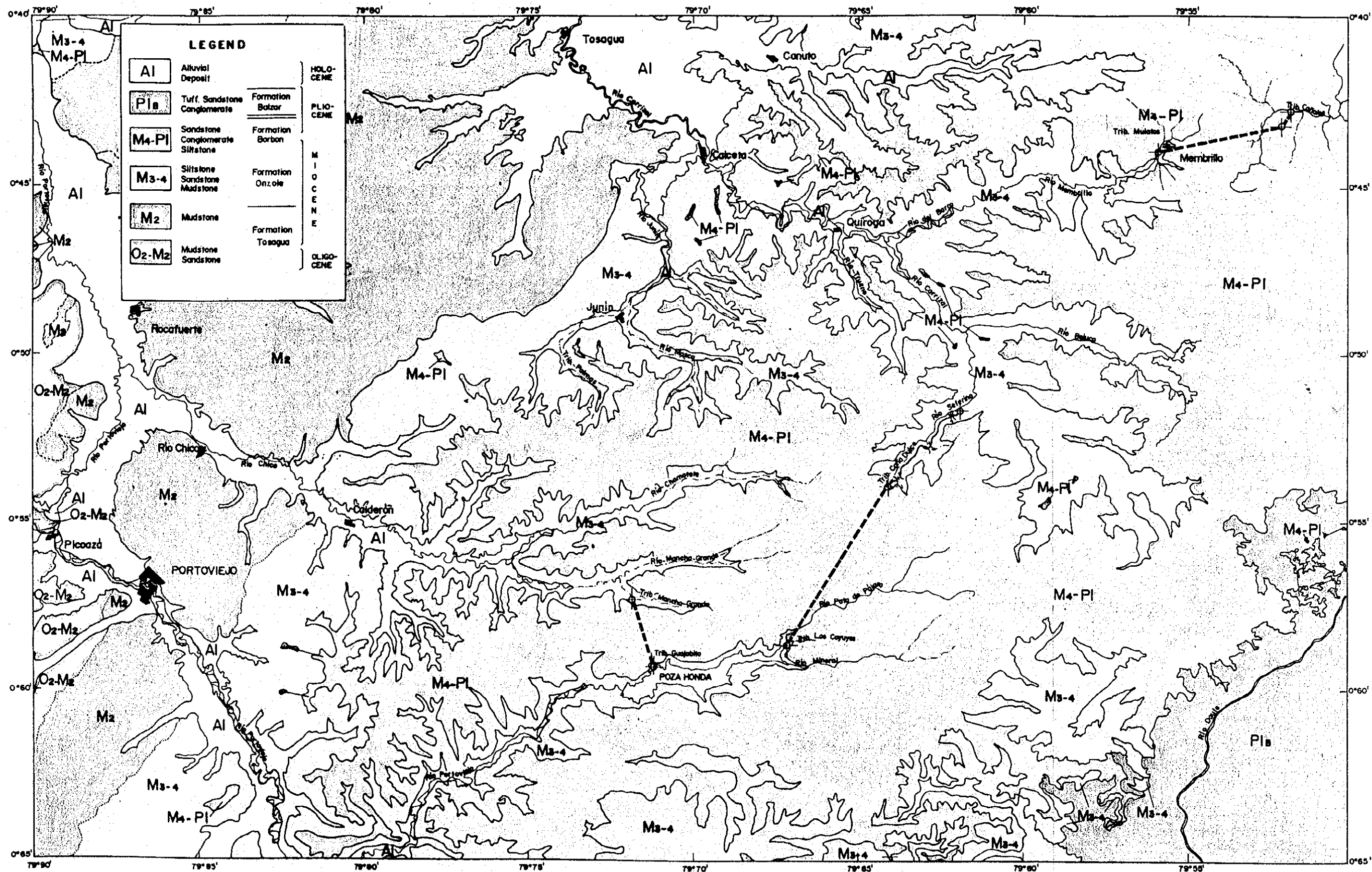
LEGEND	
	Access Road
	Tunnel
	Open Channel
	Existing Road
	Existing Road



GOVERNMENT OF THE REPUBLIC OF ECUADOR
 CENTRO DE REHABILITACION DE MANABI (CRM)
 THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN
 SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
 JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE
 REFERENCE MAP OF PROJECT AREA

Figure 1.2.1(1/2)



LEGEND		
AI	Alluvial Deposit	HOLO-CENE
PIa	Tuff Sandstone Conglomerate	PLIO-CENE
M4-PI	Sandstone Conglomerate Siltstone	MIO-CENE
M3-4	Siltstone Sandstone Mudstone	
M2	Mudstone	
O2-M2	Mudstone Sandstone	OLIGO-CENE
		Formation Batzar
		Formation Borbon
		Formation Onzole
		Formation Tosagua



REV. NO.	REVISADO	APROBADO	FECHA

CRM
CENTRO DE REHABILITACION DE MANABI

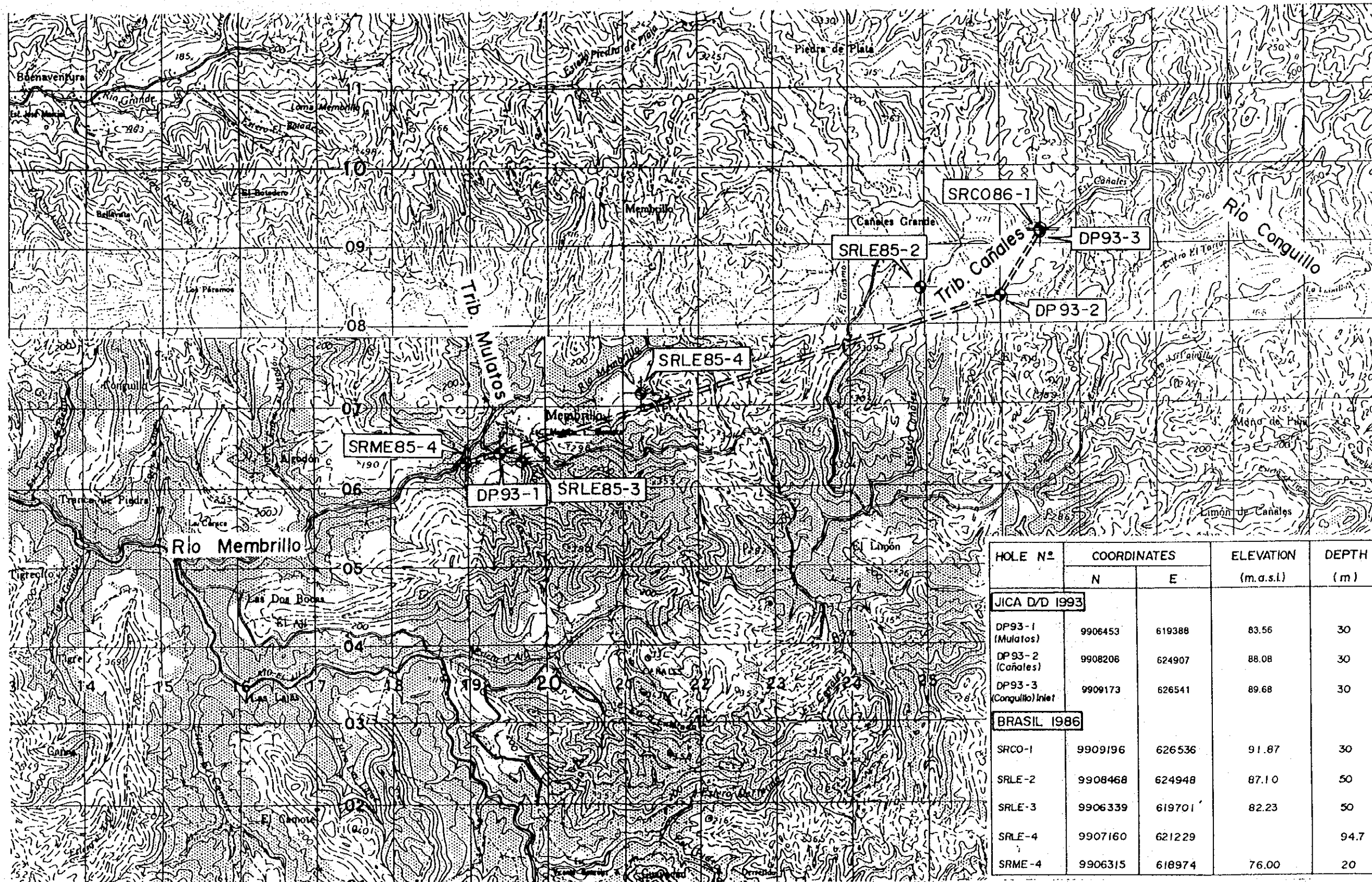
Estudio de Diseño Detallado de los Traszases de Agua para las Cuencas de los Rios Chone - Portoviejo
The Detailed Design Study on the Water Transbasin Schemes for Chone - Portoviejo River Basins

REPUBLICA DEL ECUADOR

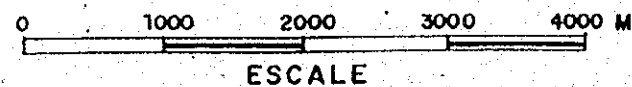
TITULO:
REGIONAL GEOLOGICAL MAP (1/2)

LEVANTO:	APROBADO:
DIBUJO:	FECHA:
DISEÑO:	DIBUJO NO:
REVISO:	
ENTRADO:	
FECHA:	F-2

FIGURE 1.3.1



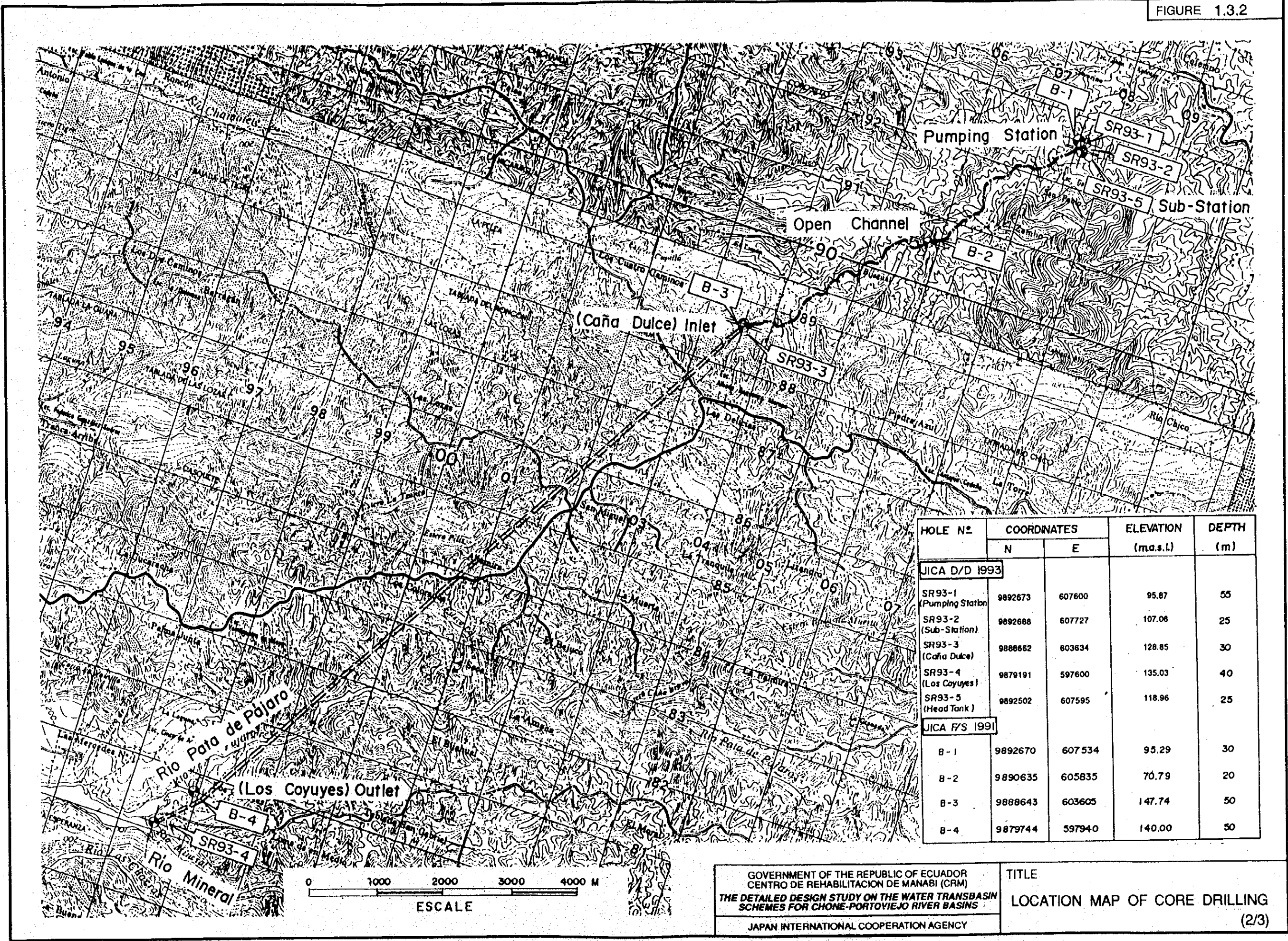
HOLE N°	COORDINATES		ELEVATION (m.a.s.l.)	DEPTH (m)
	N	E		
JICA D/D 1993				
DP93-1 (Mulpios)	9906453	619388	83.56	30
DP93-2 (Cañales)	9908206	624907	88.08	30
DP93-3 (Conguillo) Inlet	9909173	626541	89.68	30
BRASIL 1986				
SRCO-1	9909196	626536	91.87	30
SRLE-2	9908468	624948	87.10	50
SRLE-3	9906339	619701	82.23	50
SRLE-4	9907160	621229		94.7
SRME-4	9906315	618974	76.00	20



GOVERNMENT OF THE REPUBLIC OF ECUADOR
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 THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN
 SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
 JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE
 LOCATION MAP OF CORE DRILLING
 (1/3)

FIGURE 1.3.2

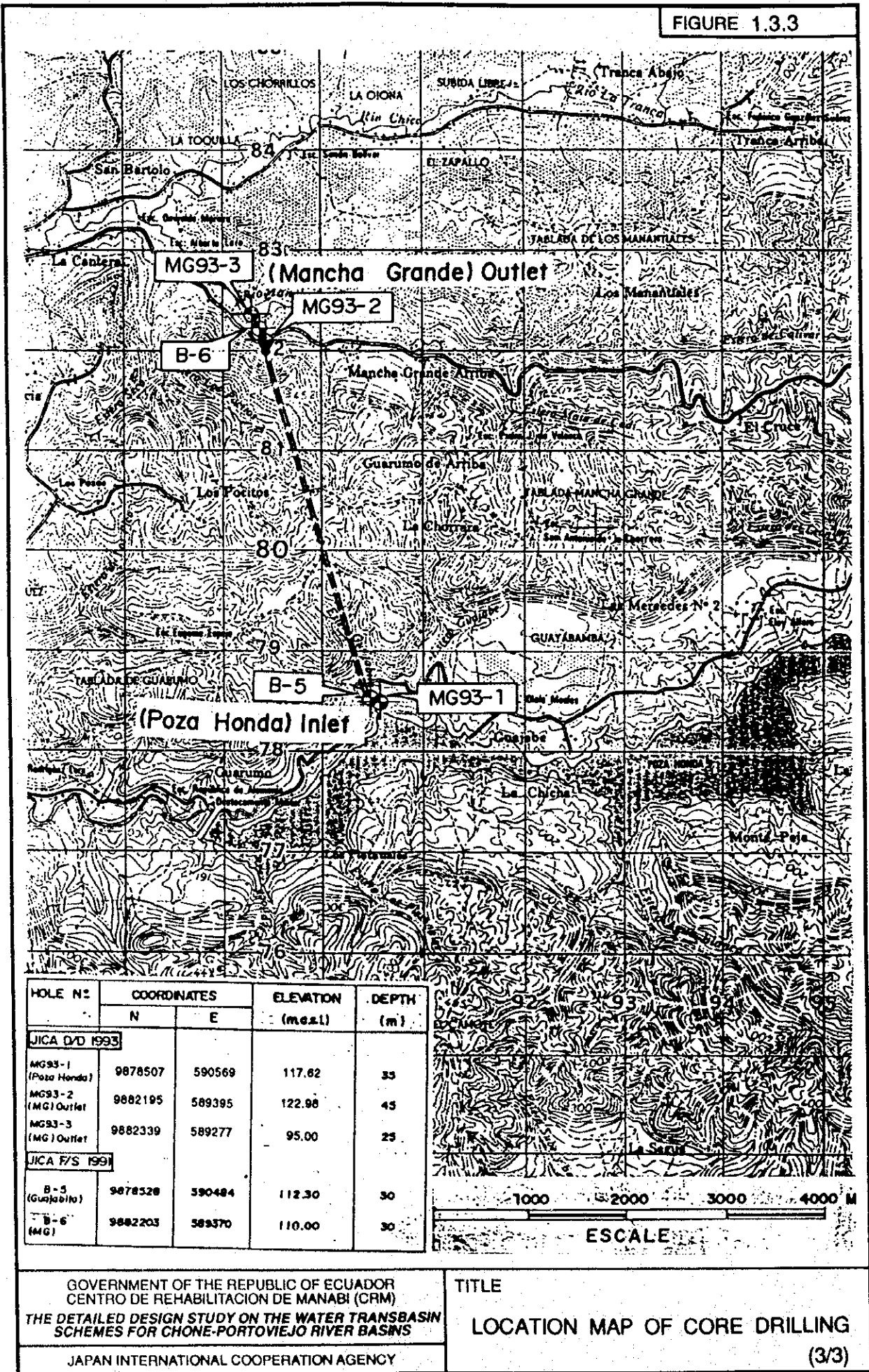


HOLE N°	COORDINATES		ELEVATION (m.a.s.l.)	DEPTH (m)
	N	E		
JICA D/D 1993				
SR93-1 (Pumping Station)	9892673	607600	95.87	55
SR93-2 (Sub-Station)	9892688	607727	107.06	25
SR93-3 (Caña Dulce)	9888662	603634	128.85	30
SR93-4 (Los Coyuyes)	9879191	597600	135.03	40
SR93-5 (Head Tank)	9892502	607595	118.96	25
JICA F/S 1991				
B-1	9892670	607534	95.29	30
B-2	9890635	605835	70.79	20
B-3	9888643	603605	147.74	50
B-4	9879744	597940	140.00	50

GOVERNMENT OF THE REPUBLIC OF ECUADOR
 CENTRO DE REHABILITACION DE MANABI (CRM)
 THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN
 SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
 JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE
 LOCATION MAP OF CORE DRILLING
 (2/3)

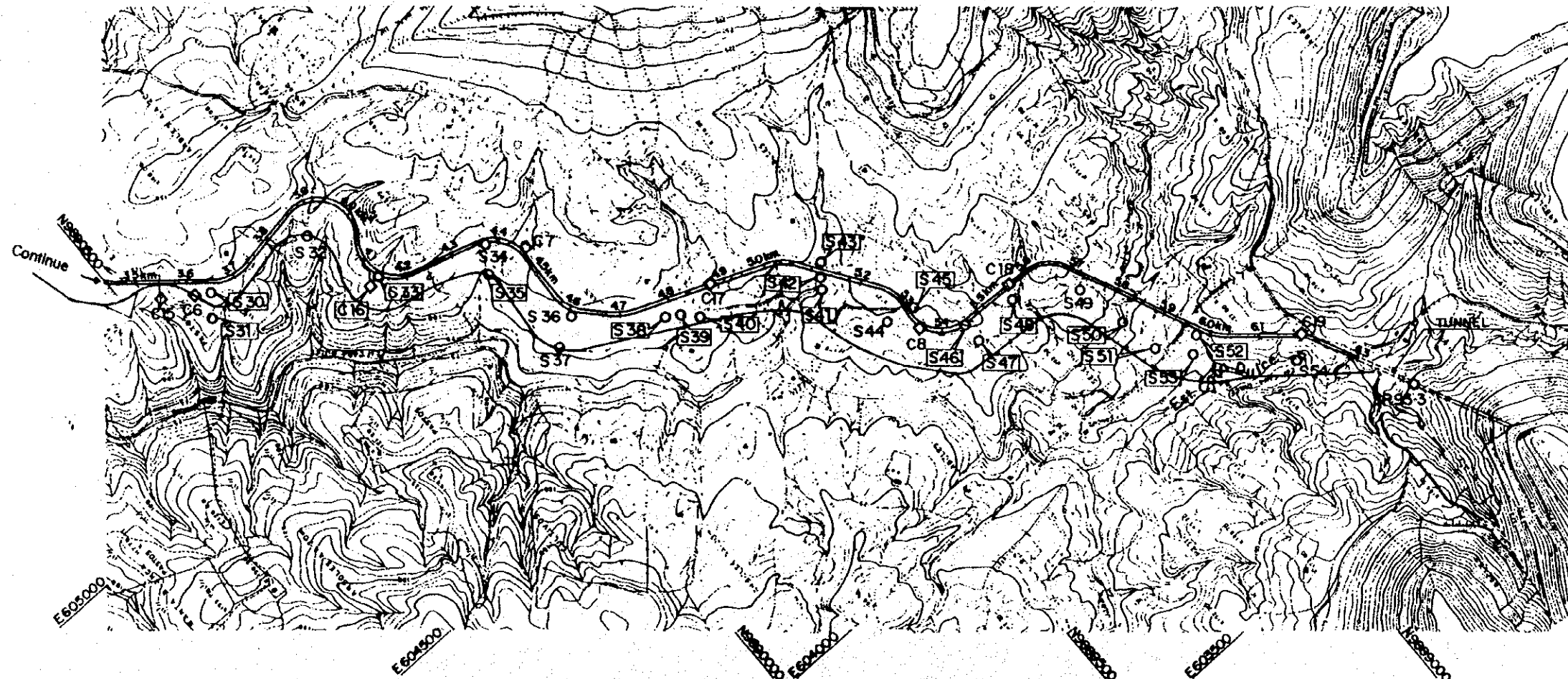
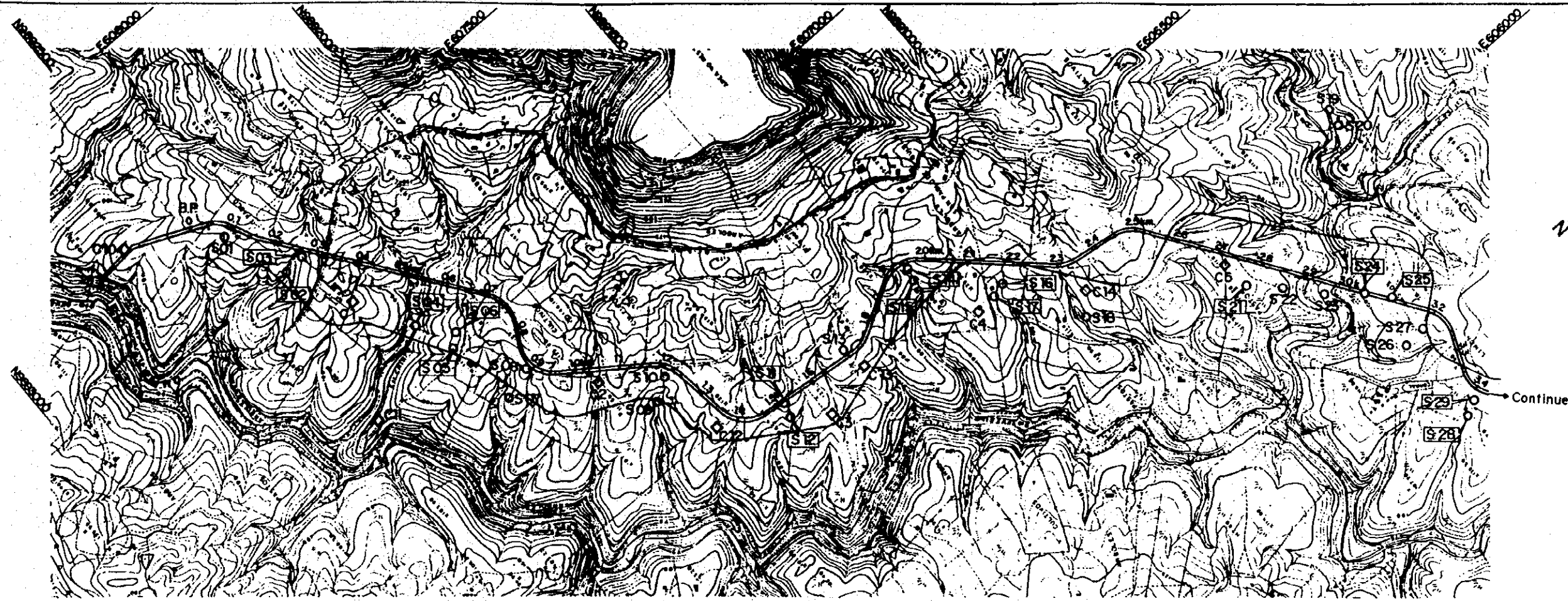
FIGURE 1.3.3



GOVERNMENT OF THE REPUBLIC OF ECUADOR
 CENTRO DE REHABILITACION DE MANABI (CRM)
**THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN
 SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS**
 JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE
LOCATION MAP OF CORE DRILLING
 (3/3)

Figure 1.3.4



LEGEND

- C 1 ~ C 19
Calicata (Test - Pit)
- S 01 ~ S 54
Sounding
- ══ Proposed Open
Channel Route
at the time of Field
Investigation
- Final Open Channel
Route



CRM
CENTRO DE
REHABILITACION
DE MANABI

Estudio de Diseño Detallado de los Traszases de
Agua para los Cuencas de los Rios Chone -Portoviejo
*The Detailed Design Study on the Water Transbasin
Schemes for Chone -Portoviejo River Basins*

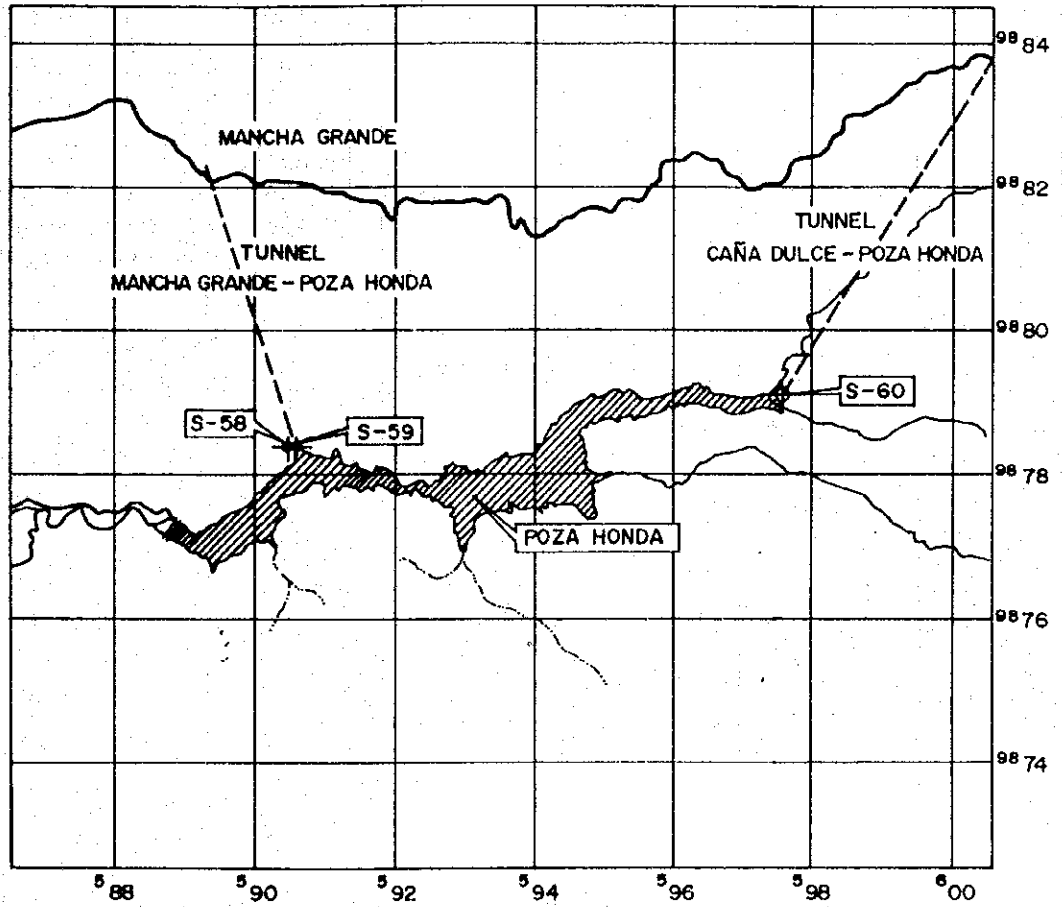
REPUBLICA DEL ECUADOR

TITULO:

Location Map of Test-Pit and Sounding
for Severino Open Channel

LEVANTO:	APROBADO:
DIBUJO:	FECHA:
DISEÑO:	DIBUJO N°:
REVISO:	
ENTREGA:	
FECHA:	

Figure 1.3.5



POINT	N	E
S-58	9878510	590500
S-59	9878480	590530
S-60	9879130	597410

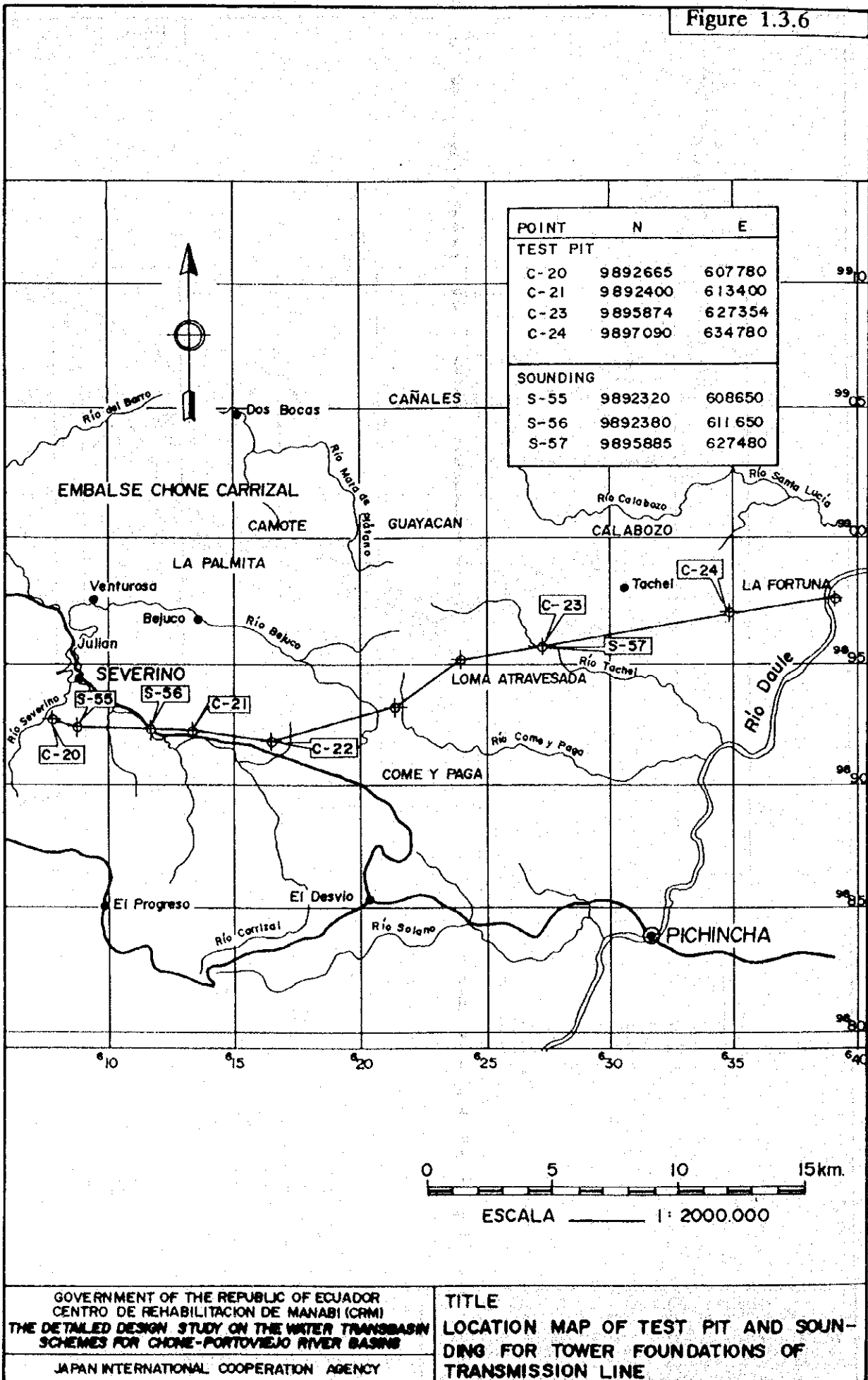
ESCALA 1:100,000



GOVERNMENT OF THE REPUBLIC OF ECUADOR
 CENTRO DE REHABILITACION DE MANABI (CRM)
 THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN
 SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
 JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE
 LOCATION MAP OF SOUNDING
 IN POZA HONDA

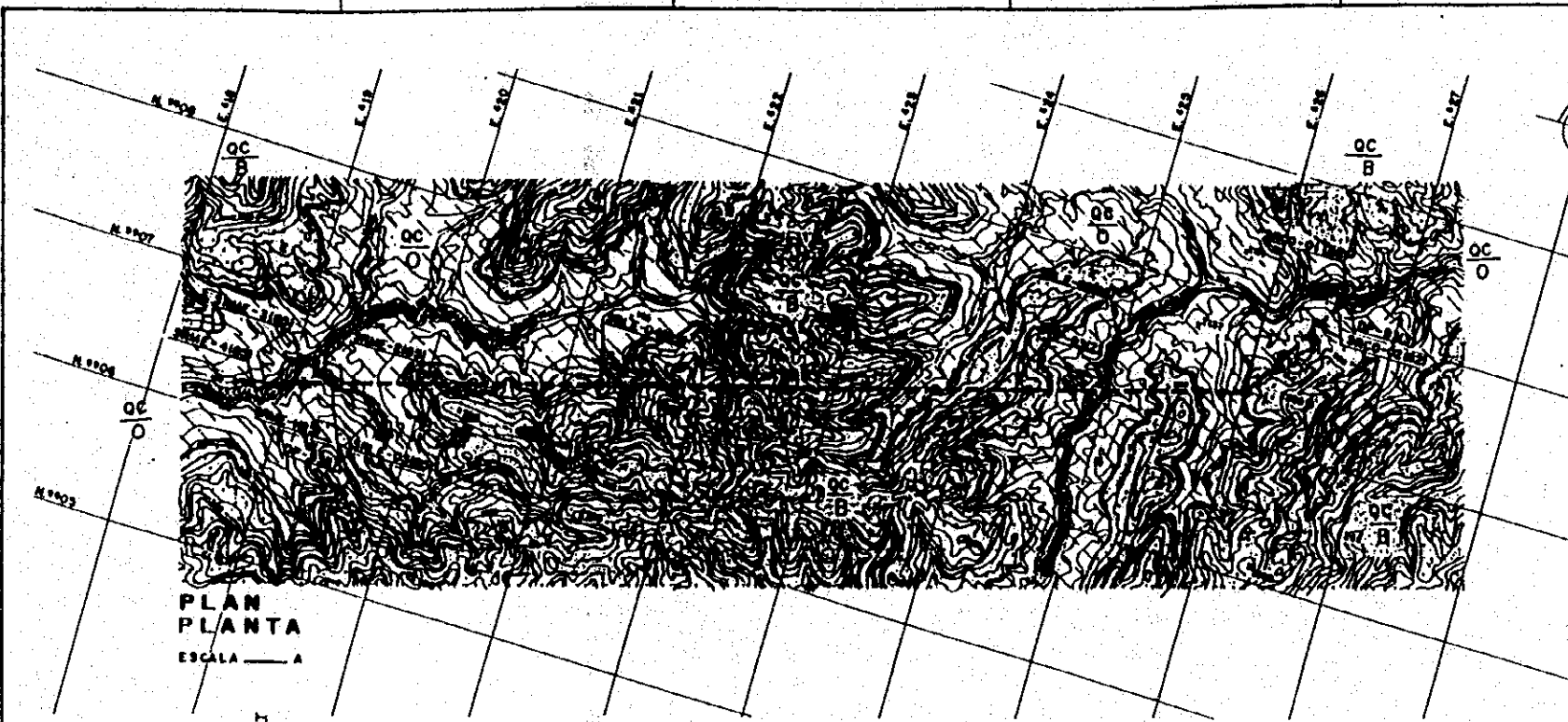
Figure 1.3.6



GOVERNMENT OF THE REPUBLIC OF ECUADOR
 CENTRO DE REHABILITACION DE MANABI (CRM)
 THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN
 SCHEMES FOR CHONE-PORTOVIEJO RIVER BASIN
 JAPAN INTERNATIONAL COOPERATION AGENCY

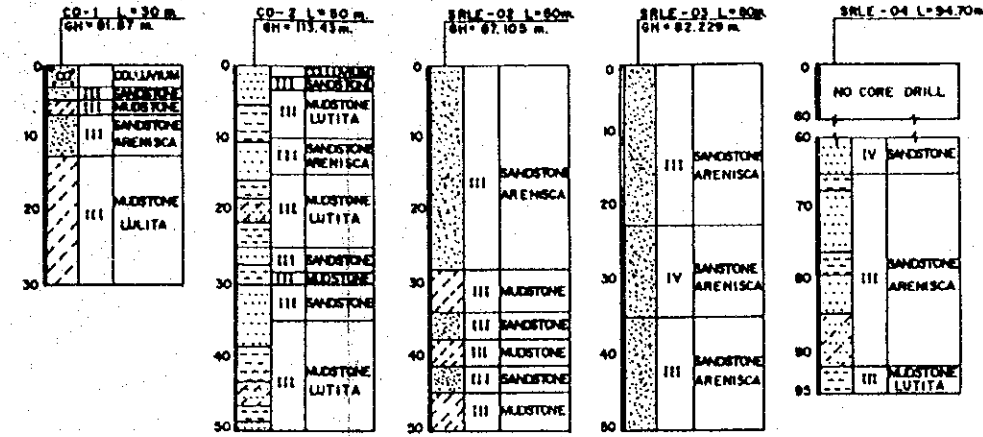
TITLE
 LOCATION MAP OF TEST PIT AND SOUNDING FOR TOWER FOUNDATIONS OF TRANSMISSION LINE

Figure 1.4.1

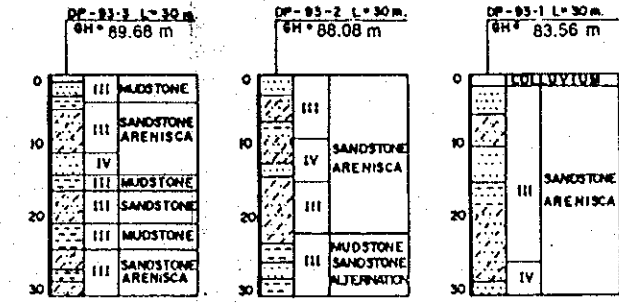


PLAN PLANTA
ESCALA — A

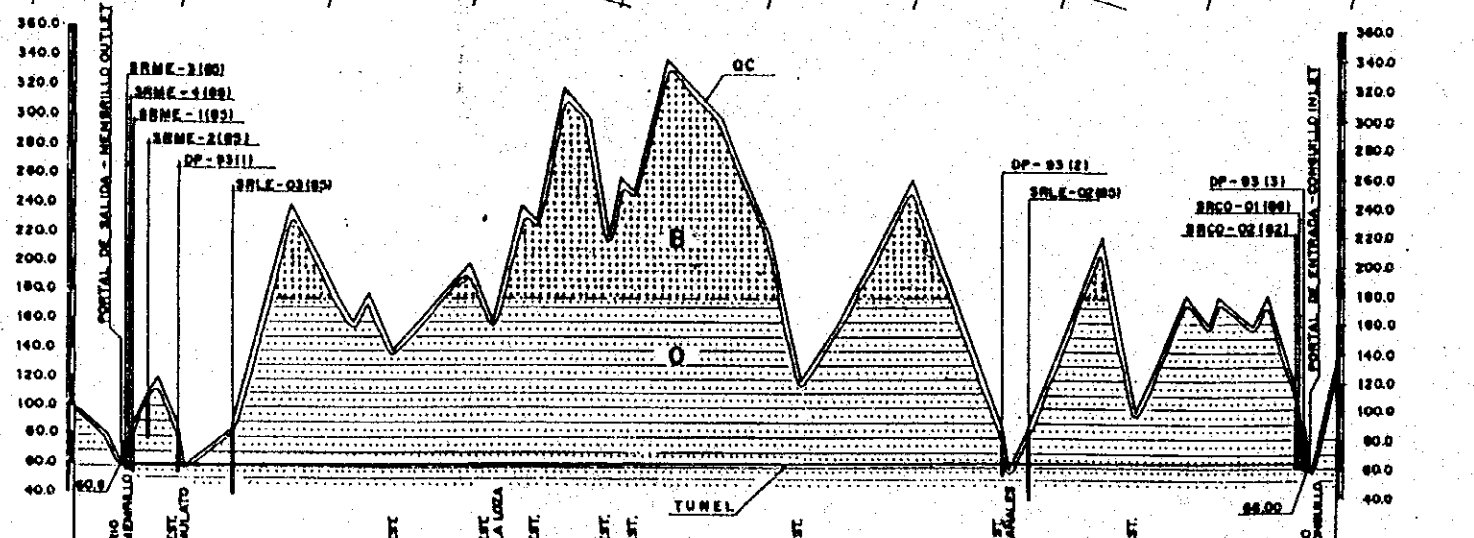
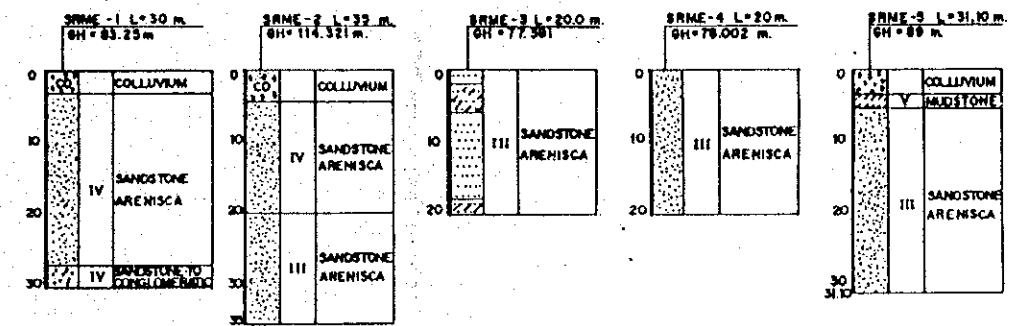
Core Drilling (1982-1986)



Core Drilling (D/D 1993)



Core Drilling (1982-1986)



COTAS DE TERRENO	ABSCISAS	GROUND HEIGHT	DISTANCE
360.00	0+000	360.00	0
340.00	0+240	340.00	240
320.00	0+320	320.00	320
300.00	0+380	300.00	380
280.00	0+420	280.00	420
260.00	0+480	260.00	480
240.00	0+500	240.00	500
220.00	0+540	220.00	540
200.00	0+580	200.00	580
180.00	0+640	180.00	640
160.00	0+680	160.00	680
140.00	0+720	140.00	720
120.00	0+760	120.00	760
100.00	0+800	100.00	800
80.00	0+840	80.00	840
60.00	0+880	60.00	880
40.00	0+920	40.00	920
20.00	0+960	20.00	960
0.00	0+980	0.00	980
0.00	0+990	0.00	990
0.00	0+995	0.00	995
0.00	0+1000	0.00	1000
0.00	0+1040	0.00	1040
0.00	0+1080	0.00	1080
0.00	0+1120	0.00	1120
0.00	0+1160	0.00	1160
0.00	0+1200	0.00	1200
0.00	0+1240	0.00	1240
0.00	0+1280	0.00	1280
0.00	0+1320	0.00	1320
0.00	0+1360	0.00	1360
0.00	0+1400	0.00	1400
0.00	0+1440	0.00	1440
0.00	0+1480	0.00	1480
0.00	0+1520	0.00	1520
0.00	0+1560	0.00	1560
0.00	0+1600	0.00	1600
0.00	0+1640	0.00	1640
0.00	0+1680	0.00	1680
0.00	0+1720	0.00	1720
0.00	0+1760	0.00	1760
0.00	0+1800	0.00	1800
0.00	0+1840	0.00	1840
0.00	0+1880	0.00	1880
0.00	0+1920	0.00	1920
0.00	0+1960	0.00	1960
0.00	0+2000	0.00	2000
0.00	0+2040	0.00	2040
0.00	0+2080	0.00	2080
0.00	0+2120	0.00	2120
0.00	0+2160	0.00	2160
0.00	0+2200	0.00	2200
0.00	0+2240	0.00	2240
0.00	0+2280	0.00	2280
0.00	0+2320	0.00	2320
0.00	0+2360	0.00	2360
0.00	0+2400	0.00	2400
0.00	0+2440	0.00	2440
0.00	0+2480	0.00	2480
0.00	0+2520	0.00	2520
0.00	0+2560	0.00	2560
0.00	0+2600	0.00	2600
0.00	0+2640	0.00	2640
0.00	0+2680	0.00	2680
0.00	0+2720	0.00	2720
0.00	0+2760	0.00	2760
0.00	0+2800	0.00	2800
0.00	0+2840	0.00	2840
0.00	0+2880	0.00	2880
0.00	0+2920	0.00	2920
0.00	0+2960	0.00	2960
0.00	0+3000	0.00	3000
0.00	0+3040	0.00	3040
0.00	0+3080	0.00	3080
0.00	0+3120	0.00	3120
0.00	0+3160	0.00	3160
0.00	0+3200	0.00	3200
0.00	0+3240	0.00	3240
0.00	0+3280	0.00	3280
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0.00	0+3360	0.00	3360
0.00	0+3400	0.00	3400
0.00	0+3440	0.00	3440
0.00	0+3480	0.00	3480
0.00	0+3520	0.00	3520
0.00	0+3560	0.00	3560
0.00	0+3600	0.00	3600
0.00	0+3640	0.00	3640
0.00	0+3680	0.00	3680
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0.00	0+4040	0.00	4040
0.00	0+4080	0.00	4080
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0.00	0+4160	0.00	4160
0.00	0+4200	0.00	4200
0.00	0+4240	0.00	4240
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0.00	0+5240	0.00	5240
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0.00	0+7680	0.00	7680
0.00	0+7720	0.00	7720
0.00	0+7760	0.00	7760
0.00	0+7800	0.00	7800
0.00	0+7840	0.00	7840
0.00	0+7880	0.00	7880
0.00	0+7920	0.00	7920
0.00	0+7960	0.00	7960
0.00	0+8000	0.00	8000
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0.00	0+8880	0.00	8880
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0.00	0+9080	0.00	9080
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0.00	0+9600	0.00	9600
0.00	0+9640	0.00	9640
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0.00	0+9920	0.00	9920
0.00	0+9960	0.00	9960
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PROFILE PERFIL LONGITUDINAL
ESCALA — H = A
V = B

LEYENDA LEGEND

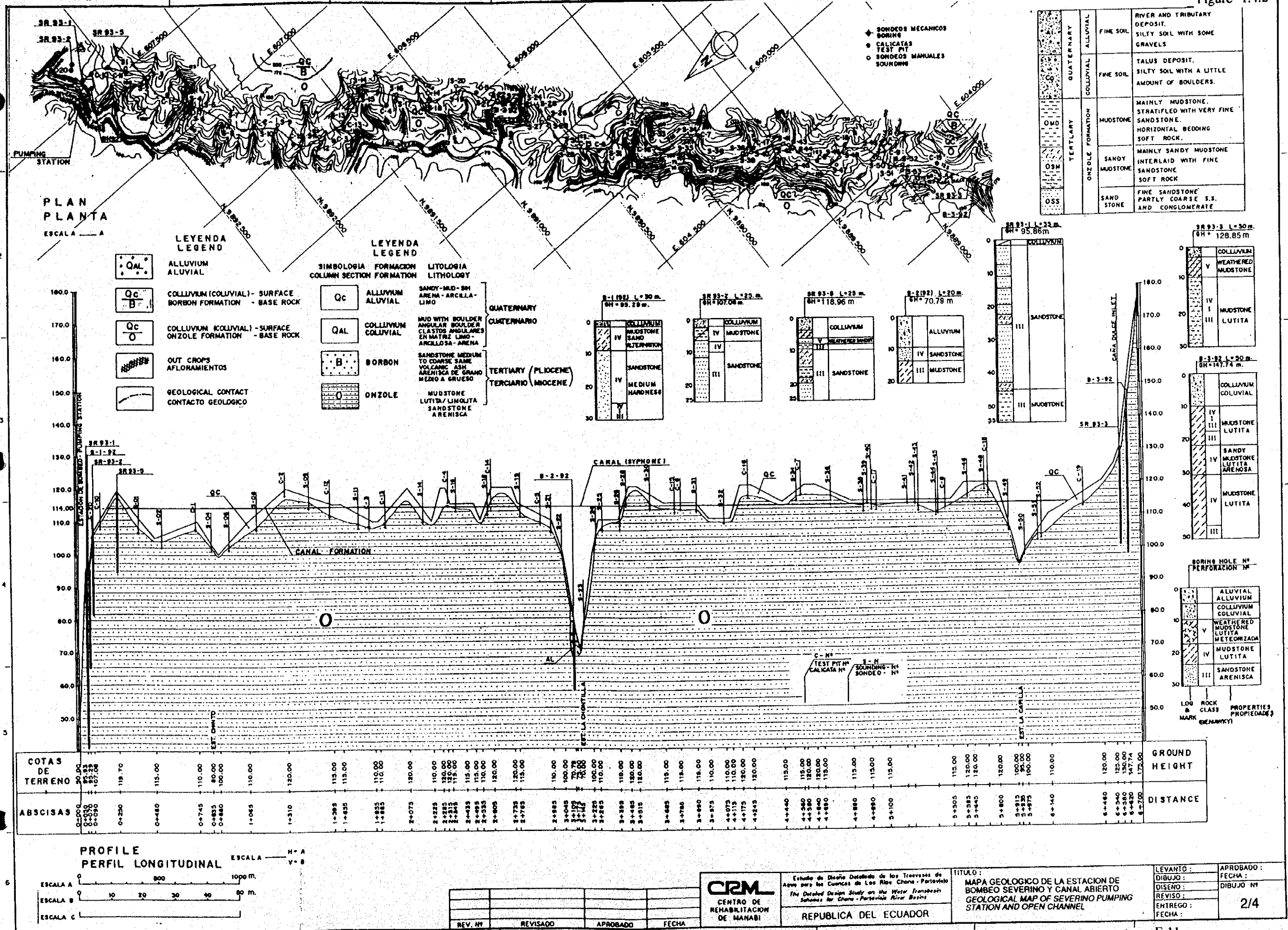
SIMBOLOGIA COLUM SECTION	FORMACION FORMATION	LITOLOGIA LITHOLOGY
Qc	ALLUVIUM ALUVIAL	SANDY-MUD-SH ARENA - ARCILLA-LIMO
Qal	COLLUVIUM COLLUVIAL	MUD WITH BOLDER ANGULAR BOULDER CLASTOS ANGULARES EN MATRIZ LIMO-ARCILLOSA-ARENA
B	BORBOM	SANDSTONE MEDIUM TO COARSE SAND VOLCANIC SAND ARENISCA DE GRANO MEDIO A BRUENO
O	ONSOLE	MUDSTONE LUTITA/LIMOLITA SANDSTONE ARENISCA

LEYENDA LEGEND

QAL	ALLUVIUM ALUVIAL
QC	COLLUVIUM (COLLUVIAL) - SURFACE BORROM FORMATION - BASE ROCK
Qc	COLLUVIUM (COLLUVIAL) - SURFACE ONSOLE FORMATION - BASE ROCK
---	OUT CROPS AFLORAMIENTOS
---	GEOLOGICAL CONTACT CONTACTO GEOLOGICO

STRATIGRAPHIC UNIT	AGE	ROCK TYPE	PROPERTIES
AL	QUATERNARY	FINE SOIL	RIVER AND TRIBUTARY DEPOSIT. SILTY SOIL WITH SOME GRAVELS
CO	QUATERNARY	FINE SOIL	TALUS DEPOSIT. SILTY SOIL WITH A LITTLE AMOUNT OF BOULDERS.
WM	QUATERNARY	WEATHERED MUDSTONE	
MD	QUATERNARY	MUDSTONE	MAINLY MUDSTONE. STRATIFIED WITH VERY FINE SANDSTONE. HORIZONTAL BEDDING. SOFT ROCK.
SS	QUATERNARY	SANDSTONE	MAINLY SANDY MUDSTONE INTERLAID WITH FINE SANDSTONE SOFT ROCK
SS	QUATERNARY	SANDSTONE	FINE SANDSTONE PARTLY COARSE S.S. AND CONGLOMERATE

Figure 1.4.2



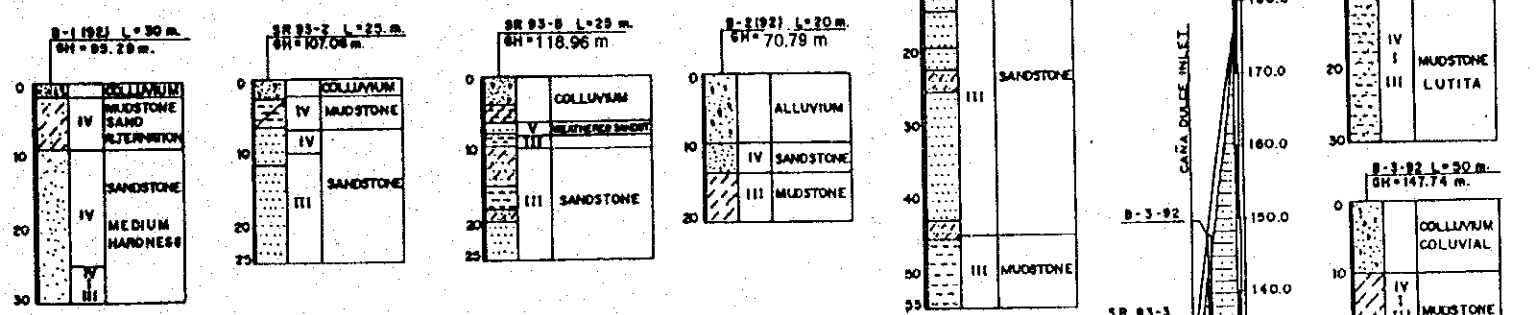
QUATERNARY	ALLUVIAL	FINE SOIL	RIVER AND TRIBUTARY DEPOSIT.
QUATERNARY	COLLUVIAL	FINE SOIL	SILTY SOIL WITH SOME GRAVELS
QUATERNARY	COLLUVIAL	FINE SOIL	TALUS DEPOSIT.
QUATERNARY	COLLUVIAL	FINE SOIL	SILTY SOIL WITH A LITTLE AMOUNT OF BOULDERS.
TERTIARY	ONZOLE FORMATION	MUDSTONE	MAINLY MUDSTONE. STRATIFIED WITH VERY FINE SANDSTONE. HORIZONTAL BEDDING SOFT ROCK.
TERTIARY	ONZOLE FORMATION	SANDY MUDSTONE	MAINLY SANDY MUDSTONE INTERLAID WITH FINE SANDSTONE SOFT ROCK
TERTIARY	ONZOLE FORMATION	SANDSTONE	FINE SANDSTONE PARTLY COARSE S.S. AND CONGLOMERATE

LEYENDA

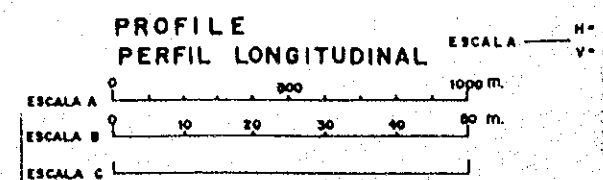
QAL	ALLUVIUM ALUVIAL
Qc/B	COLLUVIUM (COLLUVIAL) - SURFACE BORBON FORMATION - BASE ROCK
Qc/O	COLLUVIUM (COLLUVIAL) - SURFACE ONZOLE FORMATION - BASE ROCK
[Symbol]	OUT CROPS AFLORAMIENTOS
[Symbol]	GEOLOGICAL CONTACT CONTACTO GEOLOGICO

LEYENDA

SIMBOLOGIA	FORMACION	LITOLOGIA
Qc	ALLUVIUM ALUVIAL	SANDY-MUD-SH ARENA-ARCILLA-LIMO
QAL	COLLUVIUM COLLUVIAL	MUD WITH BOULDER ANGULAR BOULDER CLASTOS ANGULARES EN MATRIZ LIMO-ARCILLOSA-ARENA
B	BORBON	SANDSTONE MEDIUM TO COARSE SAND VOLCANIC ASH ARENISCAS DE GRANO MEDIO A GRUESO
O	ONZOLE	MUDSTONE LUTITA/LIMOLITA SANDSTONE ARENISCAS



COTAS DE TERRENO	ABSCISAS	GROUND HEIGHT	DISTANCE
119.70	0+250	119.70	0+250
115.00	0+480	115.00	0+480
110.00	0+745	110.00	0+745
100.00	0+885	100.00	0+885
110.00	1+065	110.00	1+065
120.00	1+310	120.00	1+310
115.00	1+395	115.00	1+395
115.00	1+635	115.00	1+635
110.00	1+885	110.00	1+885
120.00	2+075	120.00	2+075
110.00	2+225	110.00	2+225
120.00	2+215	120.00	2+215
115.00	2+285	115.00	2+285
115.00	2+435	115.00	2+435
115.00	2+685	115.00	2+685
120.00	2+805	120.00	2+805
120.00	2+735	120.00	2+735
115.00	2+785	115.00	2+785
110.00	2+885	110.00	2+885
100.00	3+045	100.00	3+045
70.00	3+175	70.00	3+175
110.00	3+225	110.00	3+225
110.00	3+285	110.00	3+285
120.00	3+485	120.00	3+485
120.00	3+815	120.00	3+815
115.00	3+685	115.00	3+685
115.00	3+780	115.00	3+780
110.00	3+880	110.00	3+880
110.00	3+875	110.00	3+875
110.00	4+075	110.00	4+075
120.00	4+115	120.00	4+115
120.00	4+175	120.00	4+175
120.00	4+245	120.00	4+245
115.00	4+440	115.00	4+440
115.00	4+560	115.00	4+560
120.00	4+580	120.00	4+580
120.00	4+840	120.00	4+840
115.00	4+880	115.00	4+880
115.00	4+880	115.00	4+880
115.00	4+890	115.00	4+890
115.00	5+100	115.00	5+100
115.00	5+505	115.00	5+505
120.00	5+585	120.00	5+585
120.00	5+640	120.00	5+640
120.00	5+800	120.00	5+800
100.00	5+815	100.00	5+815
100.00	5+825	100.00	5+825
100.00	5+875	100.00	5+875
110.00	6+140	110.00	6+140
120.00	6+460	120.00	6+460
120.00	6+540	120.00	6+540
130.00	6+580	130.00	6+580
147.74	6+820	147.74	6+820
175.00	6+700	175.00	6+700



REV. N°	REVISADO	APROBADO	FECHA

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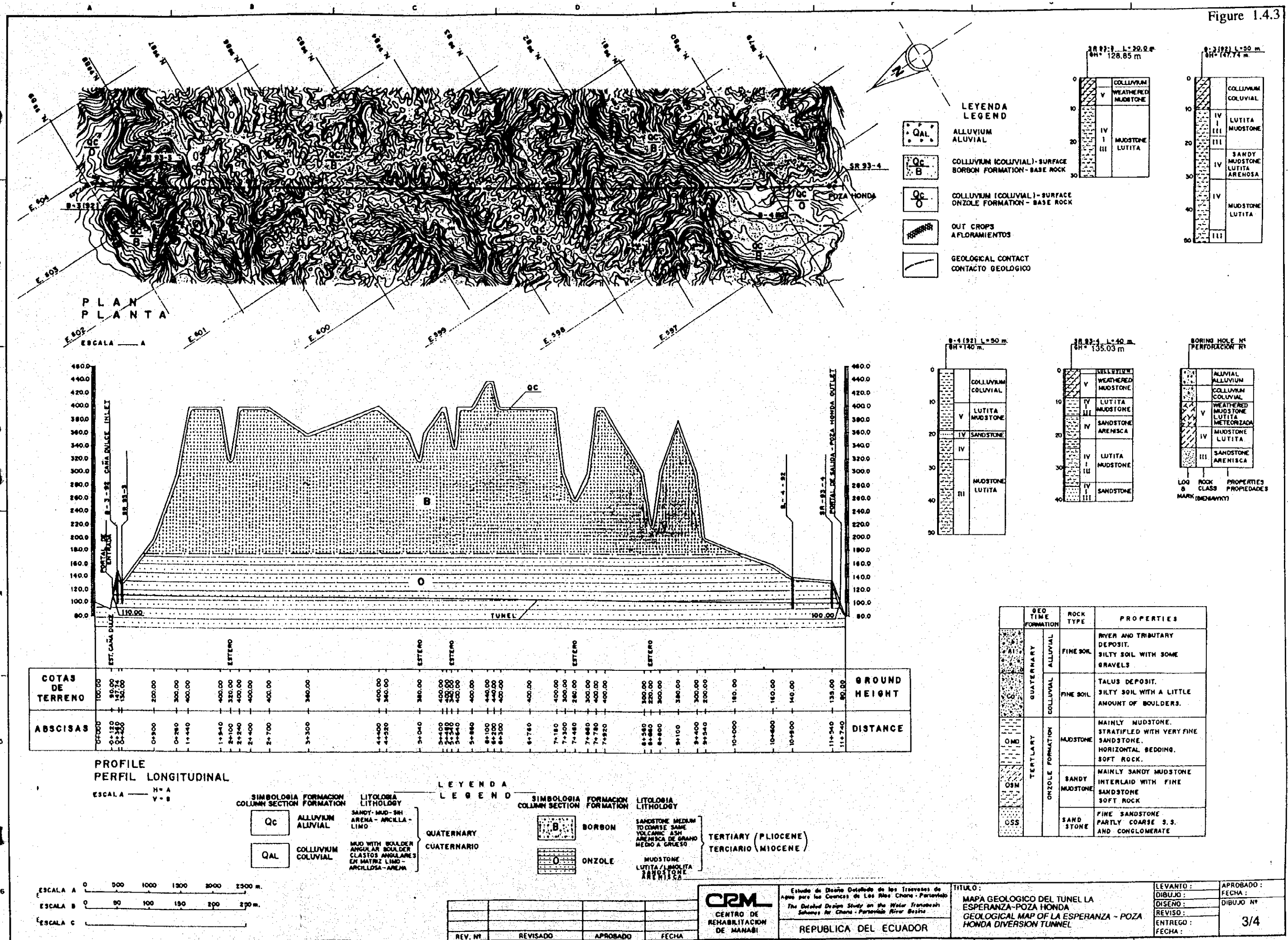
Estudio de Diseño Detallado de los Travesaños de Agua para las Cuenclas de Los Rios Chona - Paratuvio
The Detailed Design Study on the Water Traverses Schemes for Chona - Paratuvio River Basins

REPUBLICA DEL ECUADOR

TITULO: MAPA GEOLOGICO DE LA ESTACION DE BOMBEO SEVERINO Y CANAL ABIERTO
GEOLOGICAL MAP OF SEVERINO PUMPING STATION AND OPEN CHANNEL

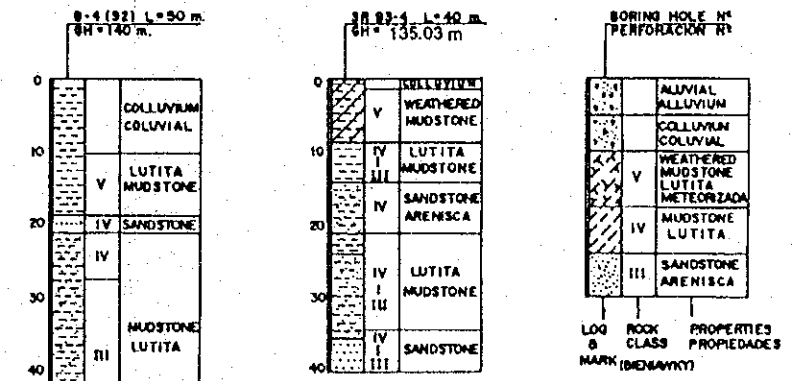
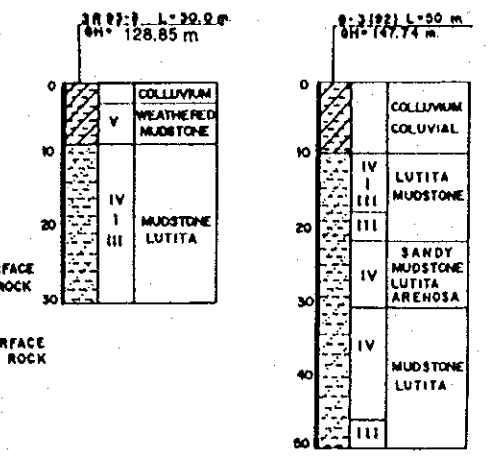
LEVANTO: APROBADO: 2/4
DIBUJO: FECHA:
DISEÑO: DIBUJO N°
REVISO:
ENTREGO:
FECHA:

Figure 1.4.3



LEYENDA LEGEND

- QAL ALLUVIUM ALUVIAL
- Qc B COLLUVIUM (COLLUVIAL)-SURFACE BORBON FORMATION-BASE ROCK
- Qc O COLLUVIUM (COLLUVIAL)-SURFACE ONZOLE FORMATION-BASE ROCK
- OUT CROPS AFLORAMIENTOS
- GEOLOGICAL CONTACT CONTACTO GEOLOGICO



PROFILE PERFIL LONGITUDINAL

ESCALA H=A V=B

COTAS DE TERRENO	ABSCISAS	GROUND HEIGHT	DISTANCE
100.00	0+000	100.00	0+000
90.00	0+120	90.00	0+120
137.74	0+130	137.74	0+130
130.00	0+140	130.00	0+140
200.00	0+300	200.00	0+300
300.00	0+260	300.00	0+260
400.00	1+440	400.00	1+440
400.00	1+840	400.00	1+840
320.00	2+100	320.00	2+100
400.00	2+240	400.00	2+240
400.00	2+400	400.00	2+400
400.00	2+700	400.00	2+700
360.00	3+300	360.00	3+300
400.00	4+400	400.00	4+400
360.00	4+520	360.00	4+520
380.00	5+040	380.00	5+040
400.00	5+400	400.00	5+400
350.00	5+540	350.00	5+540
400.00	5+640	400.00	5+640
440.00	6+100	440.00	6+100
440.00	6+200	440.00	6+200
400.00	6+300	400.00	6+300
400.00	6+760	400.00	6+760
400.00	7+160	400.00	7+160
300.00	7+300	300.00	7+300
280.00	7+480	280.00	7+480
300.00	7+680	300.00	7+680
400.00	7+780	400.00	7+780
400.00	7+820	400.00	7+820
300.00	8+380	300.00	8+380
220.00	8+680	220.00	8+680
300.00	8+800	300.00	8+800
280.00	9+100	280.00	9+100
300.00	9+400	300.00	9+400
200.00	9+540	200.00	9+540
180.00	10+000	180.00	10+000
160.00	10+400	160.00	10+400
140.00	10+800	140.00	10+800
135.00	11+540	135.00	11+540
80.00	11+740	80.00	11+740

LEYENDA LEGEND

QUATERNARY CUATERNARIO

- Qc ALLUVIUM ALUVIAL
- QAL COLLUVIUM COLUVIAL

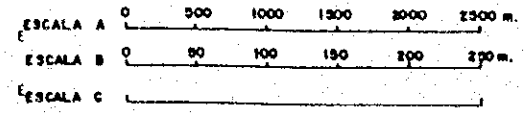
TERTIARY (PLIOCENE) TERCARIO (MIOCENE)

- B BORBON
- O ONZOLE

LITOLOGIA LITHOLOGY

- SANDY-MUD-SH ARENA-ARCILLA-LIMO
- MUD WITH BOULDER ANGULAR BOULDER CLASTOS ANGULARES EN MATRIZ LIMO-ARCILLOSA-ARENA
- SANDSTONE MEDIUM TO COARSE SAND VOLCANIC ASH ARENOSA DE GRANO MEDIO A GRUESO
- MUDSTONE LUTITA/LIMOLITA ARENOSA

QEO TIME FORMATION	ROCK TYPE	PROPERTIES
QUATERNARY ALLUVIAL	FINE SOIL	RIVER AND TRIBUTARY DEPOSIT. SILTY SOIL WITH SOME GRAVELS
QUATERNARY COLLUVIAL	FINE SOIL	TALUS DEPOSIT. SILTY SOIL WITH A LITTLE AMOUNT OF BOULDERS.
TERTIARY ONZOLE FORMATION	MUDSTONE	MAINLY MUDSTONE. STRATIFIED WITH VERY FINE SANDSTONE. HORIZONTAL BEDDING. SOFT ROCK.
TERTIARY ONZOLE FORMATION	SANDY MUDSTONE	MAINLY SANDY MUDSTONE INTERLAID WITH FINE SANDSTONE SOFT ROCK
TERTIARY ONZOLE FORMATION	SANDSTONE	FINE SANDSTONE PARTLY COARSE S.S. AND CONGLOMERATE



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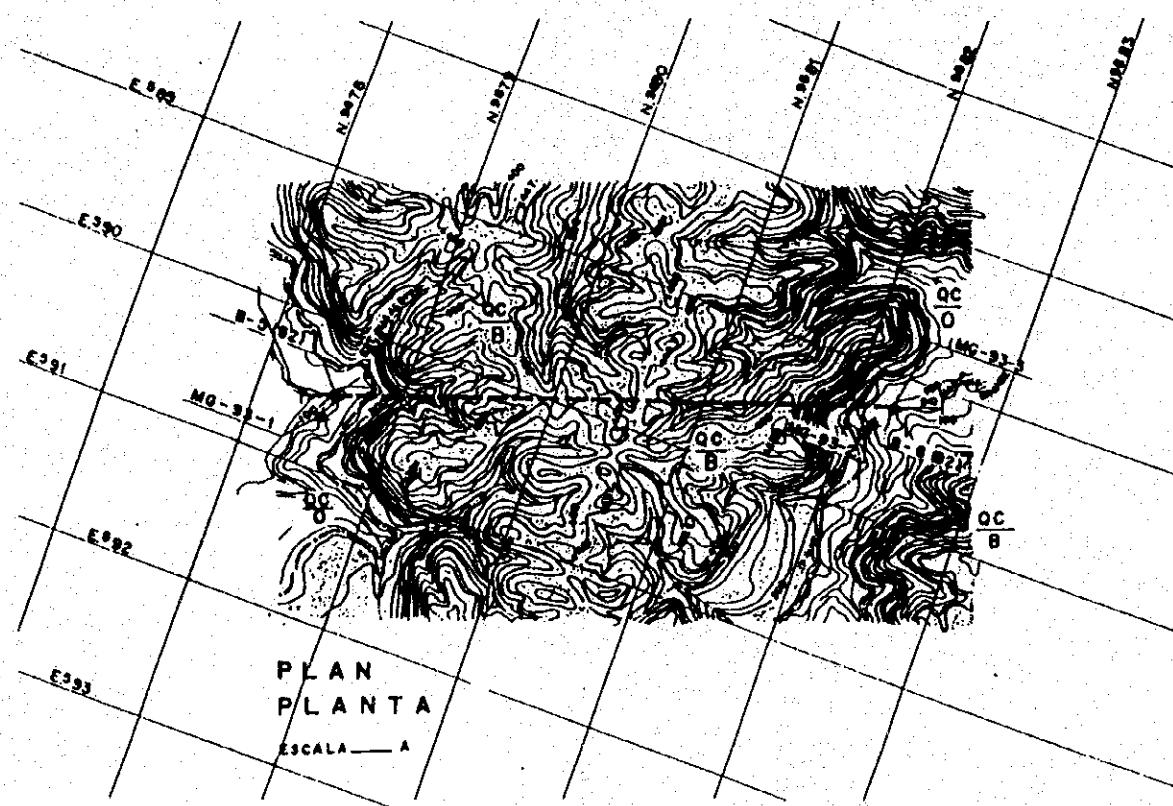
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The Detailed Design Study on the Water Traverses Schemes for Chana - Paravaleto River Basins

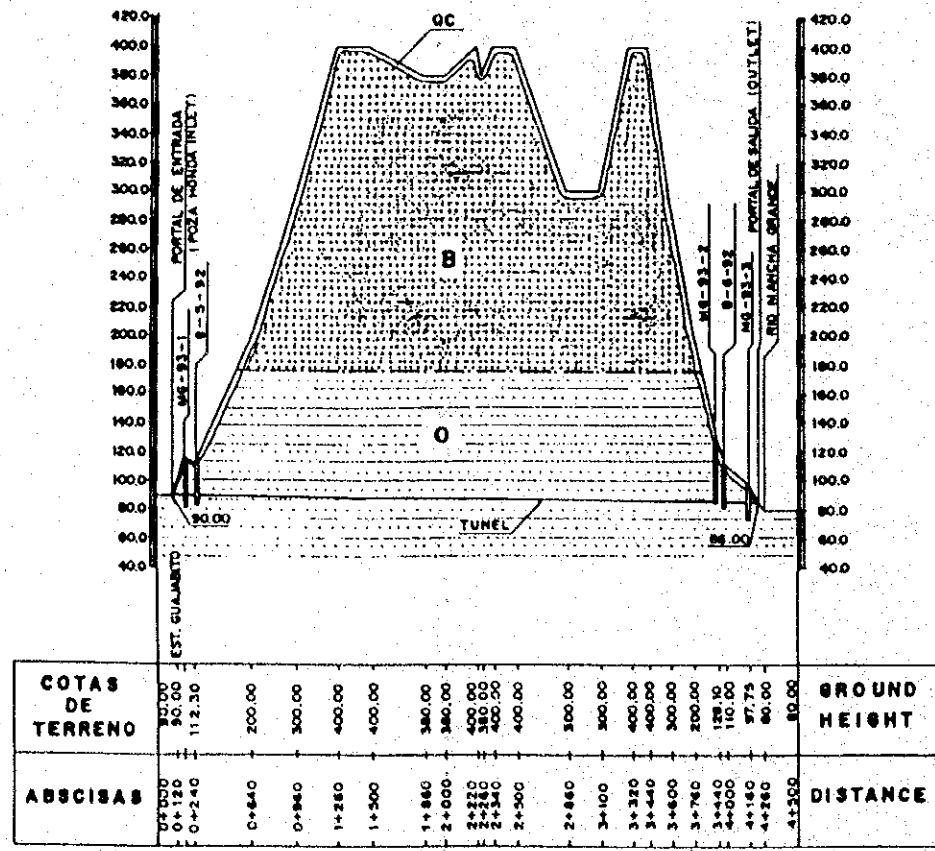
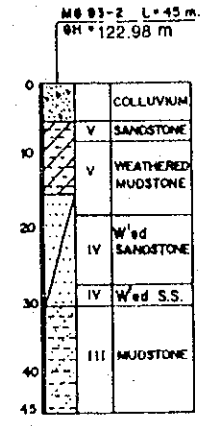
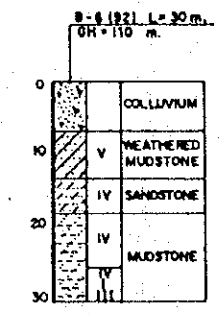
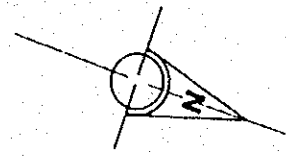
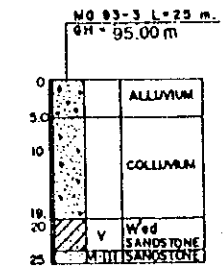
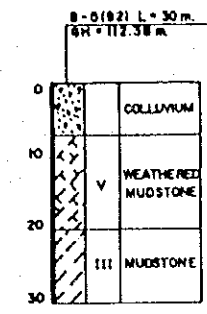
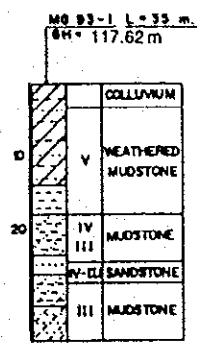
REPUBLICA DEL ECUADOR

TITULO:
MAPA GEOLOGICO DEL TUNEL LA ESPERANZA-POZA HONDA
GEOLOGICAL MAP OF LA ESPERANZA - POZA HONDA DIVERSION TUNNEL

LEVANTO: APROBADO:
DIBUJO: FECHA:
REVISO: DIBUJO N°:
ENTREGO: REVISO:
FECHA: 3/4

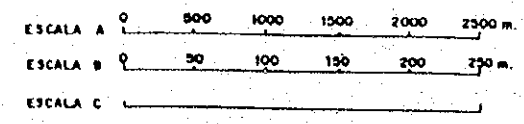
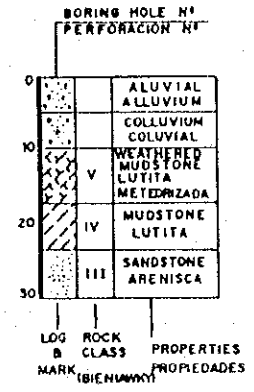


- LEYENDA
LEGEND**
- ALLUVIUM
ALUVIAL
 - COLLUVIUM (COLLUVIAL) - SURFACE
BORBON FORMATION - BASE ROCK
 - COLLUVIUM (COLLUVIAL) - SURFACE
ONZOLE FORMATION - BASE ROCK
 - OUT CROPS
AFLORAMIENTOS
 - GEOLOGICAL CONTACT
CONTACTO GEOLOGICO



- LEYENDA
LEGEND**
- | SIMBOLOGIA
COLUMN SECTION | FORMACION
FORMATION | LITOLOGIA
LITHOLOGY | |
|------------------------------|------------------------|--|--|
| | ALLUVIUM
ALUVIAL | SANDY-MUD-SH
ARENA - ARCILLA-
LIMO | QUATERNARY
CUATERNARIO |
| | COLLUVIUM
COLLUVIAL | MUD WITH BOULDER
ANGULAR BOULDER
CLASTOS ANGULARES
EN MATRIZ LIMO-
ARCILLOSA-ARENA | |
| | BORBON | SANDSTONE MEDIUM
TO COARSE GRAIN
VOLCANIC ASH
ARENISCA DE GRANO
MEDIO A GRUESO | TERTIARY (PLIOCENE)
TERCIARIO (MIOCENE) |
| | ONZOLE | MUDSTONE
LUTITA/LIMOLITA
SANDSTONE
ARENISCA | |

BED TIME FORMATION	ROCK TYPE	PROPERTIES
QUATERNARY ALLUVIAL	FINE SOIL	RIVER AND TRIBUTARY DEPOSIT. SILTY SOIL WITH SOME GRAVELS
QUATERNARY COLLUVIAL	FINE SOIL	TALUS DEPOSIT. SILTY SOIL WITH A LITTLE AMOUNT OF BOULDERS.
TERTIARY ONZOLE FORMATION	MUDSTONE	MAINLY MUDSTONE. STRATIFIED WITH VERY FINE SANDSTONE. HORIZONTAL BEDDING. SOFT ROCK.
TERTIARY ONZOLE FORMATION	SANDY MUDSTONE	MAINLY SANDY MUDSTONE INTERLAID WITH FINE SANDSTONE SOFT ROCK
TERTIARY ONZOLE FORMATION	SANDSTONE	FINE SANDSTONE PARTLY COARSE S.S. AND CONGLOMERATE



REV. N°	REVISADO	APROBADO	FECHA

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Estudio de Diseño Detallado de los Travesaños de Agua para los Cuencas de Los Rios Chone - Paratuvia
The Detailed Design Study on the Water Transbasin Schemes for Chone - Paratuvia River Basins

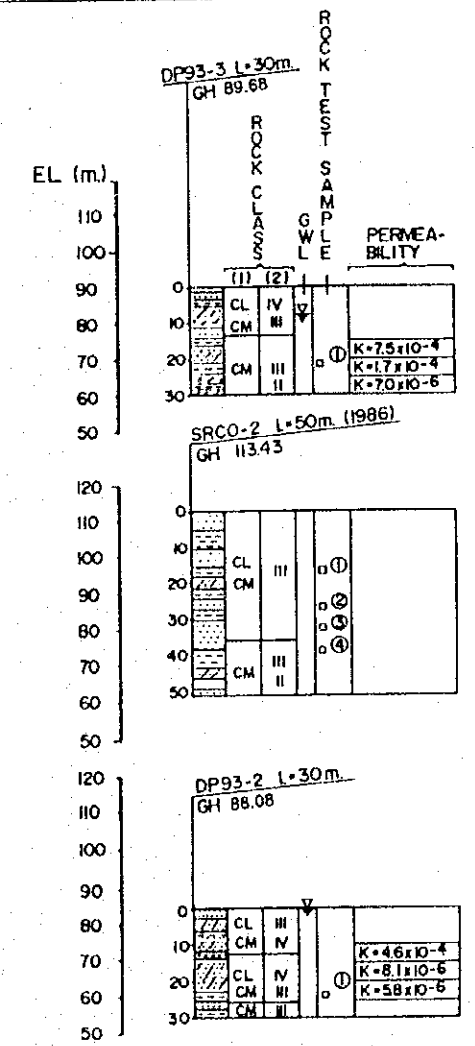
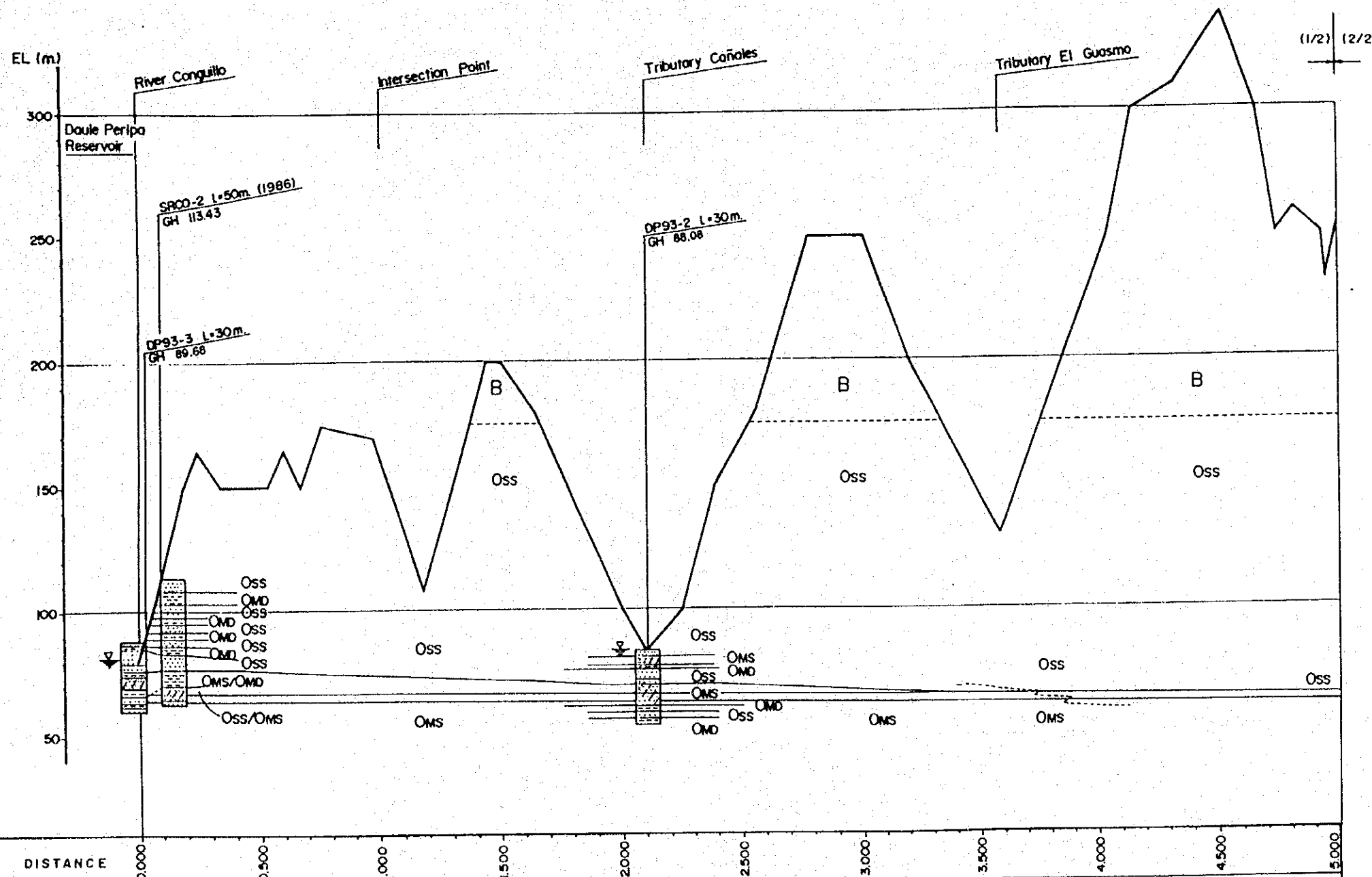
REPUBLICA DEL ECUADOR

TITULO:
MAPA GEOLOGICO DEL TUNEL POZA HONDA-MANCHA GRANDE
GEOLOGICAL MAP OF POZA HONDA-MANCHA GRANDE DIVERSION TUNNEL

LEVANTO:	APROBADO:
DIBUJO:	FECHA:
DISEÑO:	DIBUJO N°
REVISO:	4/4
ENTREGO:	FECHA:

LEGEND

SYMBOL	GEO - TIME FORMATION	ROCK TYPE	PROPERTIES
Al	QUATERNARY	Alluvium	Soil with gravels River deposit
Co		Colluvium	Fine soil with debris Secondary deposit and transported soil.
WMS	TERTIARY	Soil	Completely weathered. Loose and soft.
B		Weathered SS and Md	Discoloured, fractured. Loose.
B		Sandstone	Mainly sandstone. Massive rock.
Oms	NEOGENE	Muddy Sandstone Sandy Mudstone	Lithologically complex of fine sand & mud with shell fossils. Stratified partly approx. 1 cm. in interval. Massive rock.
Oss		Sandstone	Mainly fine grain. Interbedding thin coarse sandstone or conglomerate. Massive rock.
Omd		Mudstone	Homogeneous layer with 0.5 m. to 2m. in thickness. Massive rock.



ROCK TYPE	Oss/Oms	Oms	Oms	Oms	Oss
ROCK TYPE	Sandstone and Muddy sandstone	Muddy sandstone	Muddy sandstone	Muddy sandstone	Fine sandstone
ROCK CLASSIFICATION	(1) CL	CM	CL	CM	CM
	(2) IV-III	III-II	IV	III-II	III-II
Wave VELOCITY (km/sec)					
ENGINEERING PROPERTIES	Slightly weathered	Moderately cemented. Massive.	Slightly weathered, loose.	Relatively well cemented. Massive.	Relatively well cemented. Massive.
	qu = 30	qu = 50	qu = 30	qu = 50	qu = 50
	Es = 10,000	Es = 15,000	Es = 10,000	Es = 20,000	Es = 20,000
	C = 2.5 φ = 35	C = 5 φ = 40	C = 2.5 φ = 35	C = 5 φ = 40	C = 5 φ = 40

Note: (1) Japanese Standard (2) Bienkowski's Classification.
 qu : Uniaxial Compressive Strength (kg/cm²). C : Cohesion (kg/cm²)
 Es : Static Elastic Modulus (kg/cm²). φ : Internal Angle of Friction (degree)



REV. N°	REVISADO	APROBADO	FECHA

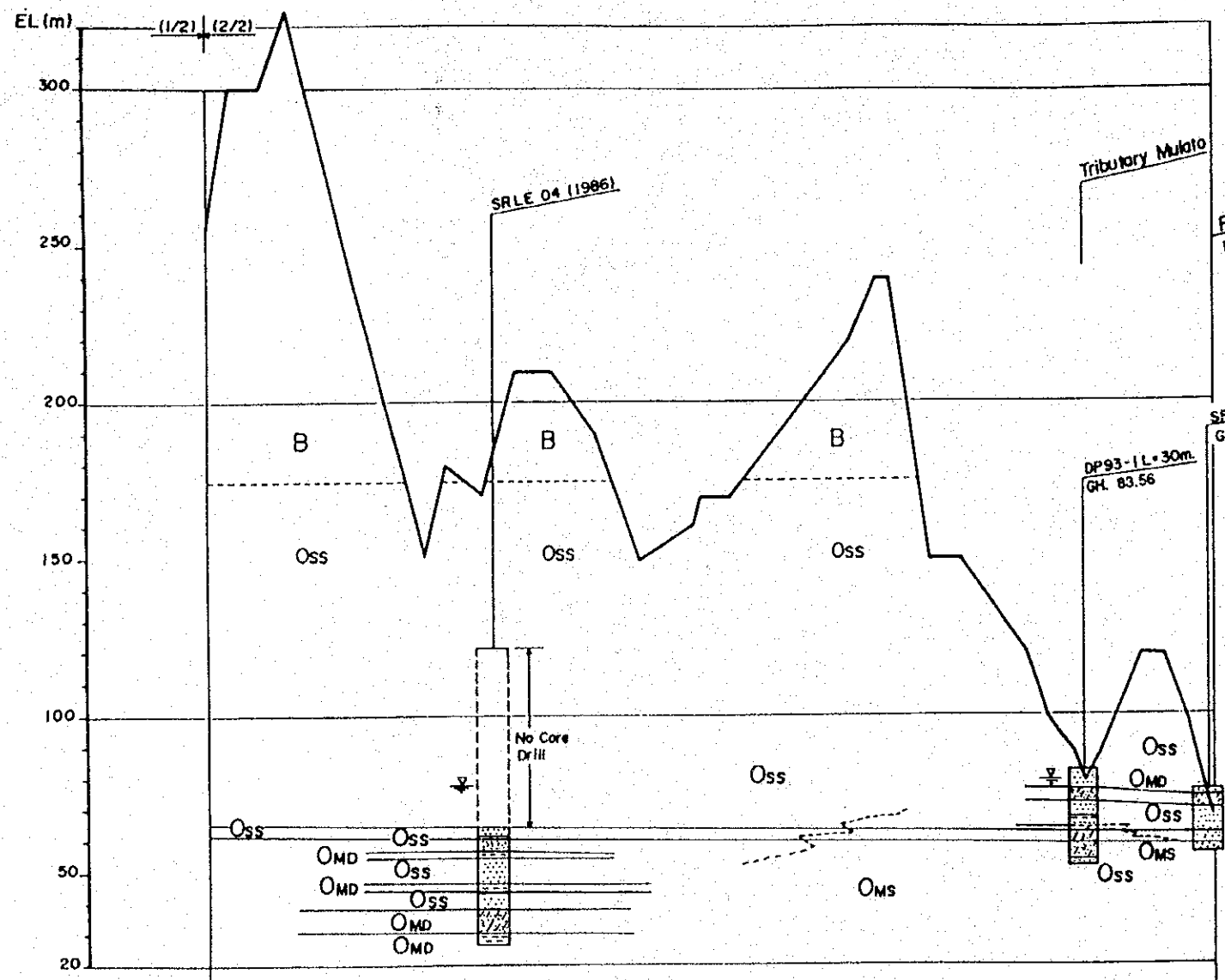
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CENTRO DE REHABILITACION DE MANABI

Estudio de Diseño Detallado de los Tramos de Agua para las Cuenclas de Los Rios Chano - Paratambo
The Detailed Design Study on the Water Trambasin Schemes for Chano - Paratambo River Basins

REPUBLICA DEL ECUADOR

TITULO : PERFIL GEOLOGICO DEL TUNEL DAULE - PERIPA-LA ESPERANZA (1/2) ENGINEERING GEOLOGICAL PROFILE OF DAULE-PERIPA-LA ESPERANZA DIVERSION TUNNEL (1/2)	LEVANTO : DIBUJO : DISEÑO : REVISO : ENTREGO : FECHA :	APROBADO : FECHA : DIBUJO N°
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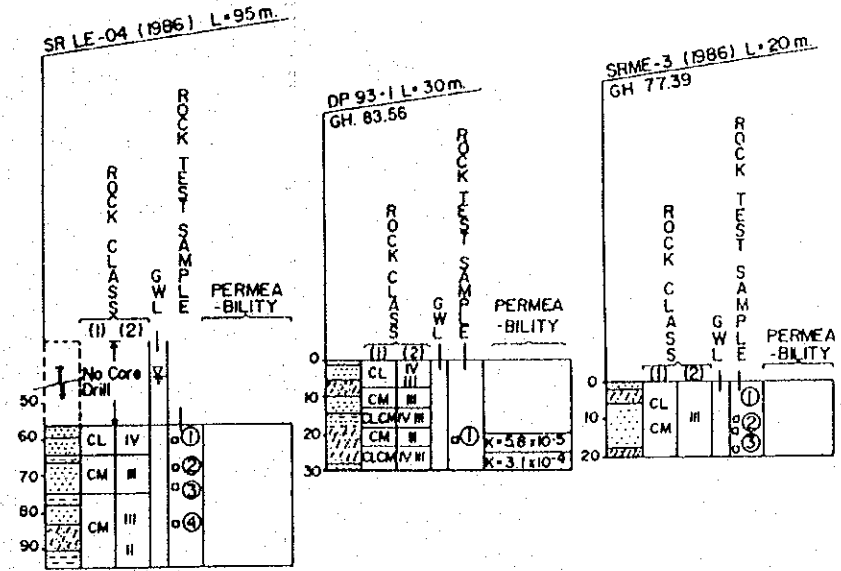
Figure 1.5.1(2/2)



LEGEND			
SYMBOL	GEO - TIME FORMATION	ROCK TYPE	PROPERTIES
AI	QUATERNARY	Alluvium	Soil with gravels
Co		Colluvium	Fine soil with debris
WMS	TERTIARY	Soil	Completely weathered. Loose and soft.
B		Borbon Sandstone	Discoloured, fractured. Loose.
Oms		Oms Muddy Sandstone	Mainly sandstone. Massive rock.
Oss	NEOGENE	Oss Muddy Sandstone	Lithologically complex of fine sand & mud with shell fossils. Stratified partly approx. 1 cm. in interval.
Omd		Omd Sandstone	Massive rock.
		Oss Sandstone	Mainly fine grain. Interbedding thin coarse sandstone or conglomerate. Massive rock.
		Omd Mudstone	Homogeneous layer with 0.5 m. to 2m. in thickness. Massive rock.

DISTANCE	5000	5500	6000	6500	7000	7500	8000
ROCK TYPE	Oss Fine sandstone		Oms Muddy sandstone	Oms Muddy s.s.	Oss Fine sandstone		
ROCK CLASSIFICATION (1)	CM		CM	CL	CL-CM		
ROCK CLASSIFICATION (2)	III-II		II-II	IV	IV-III		
P Wave VELOCITY (km/sec)							
ENGINEERING PROPERTIES	Relatively well cemented Massive qu = 50 Es = 20,000 C = 5 Ø = 40		Moderately cemented Massive qu = 50 Es = 15,000 C = 5 Ø = 40	Loose Much ground water qu = 30 Es = 10,000 C = 2.5 Ø = 35	Slightly weathered qu = 30 Es = 10,000 C = 2.5 Ø = 35		

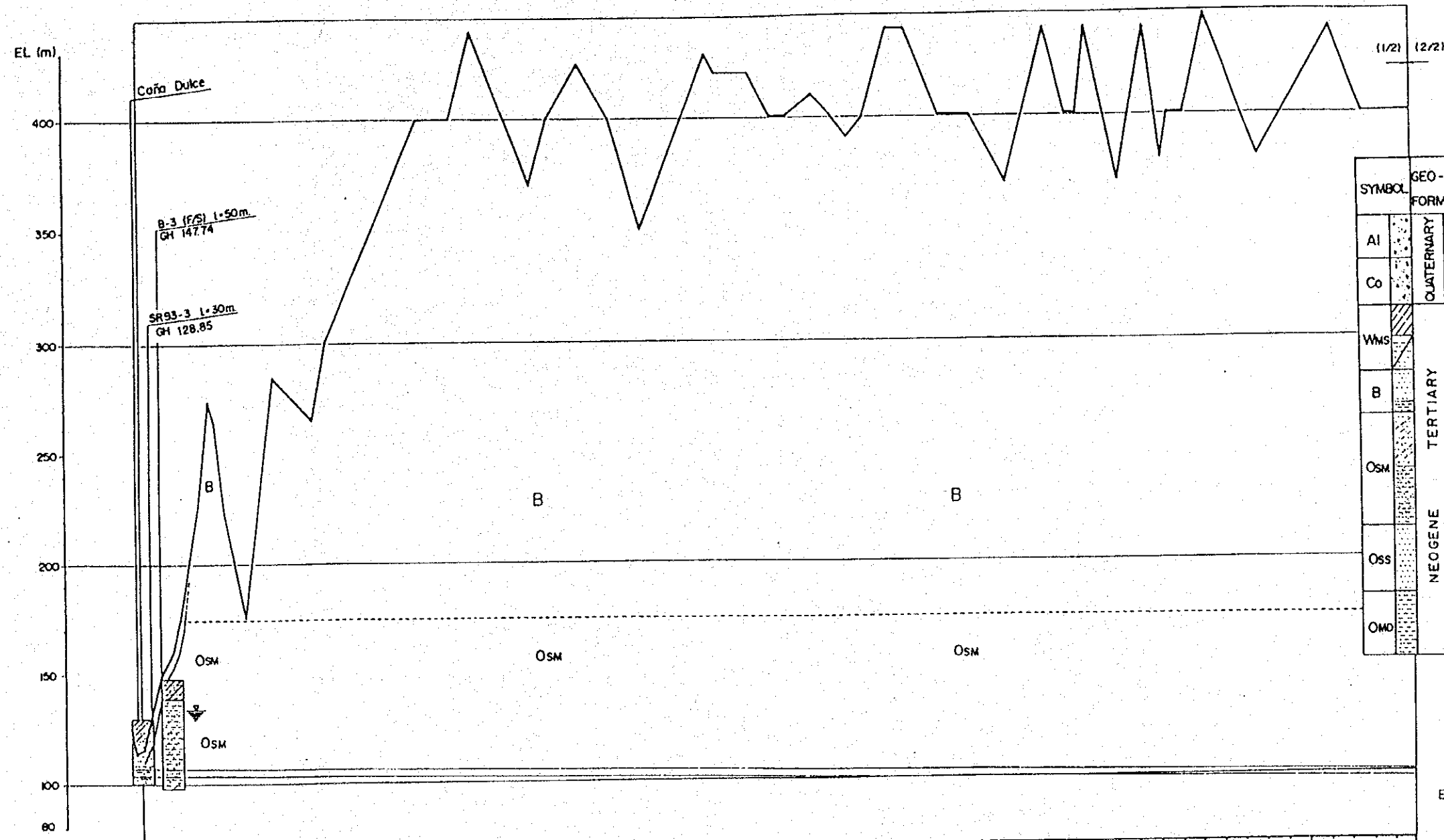
Note (1) Japanese Standard. (2) Benlowish's Classification
 qu - Uniaxial Compressive Strength (kgf/cm²) C - Cohesion (kgf/cm²)
 Es - Static Elastic Modulus (kgf/cm²) Ø - Internal Angle of Friction (degree)



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CRIM CENTRO DE REHABILITACION DE MANABI	Estudio de Diseño Detallado de los Traveses de Agua para los Cuencas de Los Rios Chona - Portoviejo The Detailed Design Study on the Water Transfers Between the Chona - Portoviejo River Basins	TITULO: PERFIL GEOLOGICO DEL TUNEL DAULE-PERIPA-LA ESPERANZA (2/2) ENGINEERING GEOLOGICAL PROFILE OF DAULE-PERIPA-LA ESPERANZA DIVERSION TUNNEL (2/2)	LEVANTO: DIBUJO: REVISO: ENTREGO: FECHA:	APROBADO: FECHA: DIBUJO Nº
	REPUBLICA DEL ECUADOR		FECHA:	

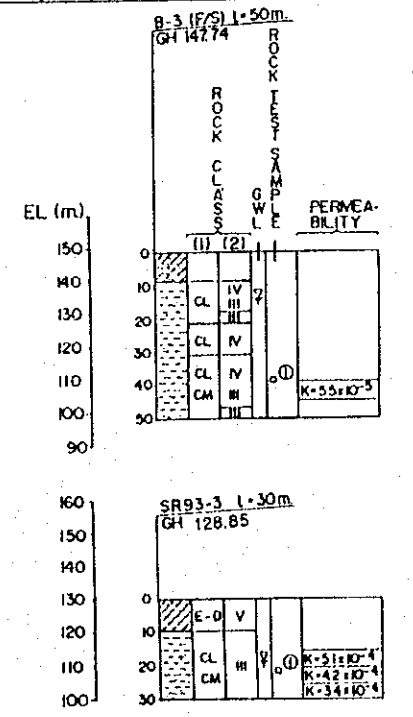
Figure 1.5.2(1/2)



LEGEND			
SYMBOL	GEO-TIME FORMATION	ROCK TYPE	PROPERTIES
Al	QUATERNARY	Alluvium	Soil with gravels
Co		Colluvium	Fine soil with debris
WMS	TERTIARY	Soil	Completely weathered. Loose and soft
B		Sandstone	Weathered SS and Md. Loose.
OSM		Muddy Sandstone Sandy Mudstone	Mainly sandstone. Massive rock.
OSS	NEOGENE	Sandstone	Lithologically complex of fine sand B mud with shell fossils. Stratified partly approx. 1 cm in interval. Massive rock.
OMD		Mudstone	Mainly fine grain. Interbedding thin coarse sandstone or conglomerate. Massive rock.
	Onzole		Homogeneous layer with 0.5 m to 2m in thickness. Massive rock.

DISTANCE		0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000
ROCK TYPE	OSM	OSM												
	Sandy mudstone	Sandy mudstone												
ROCK CLASSIFICATION (1)	CL	CM												
	(2) IV	III												
P-Wave VELOCITY (km/sec)	2.0	2.5												
ENGINEERING PROPERTIES	Slightly weathered, soft	Relatively well cemented Massive												
	qu = 30	qu = 50-70												
	Es = 10,000	Es = 20,000												
	C = 2.5	C = 5												
	φ = 35	φ = 40												

Note: qu : Uniaxial Compressive Strength (kgf/cm²), C : Cohesion (kgf/cm²)
 Es : Static Elastic Modulus (kgf/cm²), φ : Internal Angle of Friction (degree)
 (1) Japanese Standard, (2) Benckovsk's Classification

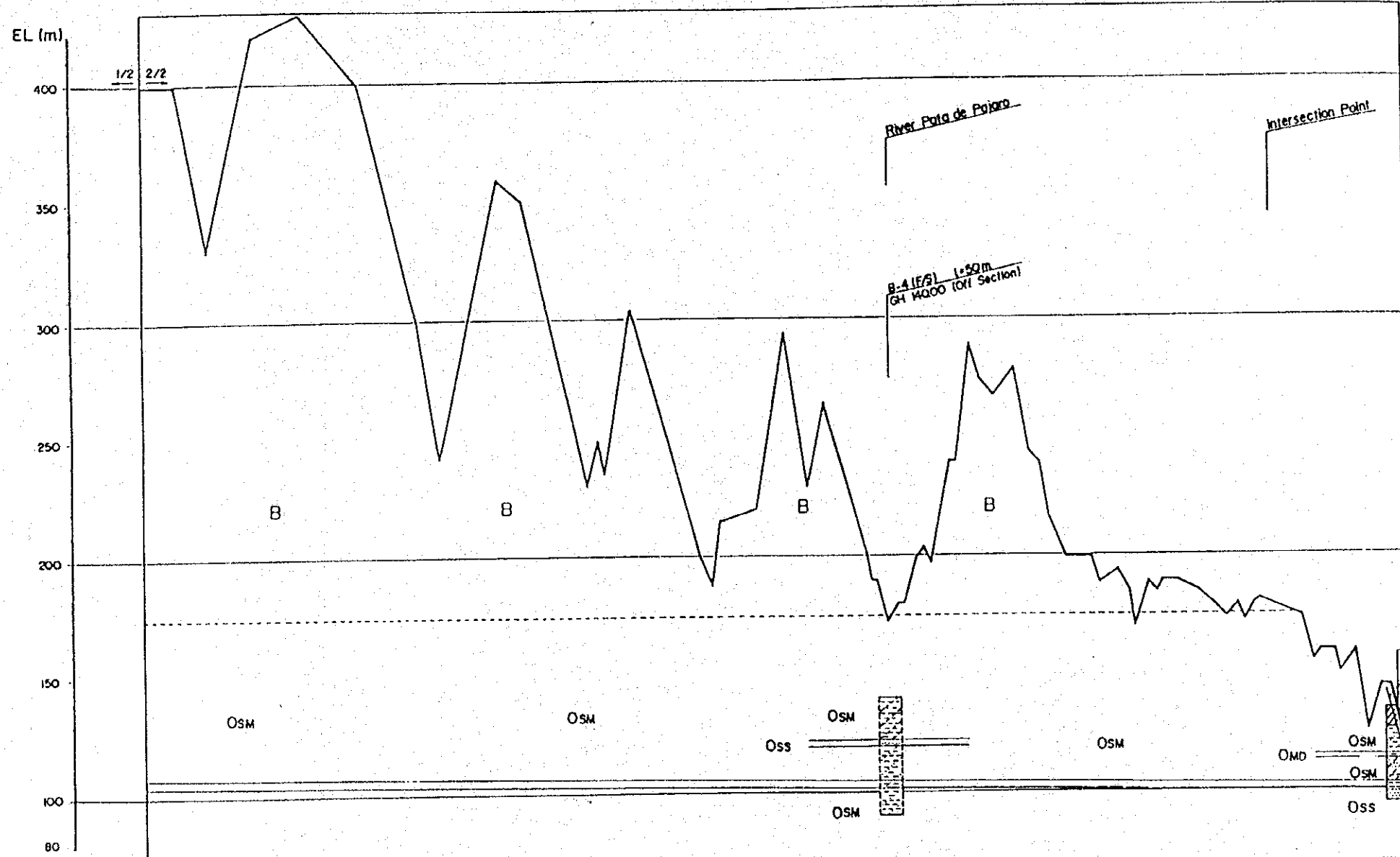


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 Estudio de Diseño Detallado de los Tramos de Agua para los Canchales de Los Rios Chona - Paratuvia
 The Detailed Design Study on the Water Transfer Schemes for Chona - Paratuvia River Basins
 REPUBLICA DEL ECUADOR

TITULO:	PERFIL GEOLOGICO DEL TUNEL LA ESPERANZA-POZA HONDA (1/2)	LEVANTO:		APROBADO:	
	ENGINEERING GEOLOGICAL PROFILE OF LA ESPERANZA-POZA HONDA DIVERSION TUNNEL (1/2)	DIBUJO:		FECHA:	
		DISENO:		DIBUJO NO:	
		REVISO:			
		ENTREGO:			
		FECHA:			

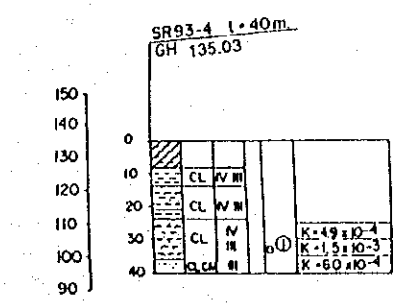
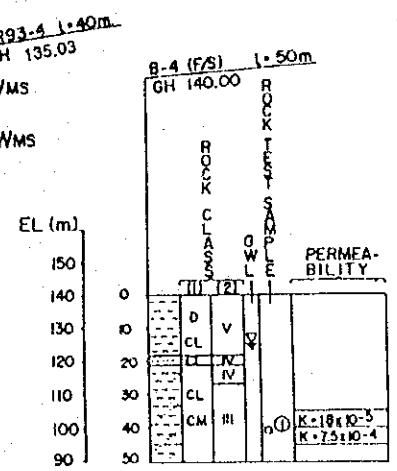
Figure 1.5.2(2/2)



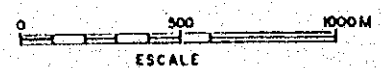
Los Cuayes
Poza Honda Reservoir

LEGEND				
SYMBOL	GEO - TIME FORMATION	ROCK TYPE	PROPERTIES	
AI	QUATERNARY	Alluvium	Soil with gravels	
Co		Colluvium	Fine soil with debris	
WMS	TERTIARY		Soil	
			Weathered S.S. and M.	Completely weathered. Loose and soft. Discoloured, fractured. Loose.
B	Barbon	Sandstone	Mainly sandstone. Massive rock.	
OSM	NEOGENE	Formation	Muddy Sandstone	Lithologically complex of fine sand B mud with shell fossils. Stratified partly approx. 1 cm. in interval. Massive rock.
Oss			Sandstone	
OMD	Onzole	Mudstone	Homogeneous layer with 0.5 m to 2m. in thickness. Massive rock.	

DISTANCE	ROCK TYPE	ROCK CLASSIFICATION	P-WAVE VELOCITY (Km/Sec)	ENGINEERING PROPERTIES
6000 - 9000	OSM Sandy Mudstone	CM III	2.5	Relatively well cemented Massive qu = 50 Es = 20,000 C = 5 φ = 40
9000 - 11500	OSM Sandy Mudstone	CM IV	2.0	Slightly Weathered Soft qu = 30 Es = 10,000 C = 2.5 φ = 35



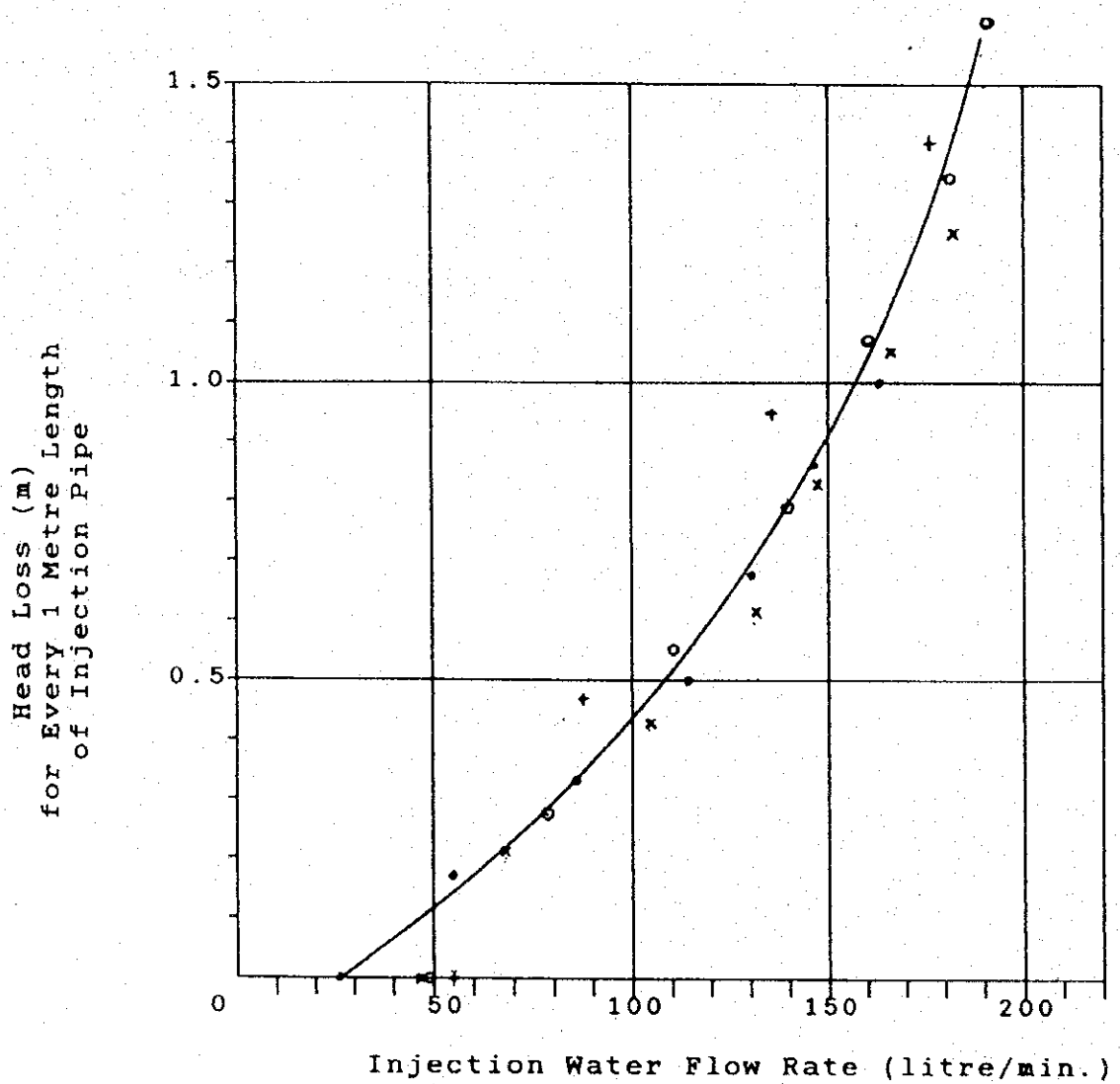
Note: (1) Japanese Standard, (2) Benckow's Classification
 qu : Uniaxial Compressive Strength (kg/cm²), C : Cohesion (kg/cm²)
 Es : Static Elastic Modulus (kg/cm²), φ : Internal Angle of Friction (degree)



REV. NO	REVISADO	APROBADO	FECHA

<p>CENTRO DE REHABILITACION DE MAMABI</p>	<p>Estudio de Diseño Detallado de los Traveses de Agua para los Cuencas de Los Rios Chano - Paracoto</p> <p>The Detailed Design Study on the Water Traverses Salinas de Chano - Paracoto River Basins</p>	<p>TITULO: PERFIL GEOLOGICO DEL TUNEL LA ESPERANZA-POZA HONDA (2/2) ENGINEERING GEOLOGICAL PROFILE OF LA ESPERANZA-POZA HONDA DIVERSION TUNNEL (2/2)</p>	LEVANTO:	APROBADO:
			DISEÑO:	FECHA:
REPUBLICA DEL ECUADOR		ENTREGO:	DIBUJO N°:	

Figure 1.5.3

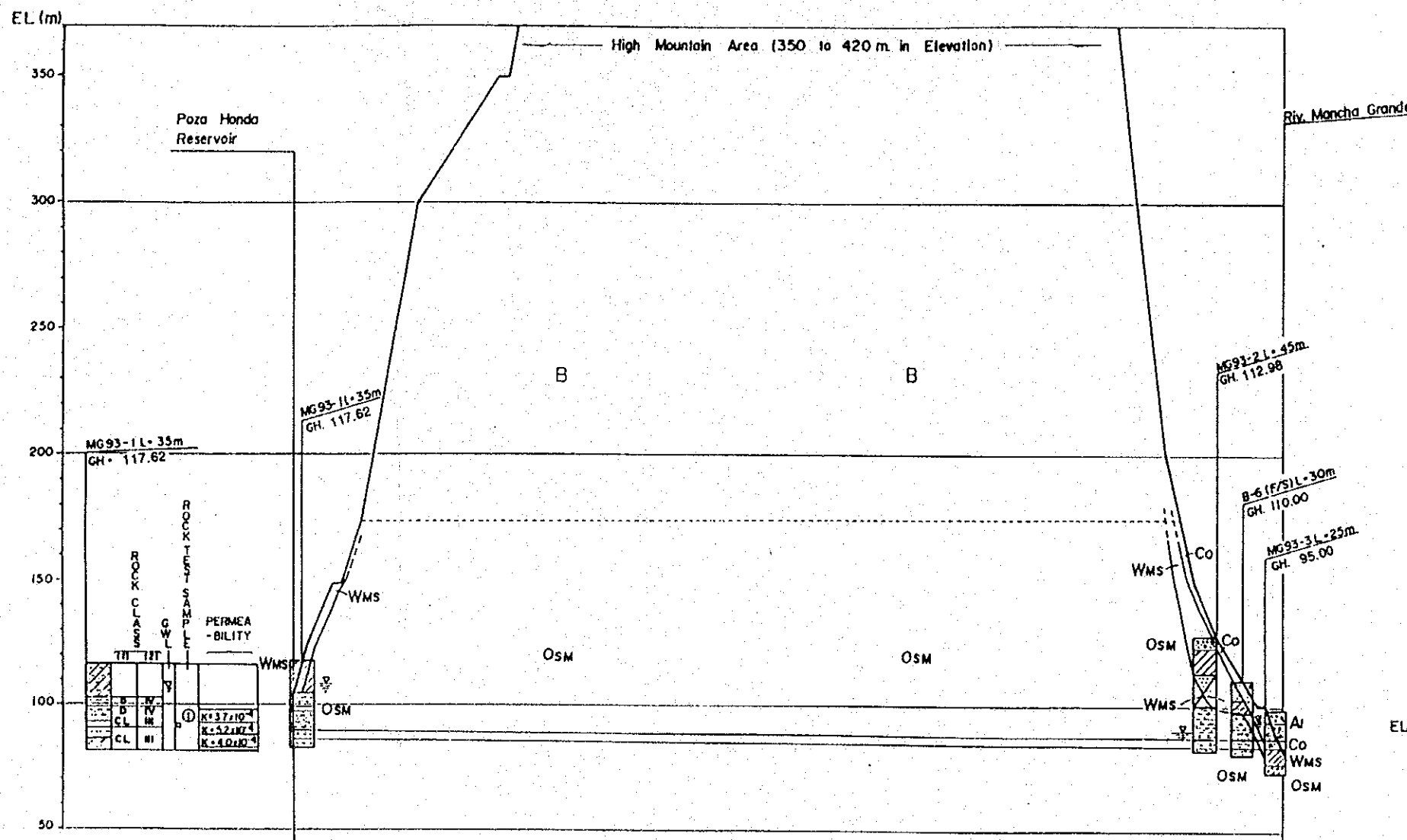


LEGEND Test with injection pipe length of:
 + 10.8m, o 18.9m, x 24.3m, • 30.0m.

GOVERNMENT OF THE REPUBLIC OF ECUADOR
 CENTRO DE REHABILITACION DE MANABI (CRM)
 THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN
 SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
 JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE
 FRICTION HEAD LOSS
 - WATER FLOW RATE GRAPH

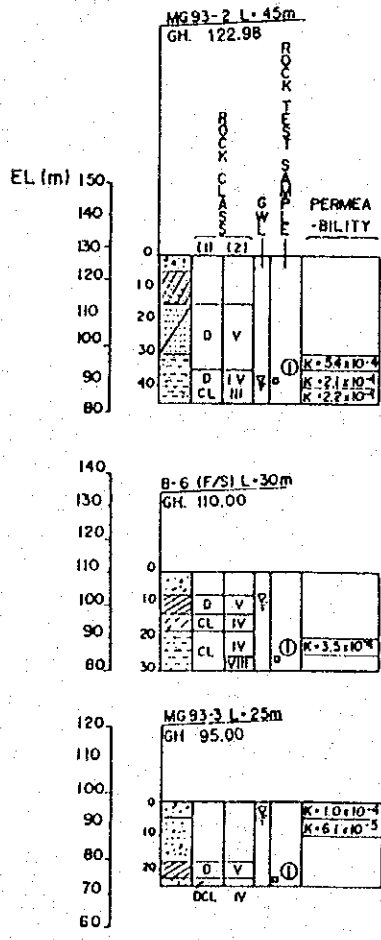
Figure 1.5.4



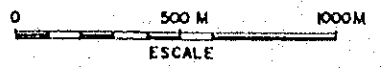
LEGEND

SYMBOL	GEO-TIME FORMATION	ROCK TYPE	PROPERTIES
AI	QUATERNARY	Alluvium	Soil with gravels
Co		Colluvium	Fine soil with debris
WMS	TERTIARY	Soil	Completely weathered. Loose and soft.
B		Weathered S.S. and Md	Discoloured, fractured. Loose.
OSM	NEOGENE	Sandstone	Mainly sandstone. Massive rock.
OSM		Muddy Sandstone	Lithologically complex of fine sand & mud with shell fossils. Stratified partly approx. 1 cm. in interval.
OSM		Sandy Mudstone	Massive rock.
OSS	Onzele	Sandstone	Mainly fine grain. Interbedding thin coarse sandstone or conglomerate. Massive rock.
OMD		Mudstone	Homogeneous layer with 0.5 m. to 2m. in thickness. Massive rock.

ROCK TYPE	OSM Sandy Mudstone		OSM Sandy Mudstone		OSM Sandy Mudstone	
	ROCK CLASSIFICATION	(1) CL	(2) III-IV	CM	III	CL-D
P-Wave VELOCITY (Km/sec)	2.0		2.5		2.0	2.2
ENGINEERING PROPERTIES	Soil qu = 30 Es = 10,000 C = 2.0 φ = 30		Moderately cemented Massive qu = 30 Es = 12,000 - 15,000 C = 5 φ = 40		Slightly weathered Soil qu = 30 Es = 10,000 C = 2.0 φ = 30	



Note (1) Japanese Standard, (2) Benlawshi's Classification. qu: Uniaxial Compressive Strength (kg/cm²) C: Cohesion (kg/cm²) Es: Static Elastic Modulus (kg/cm²) φ: Internal Angle of Friction (degree)



REV. Nº	REVISADO	APROBADO	FECHA

CRM
CENTRO DE REHABILITACION DE MANABI

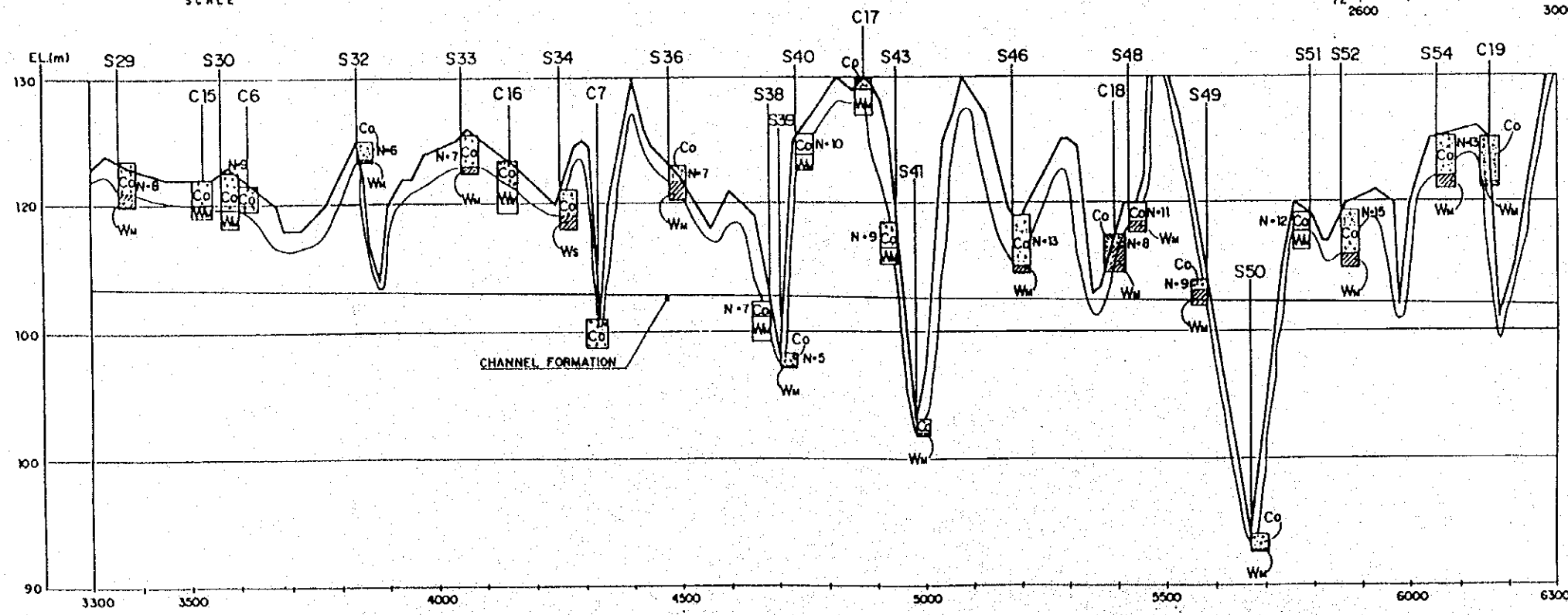
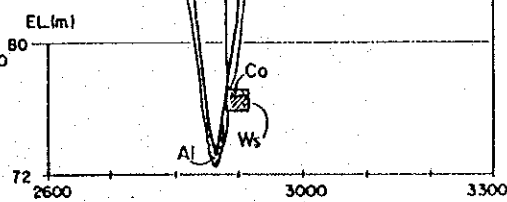
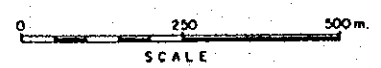
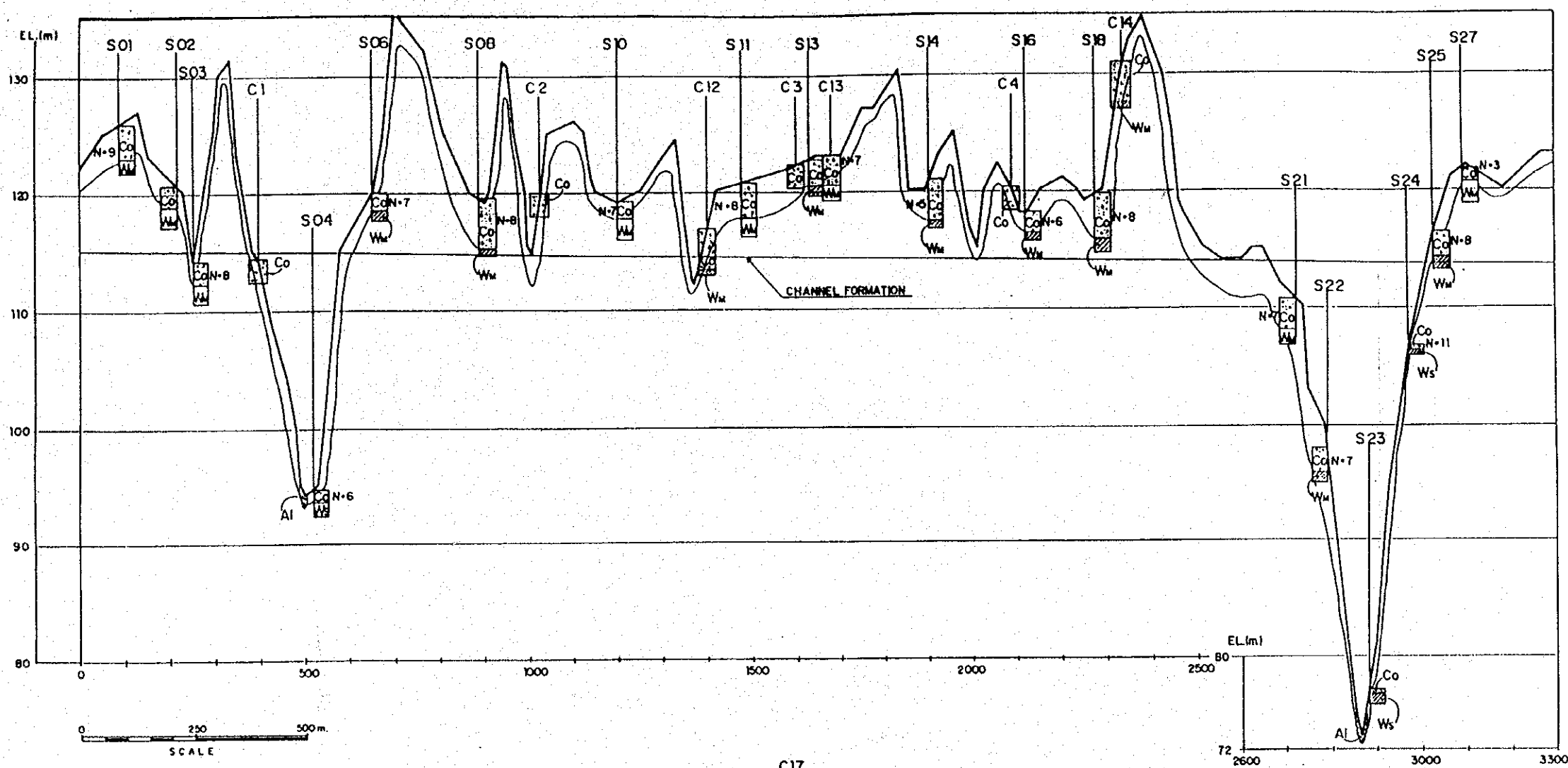
Estudio de Diseño Detallado de los Tramos de Agua para las Canchales de Los Rios Chona - Portoviejo
The Detailed Design Study on the Water Transfer Schemes for Chona - Portoviejo River Basins

REPUBLICA DEL ECUADOR

TITULO:
PERFIL GEOLOGICO DEL TUNEL POZA HONDA-MANCHA GRANDE
ENGINEERING GEOLOGICAL PROFILE OF POZA HONDA-MANCHA GRANDE DIVERSION TUNNEL

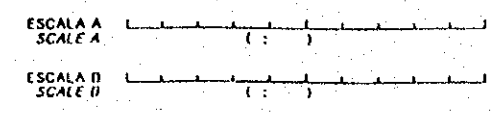
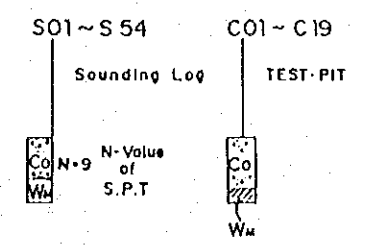
LEVANTO:	APROBADO:
DIBUJO:	FECHA:
DISENO:	DIBUJO Nº
REVISO:	
ENTREGO:	
FECHA:	

Figure 1.5.5



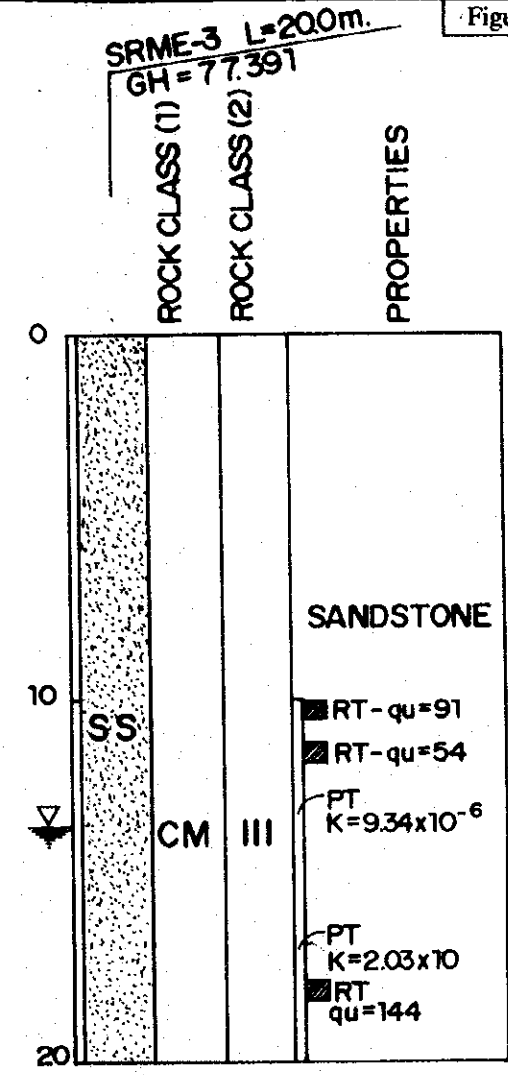
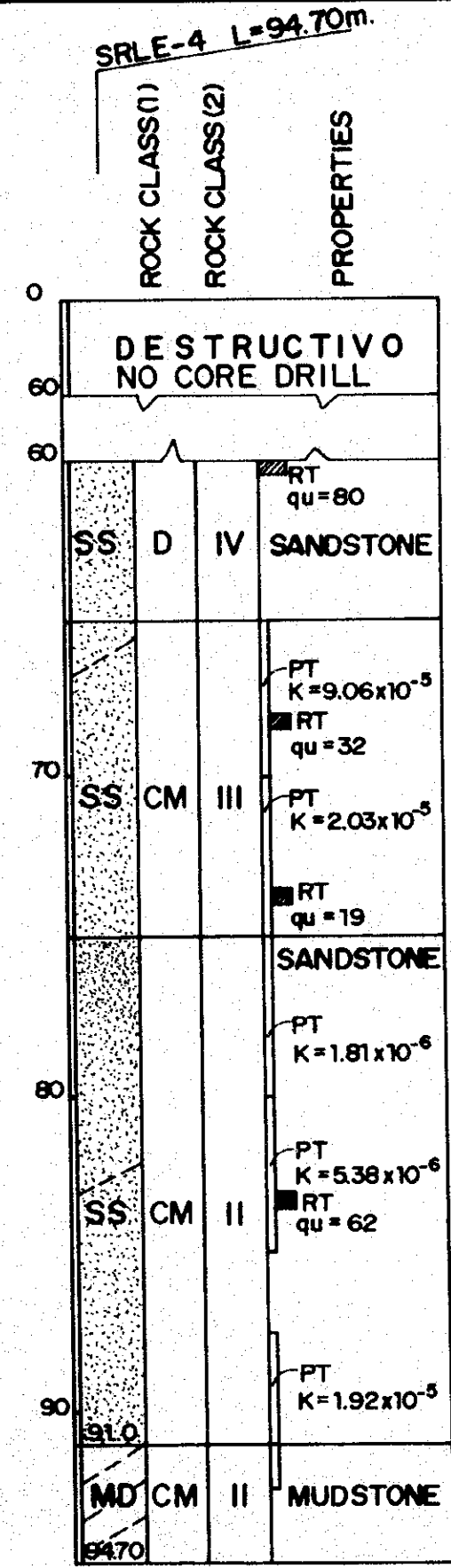
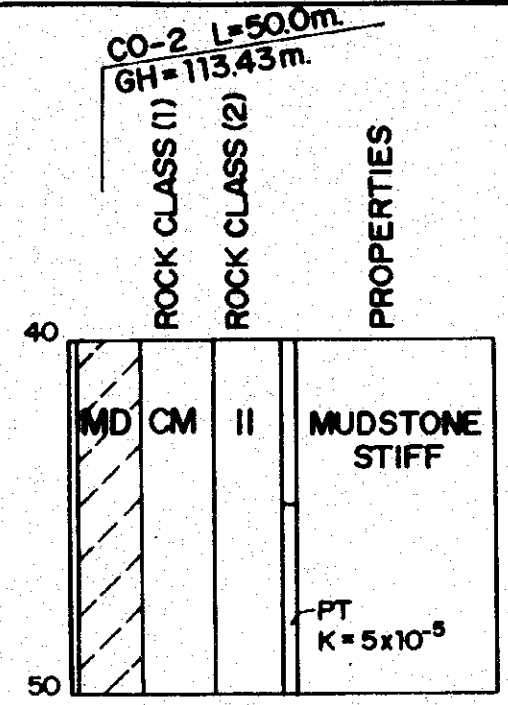
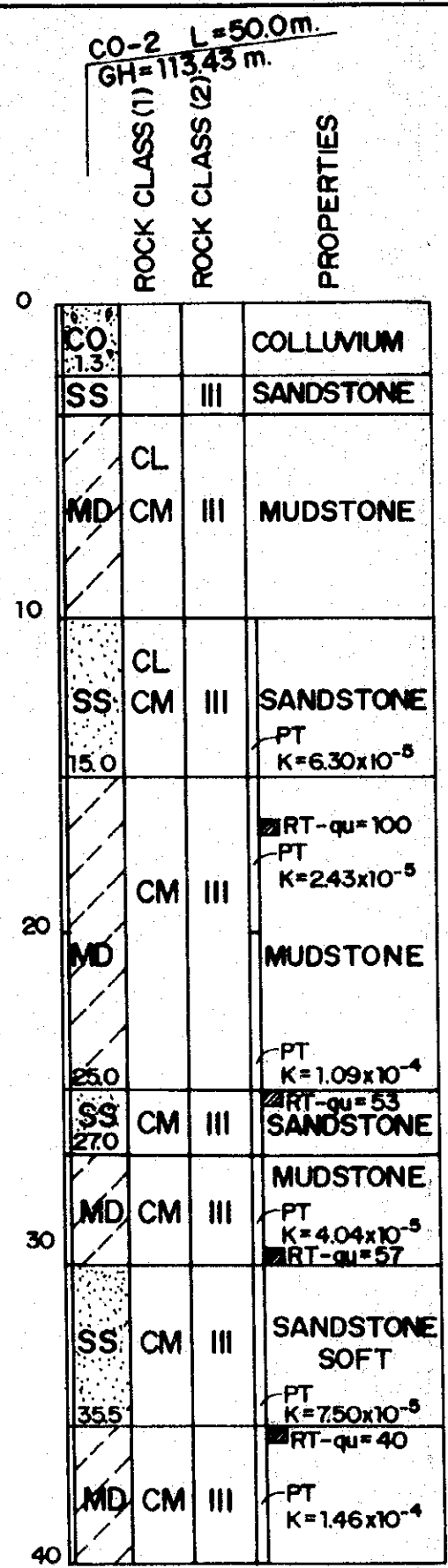
LEGEND

Al	Alluvium	Clayey soil and gravels	River deposit
Co	Colluvium	Clayey soil and debris	Secondary deposit Transported soil
Wm Ws	Onzole Formation	Weathered Rock	Complex of sandy mudstone or muddy sandstone. Decomposed into fragments and soil



REV. Nº	REVISADO	APROBADO	FECHA	<p>CPRM CENTRO DE REHABILITACION DE MANABI</p>	<p>Estudio de Diseño Detallado de los Tramos de Agua para los Cuenas de Los Rios Choro - Partevieja The Detailed Design Study on the Water Traverses Schemas for Choro - Partevieja River Basins</p>	<p>TITULO: PERFIL GEOLOGICO DEL CANAL ABIERTO SEVERINO ENGINEERING GEOLOGICAL PROFILE OF SEVERINO OPEN CHANNEL</p>	LEVANTO:	APROBADO:
							DISEÑO:	FECHA:
							REVISO:	
							ENTREGO:	
							FECHA:	

Figure 1.5.6



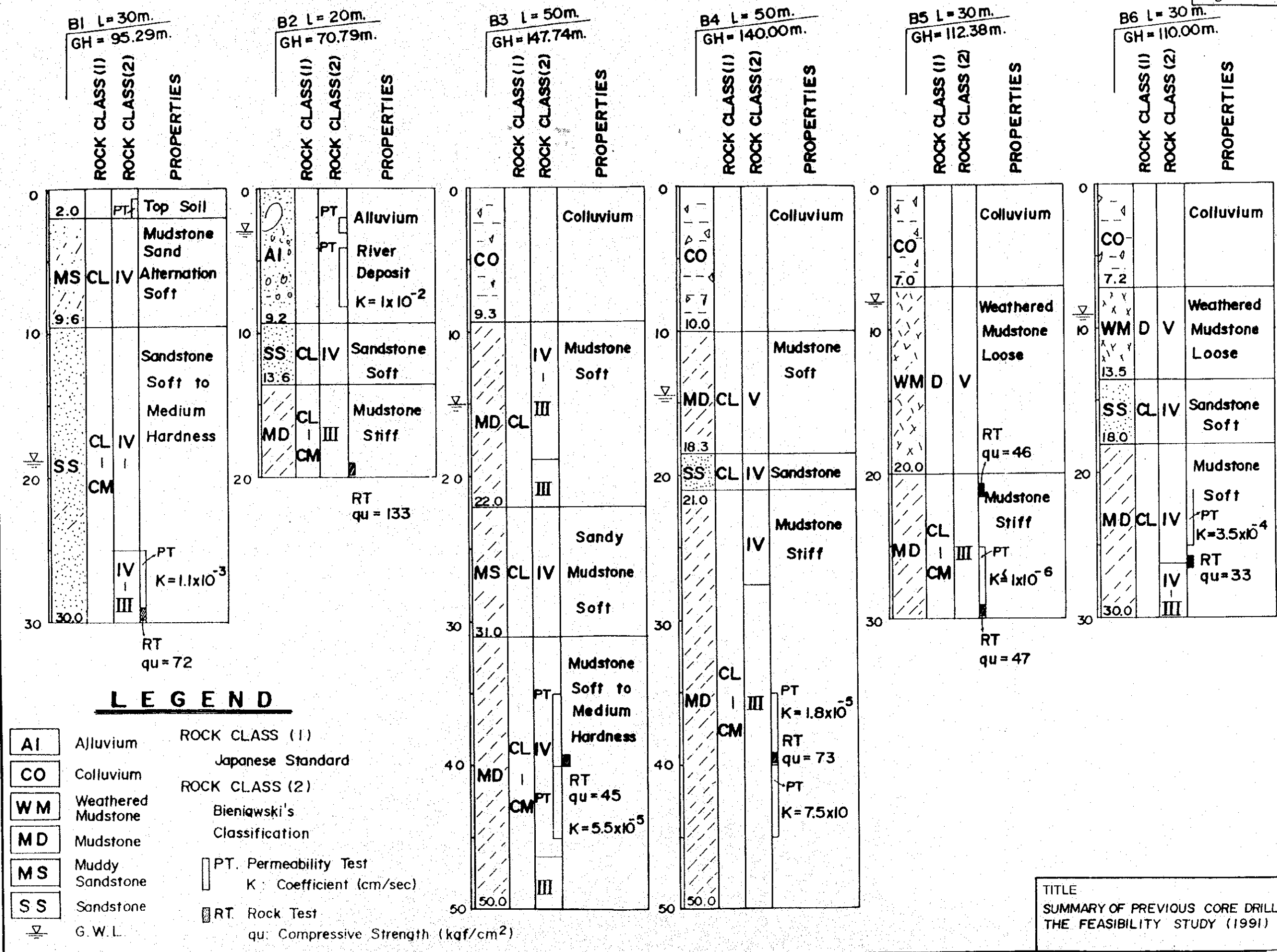
LEGEND

AI	Alluvium	ROCK CLASS (1)
CO	Colluvium	Japanese Standard
WM	Weathered Mudstone	ROCK CLASS (2)
MD	Mudstone	Bieniawski's Classification
MS	Muddy Sandstone	PT. Permeability Test
SS	Sandstone	K: Coefficient (cm/sec)
▽	G.W.L.	RT. Rock Test
		qu: Compressive Strength (kgf/cm ²)

GOVERNMENT OF THE REPUBLIC OF ECUADOR
CENTRO DE REHABILITACION DE MANABI (CRM)
THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN
SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE
SUMMARY OF PREVIOUS CORE DRILLING OF
DAULE PERIPA - LA ESPERANZA.
DIVERSION TUNNEL (1986)

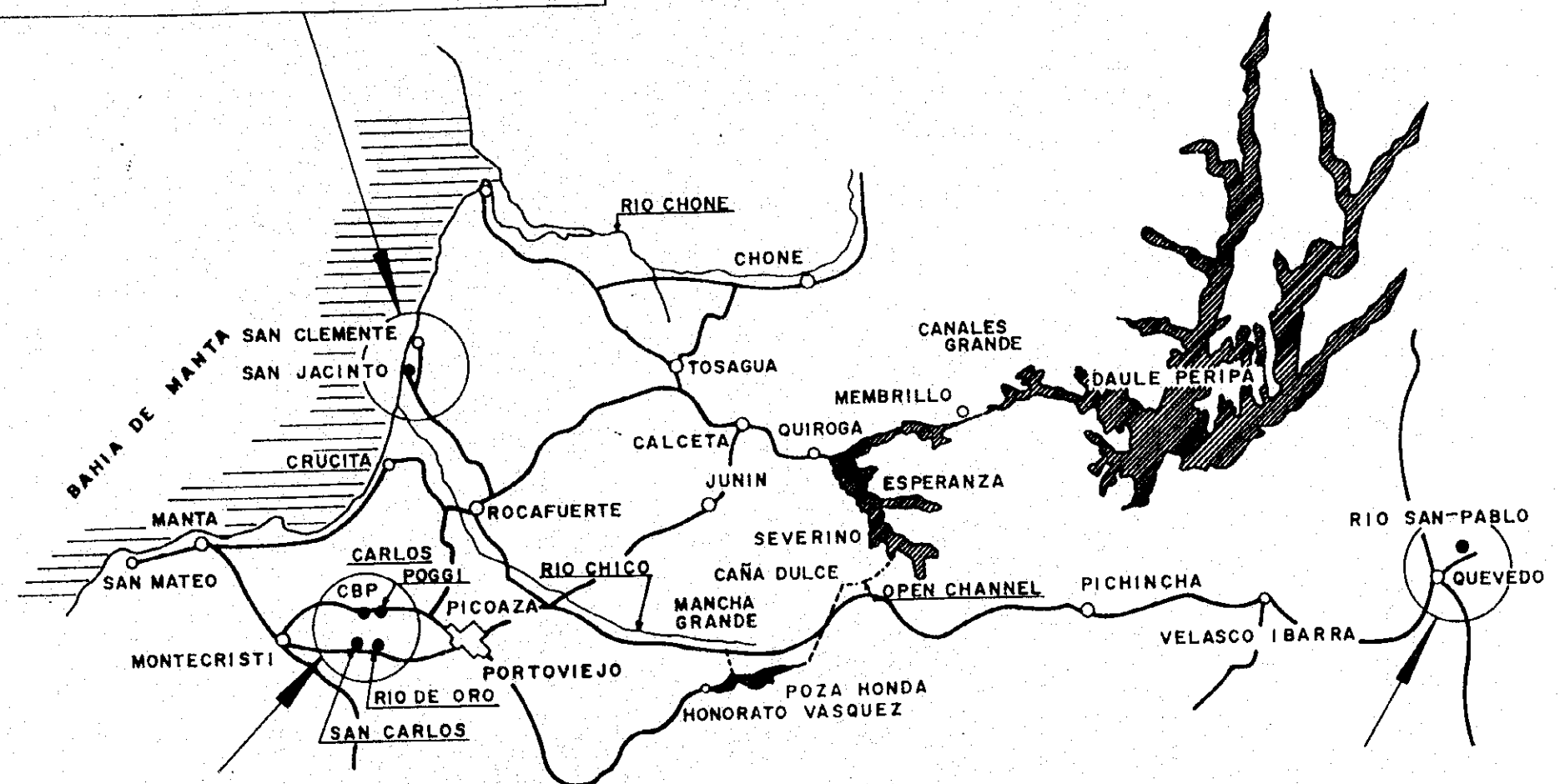
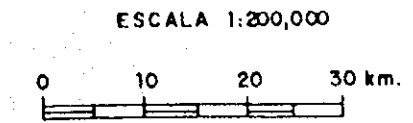
Figure 1.5.7.



TITLE
 SUMMARY OF PREVIOUS CORE DRILLING FOR
 THE FEASIBILITY STUDY (1991)

FIGURE 2.3.1

From	To	via	Km
San Jacinto	Poza Honda Inlet	Portoviejo	95
	Poza Honda Outlet	Portoviejo	108
(Sea Sand)	Mancha Grande Outlet	Rocafuerte	63
	Membrillo Outlet	Calceta	118
	Canales Grande Inlet	Calceta	132
	Severino Pump station	R. fuerte/Delicias	126
	Open Channel	R. fuerte/Delicias	121



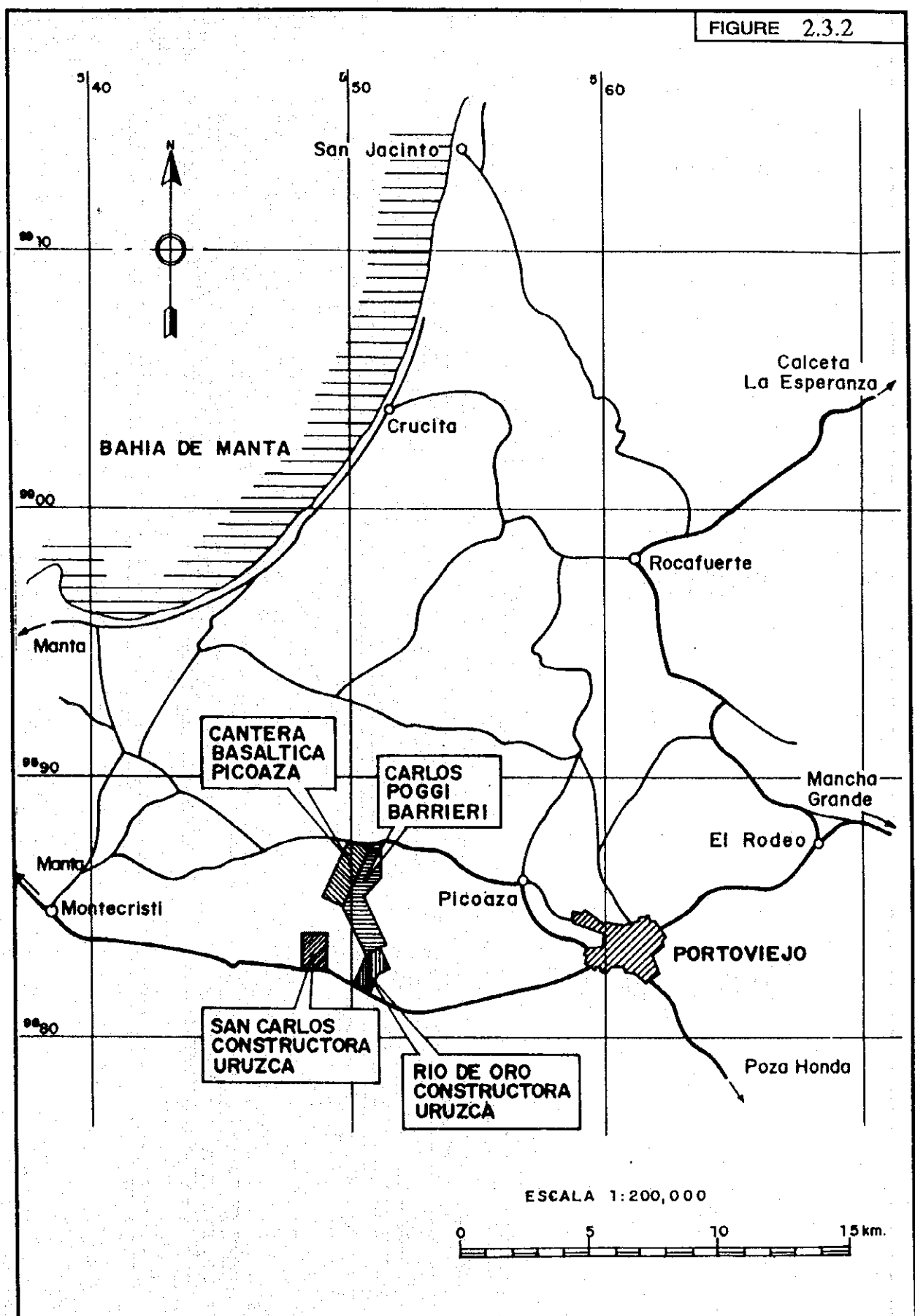
From	To	via	Km
CBP/C. Poggi	Poza Honda Inlet	Portoviejo	72
S. Carlos	Poza Honda Outlet	Portoviejo	59
	Mancha Grande Outlet	Rodeo	47
(Quarry)	Membrillo Outlet	R. fuerte/Calceta	104
	Canales Grande Inlet	R. fuerte/Calceta	107
	Severino P. Station	Rodeo/Delicias	79
	Open Channel	Rodeo/Delicias	74

From	To	via	Km
Quevedo	Poza Honda Inlet	Portoviejo	185
R.S. Pablo	Poza Honda Outlet	Portoviejo	193
	Mancha Grande Outlet	Pichincha	110
(River Sand)	Membrillo Outlet	Rocafuerte/Calceta	223
	Canales Grande Inlet	Rocafuerte/Calceta	237
	Severino Pump station	Delicias	95
	Open Channel	Delicias	100

GOVERNMENT OF THE REPUBLIC OF ECUADOR
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 SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
 JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE
 TRANSPORT DISTANCE FOR
 CONCRETE AGGREGATE

FIGURE 2.3.2

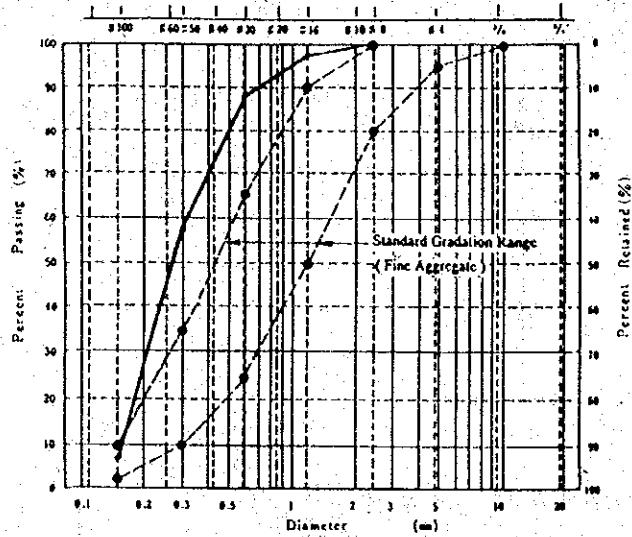


GOVERNMENT OF THE REPUBLIC OF ECUADOR
 CENTRO DE REHABILITACION DE MANABI (CRM)
 THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN
 SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
 JAPAN INTERNATIONAL COOPERATION AGENCY

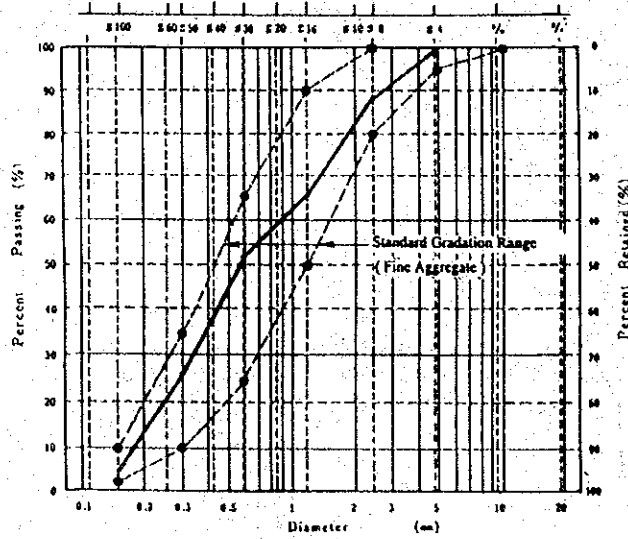
TITLE
 Location Map for
 Picoaza Quarry Sites

FIGURE 2.3.3

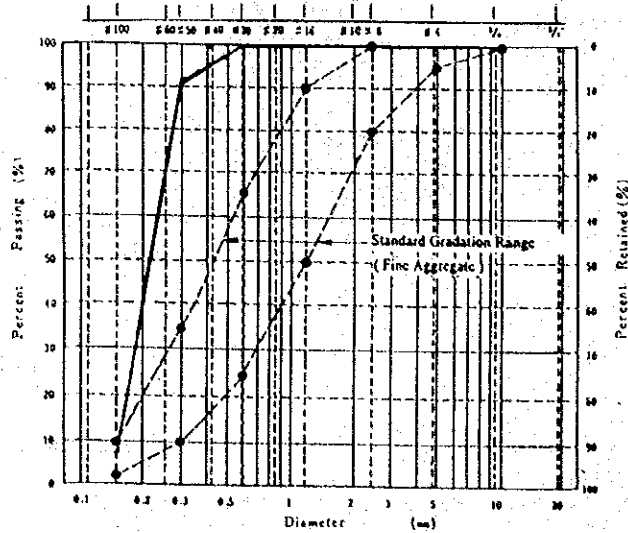
QEVEDO SAND



PICOAZA SAND



SAN JACINTO SAND

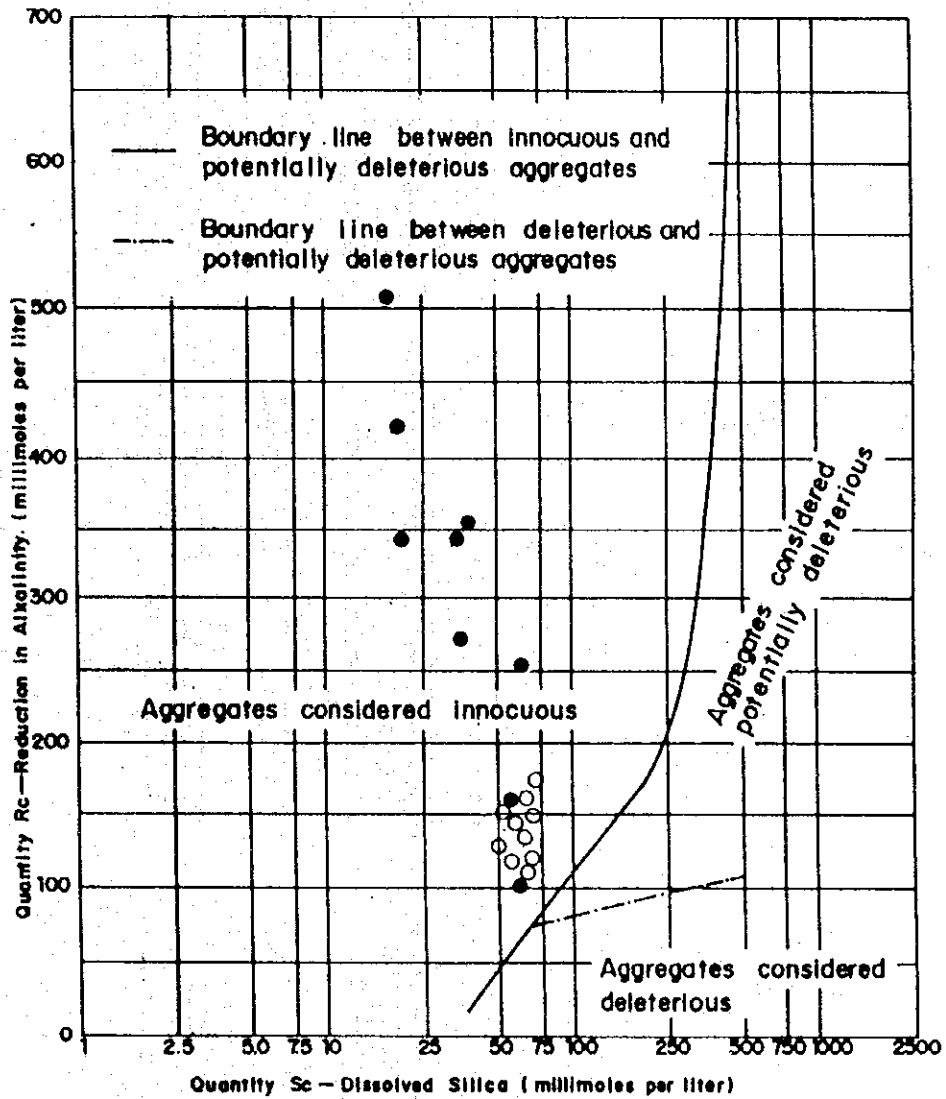


GOVERNMENT OF THE REPUBLIC OF ECUADOR
 CENTRO DE REHABILITACION DE MANABI (CRM)
 THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN
 SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS

JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE
 SIEVE ANALYSIS
 FINE AGGREGATE

FIGURE 2.3.4

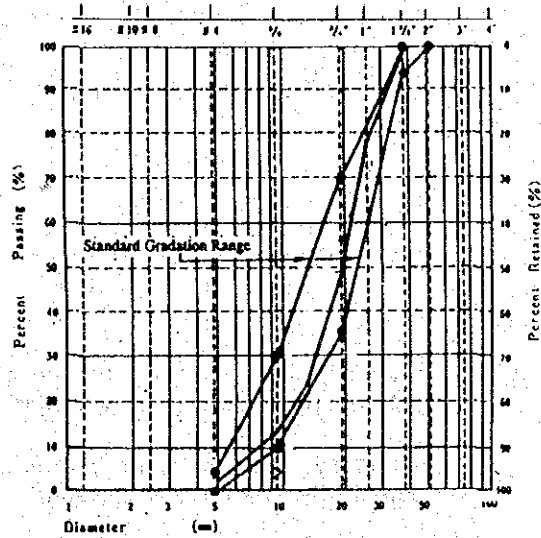


GOVERNMENT OF THE REPUBLIC OF ECUADOR
 CENTRO DE REHABILITACION DE MANABI (CRM)
 THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN
 SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
 JAPAN INTERNATIONAL COOPERATION AGENCY

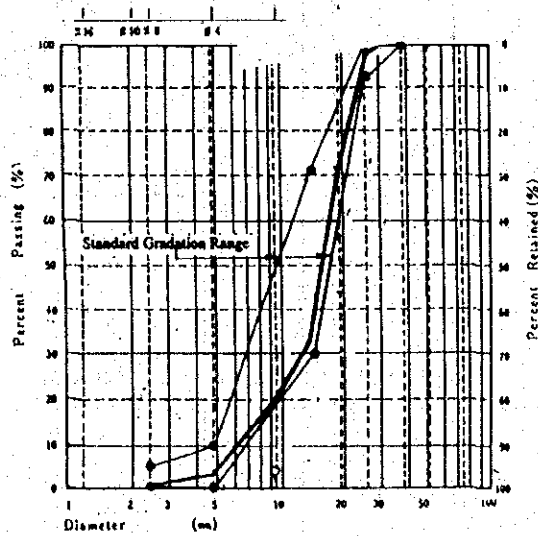
TITLE
 DIV Alkali Reactivity
 DE1 Test Results
 OF

FIGURE 2.3.5

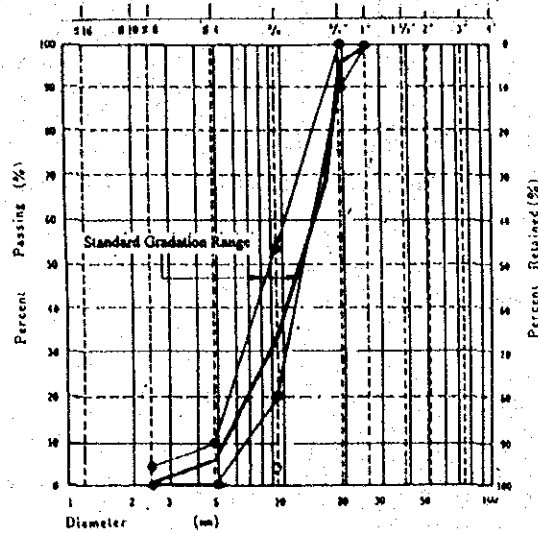
40 - 5 mm GRAVEL



25 - 5 mm GRAVEL



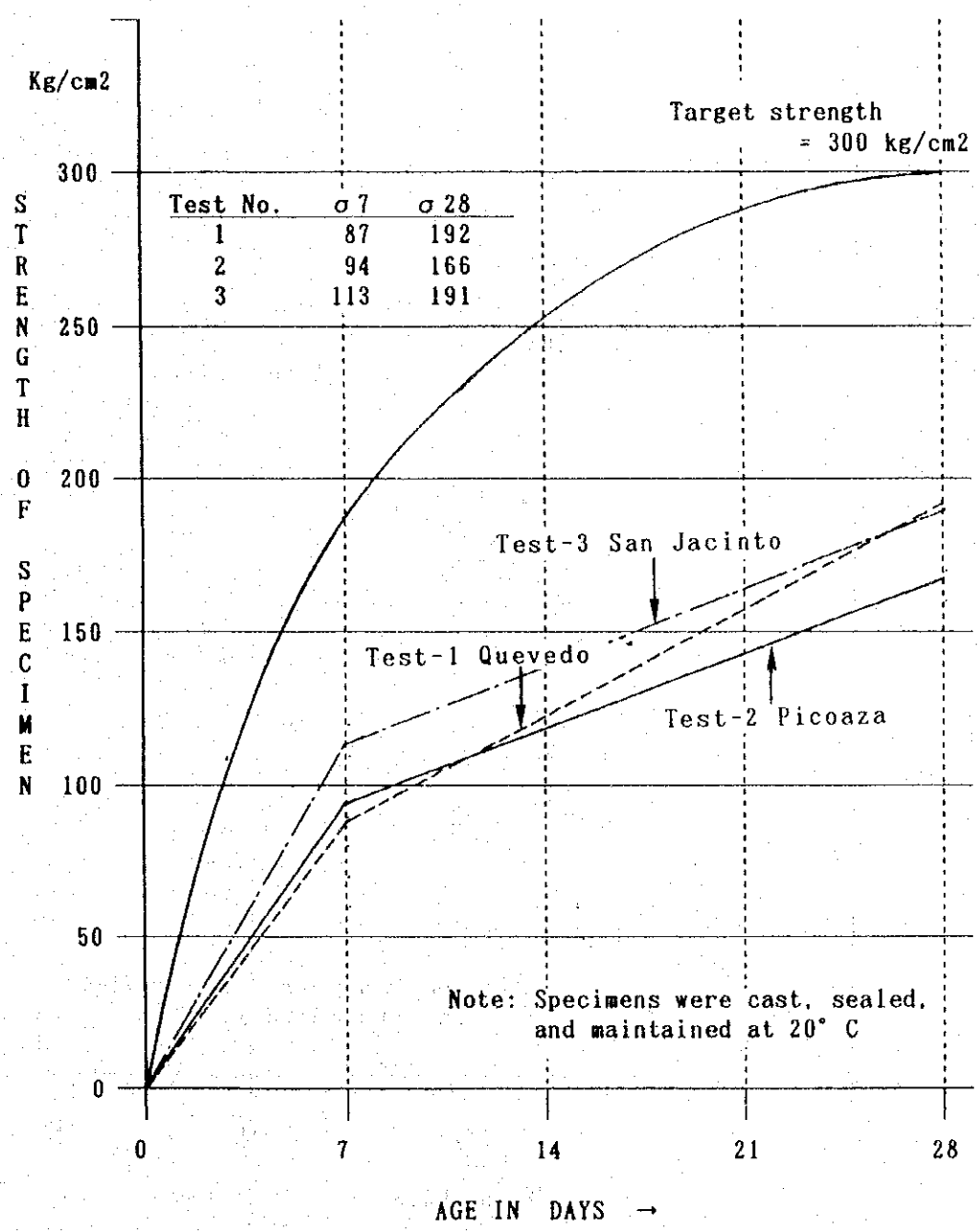
20 - 5 mm GRAVEL



GOVERNMENT OF THE REPUBLIC OF ECUADOR
 CENTRO DE REHABILITACION DE MANABI (CRM)
 THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN
 SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
 JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE
 SIEVE ANALYSIS
 COARSE AGGREGATE

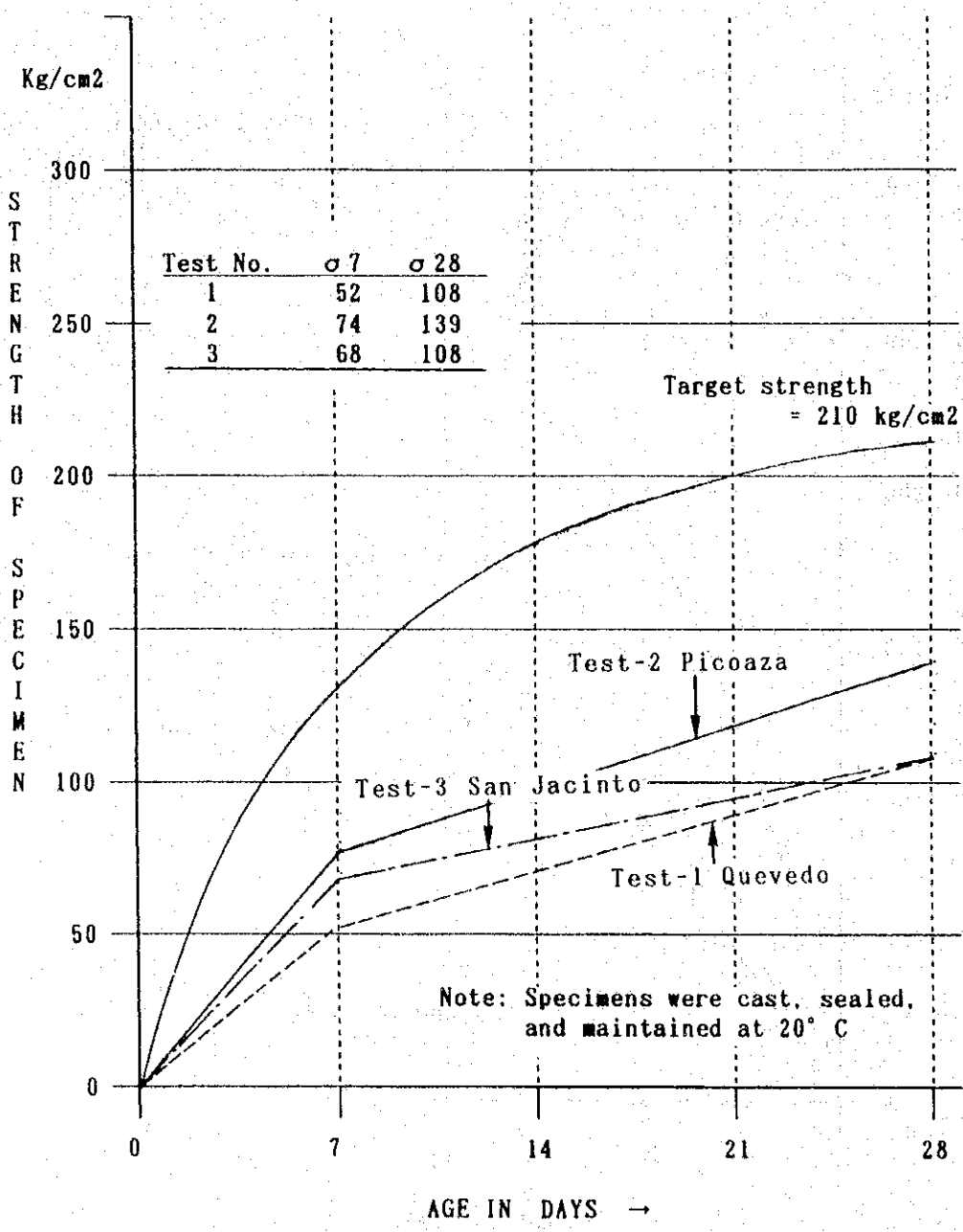
Type A-1 Concrete



GOVERNMENT OF THE REPUBLIC OF ECUADOR
 CENTRO DE REHABILITACION DE MANABI (CRM)
 THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN
 SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
 JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE
 STRENGTH OF CONCRETE - AGE IN DAYS
 FOR TYPE - A1

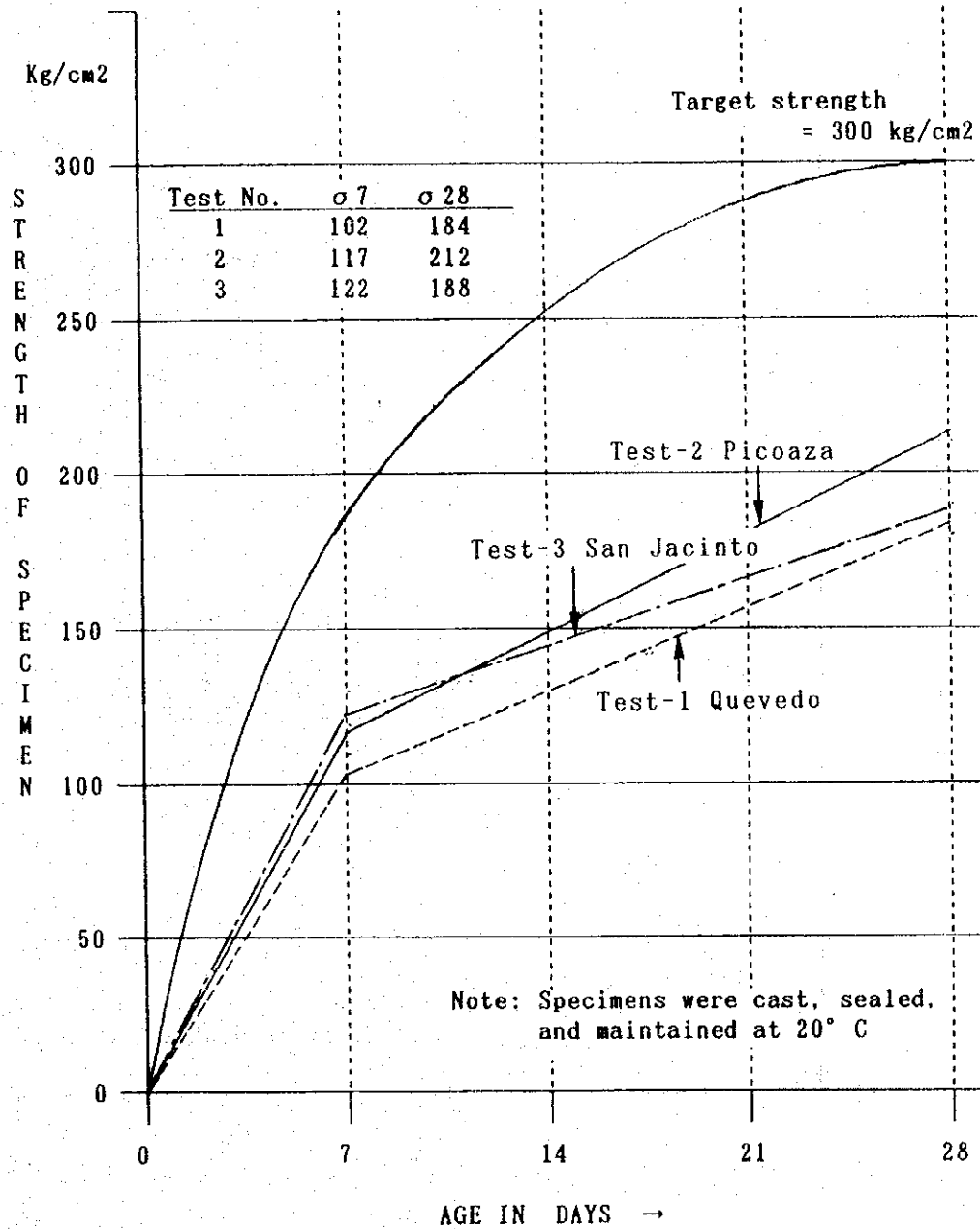
Type A-2 Concrete



GOVERNMENT OF THE REPUBLIC OF ECUADOR
 CENTRO DE REHABILITACION DE MANABI (CRM)
 THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN
 SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
 JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE
 STRENGTH OF CONCRETE - AGE IN DAYS
 FOR TYPE - A2

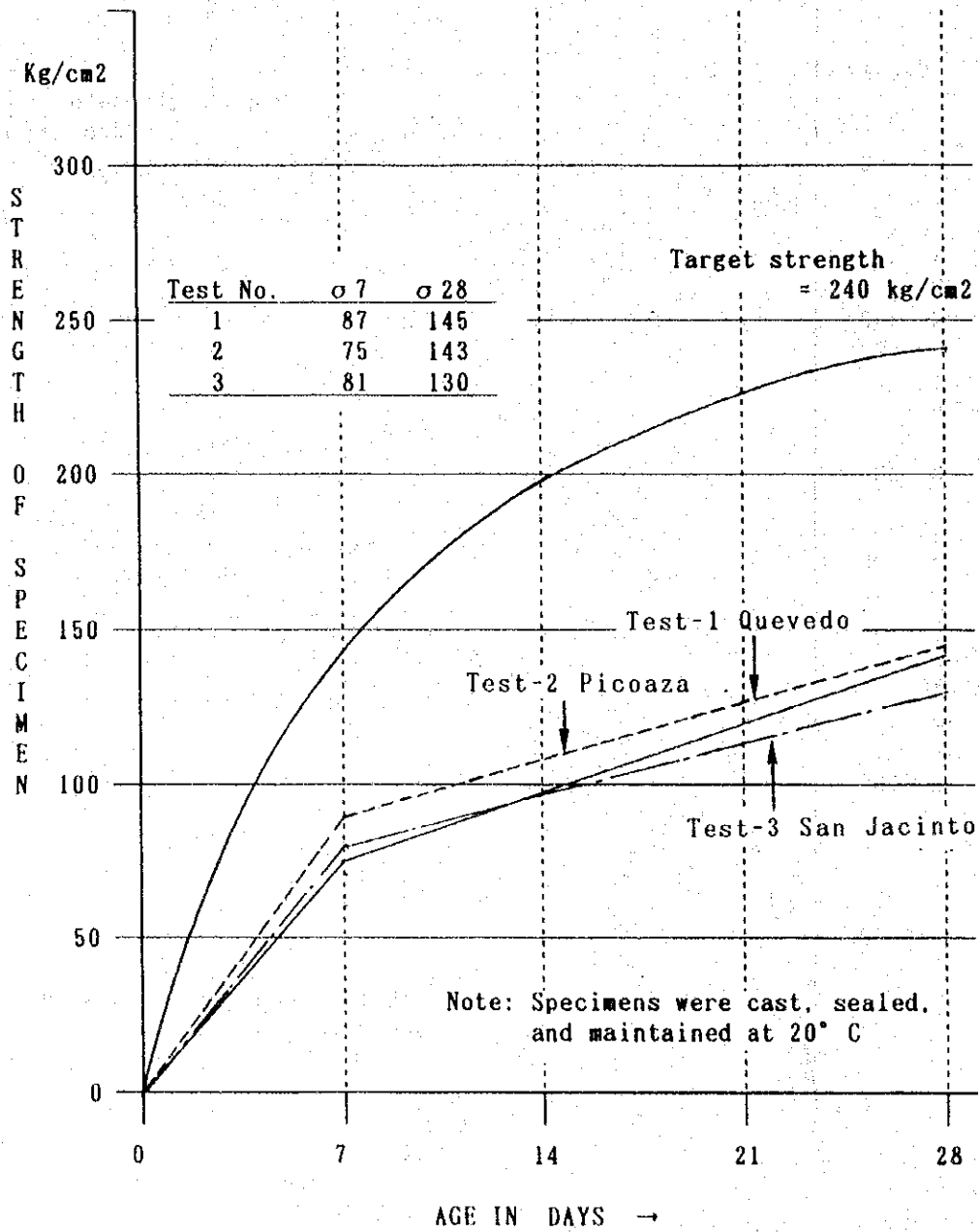
Type B-1 Concrete



GOVERNMENT OF THE REPUBLIC OF ECUADOR
 CENTRO DE REHABILITACION DE MANABI (CRM)
 THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN
 SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
 JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE
 STRENGTH OF CONCRETE - AGE IN DAYS
 FOR TYPE - B1

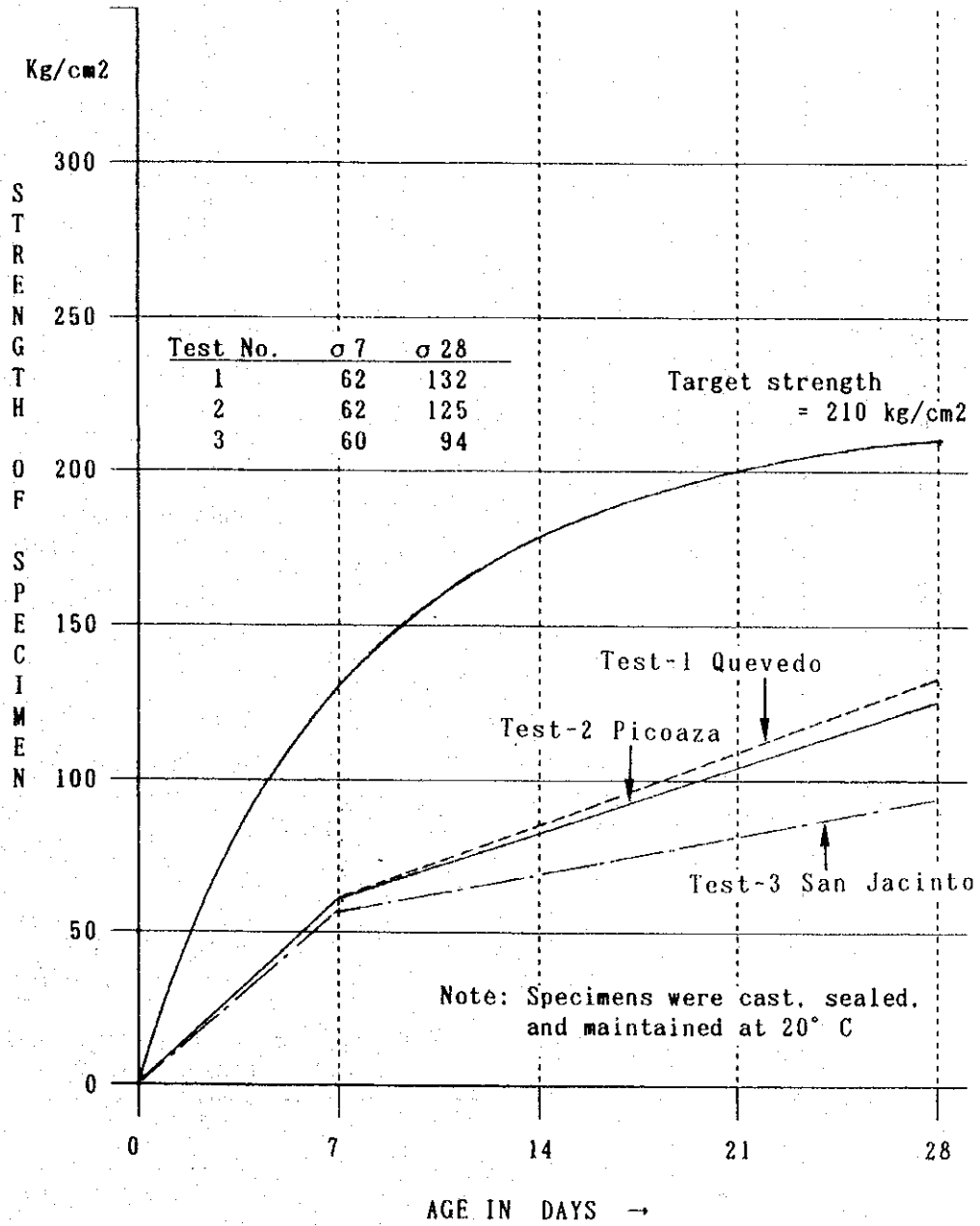
Type B-2 Concrete



GOVERNMENT OF THE REPUBLIC OF ECUADOR
 CENTRO DE REHABILITACION DE MANABI (CRM)
 THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN
 SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
 JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE
 STRENGTH OF CONCRETE - AGE IN DAYS
 FOR TYPE - B2

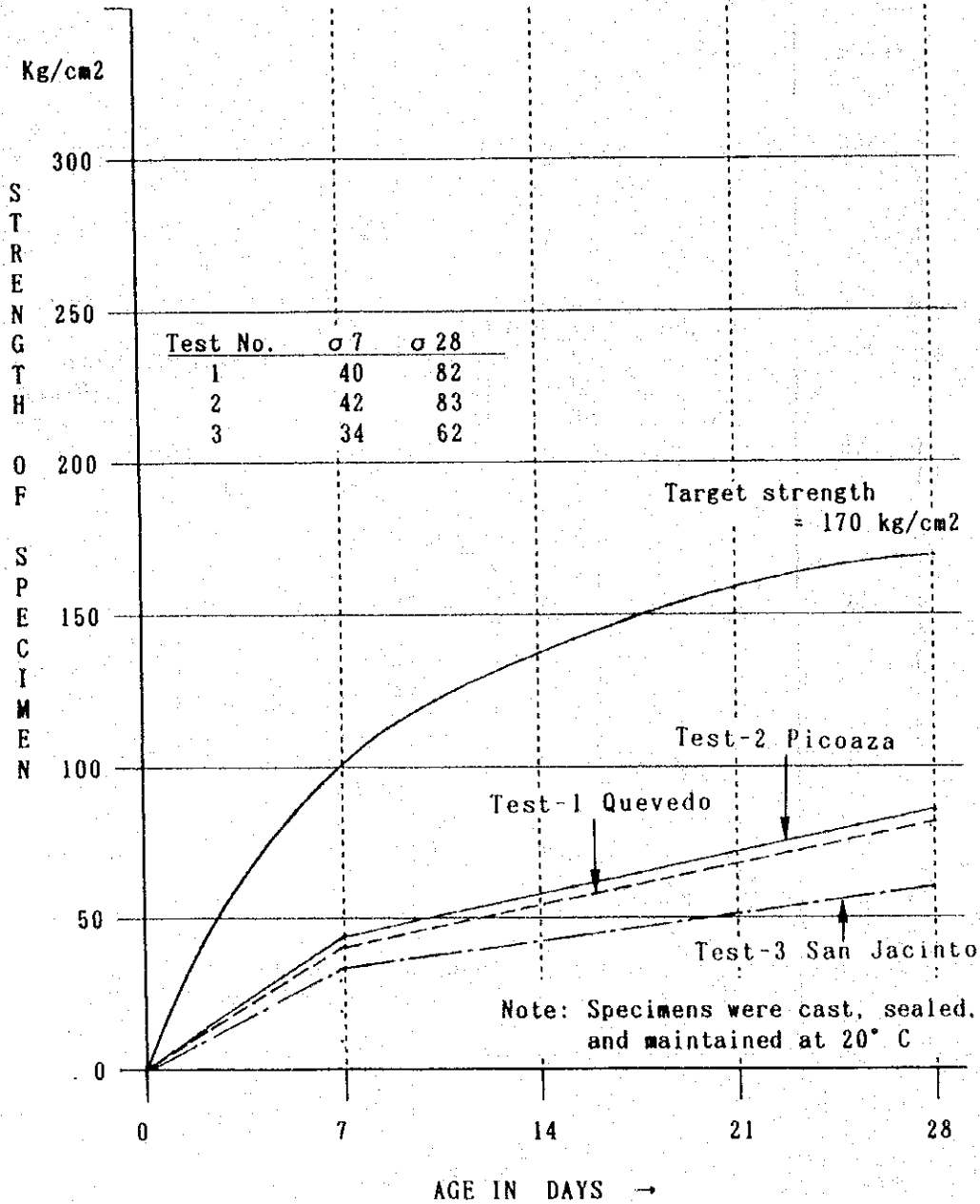
Type B-3 Concrete



GOVERNMENT OF THE REPUBLIC OF ECUADOR
 CENTRO DE REHABILITACION DE MANABI (CRM)
 THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN
 SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
 JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE
 STRENGTH OF CONCRETE - AGE IN DAYS
 FOR TYPE - B3

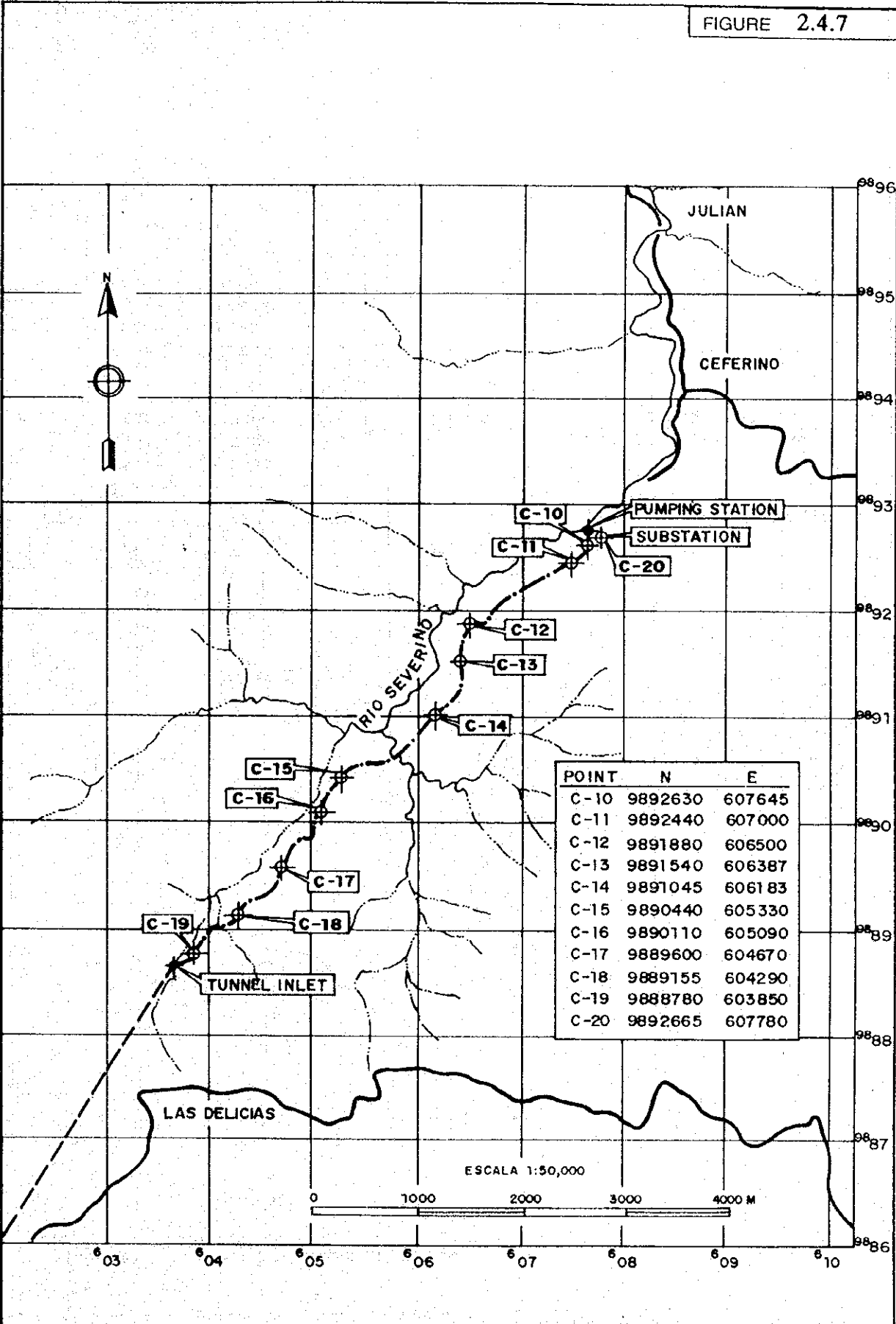
Type B-4 Concrete



GOVERNMENT OF THE REPUBLIC OF ECUADOR
 CENTRO DE REHABILITACION DE MANABI (CRM)
 THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN
 SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
 JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE
 STRENGTH OF CONCRETE - AGE IN DAYS
 FOR TYPE - B4

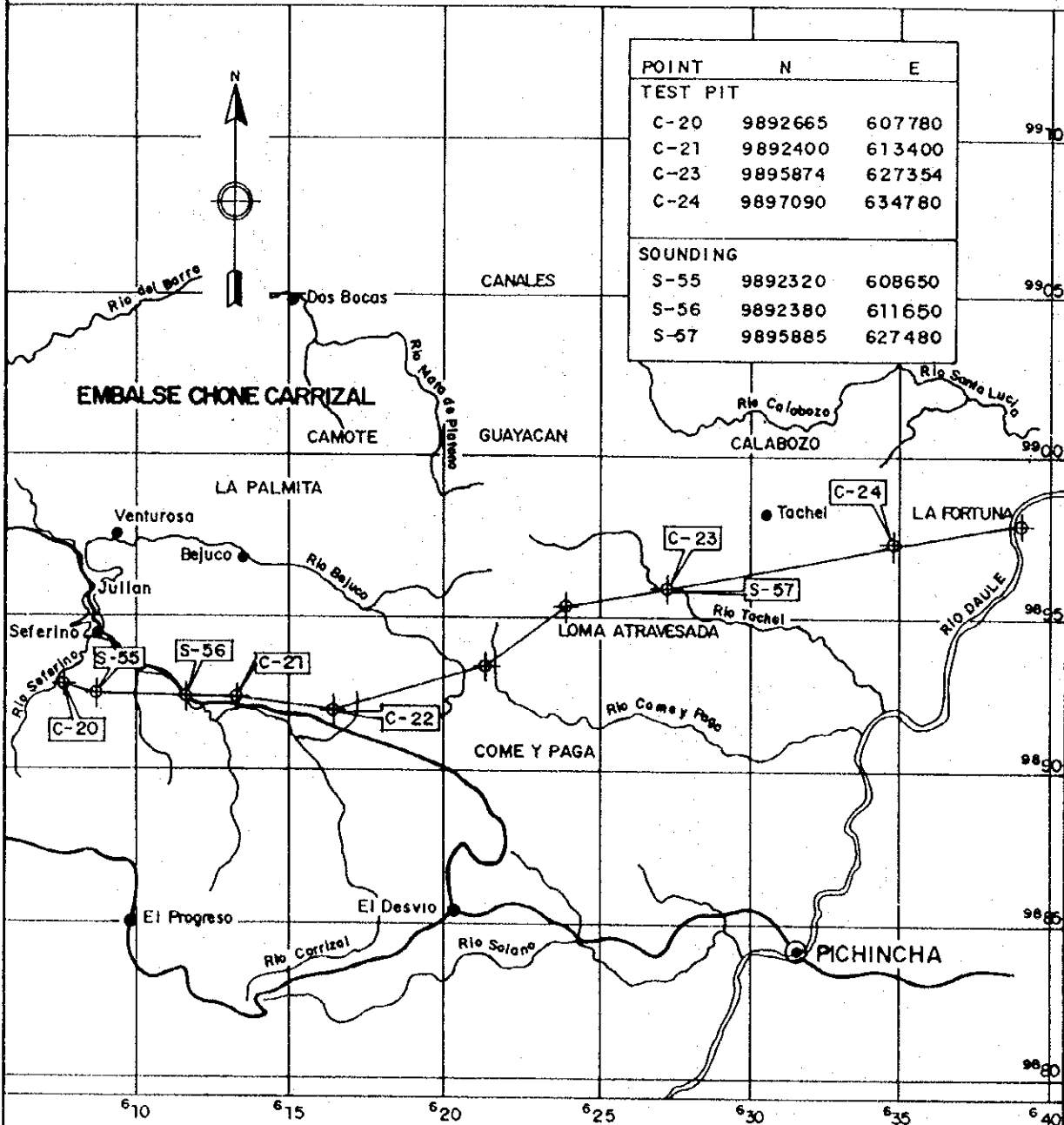
FIGURE 2.4.7



GOVERNMENT OF THE REPUBLIC OF ECUADOR
 CENTRO DE REHABILITACION DE MANABI (CRM)
 THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN
 SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
 JAPAN INTERNATIONAL COOPERATION AGENCY

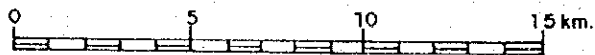
TITLE
 Location Map of Test Pits
 along Severino Pumping Station

FIGURE 2.4.8



POINT	N	E
TEST PIT		
C-20	9892665	607780
C-21	9892400	613400
C-23	9895874	627354
C-24	9897090	634780
SOUNDING		
S-55	9892320	608650
S-56	9892380	611650
S-57	9895885	627480

ESCALA 1:200,000



GOVERNMENT OF THE REPUBLIC OF ECUADOR
 CENTRO DE REHABILITACION DE MANABI (CRM)
 THE DETAILED DESIGN STUDY ON THE WATER TRANSBASIN
 SCHEMES FOR CHONE-PORTOVIEJO RIVER BASINS
 JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE

Location Map of Test Pits
 along Transmission Line