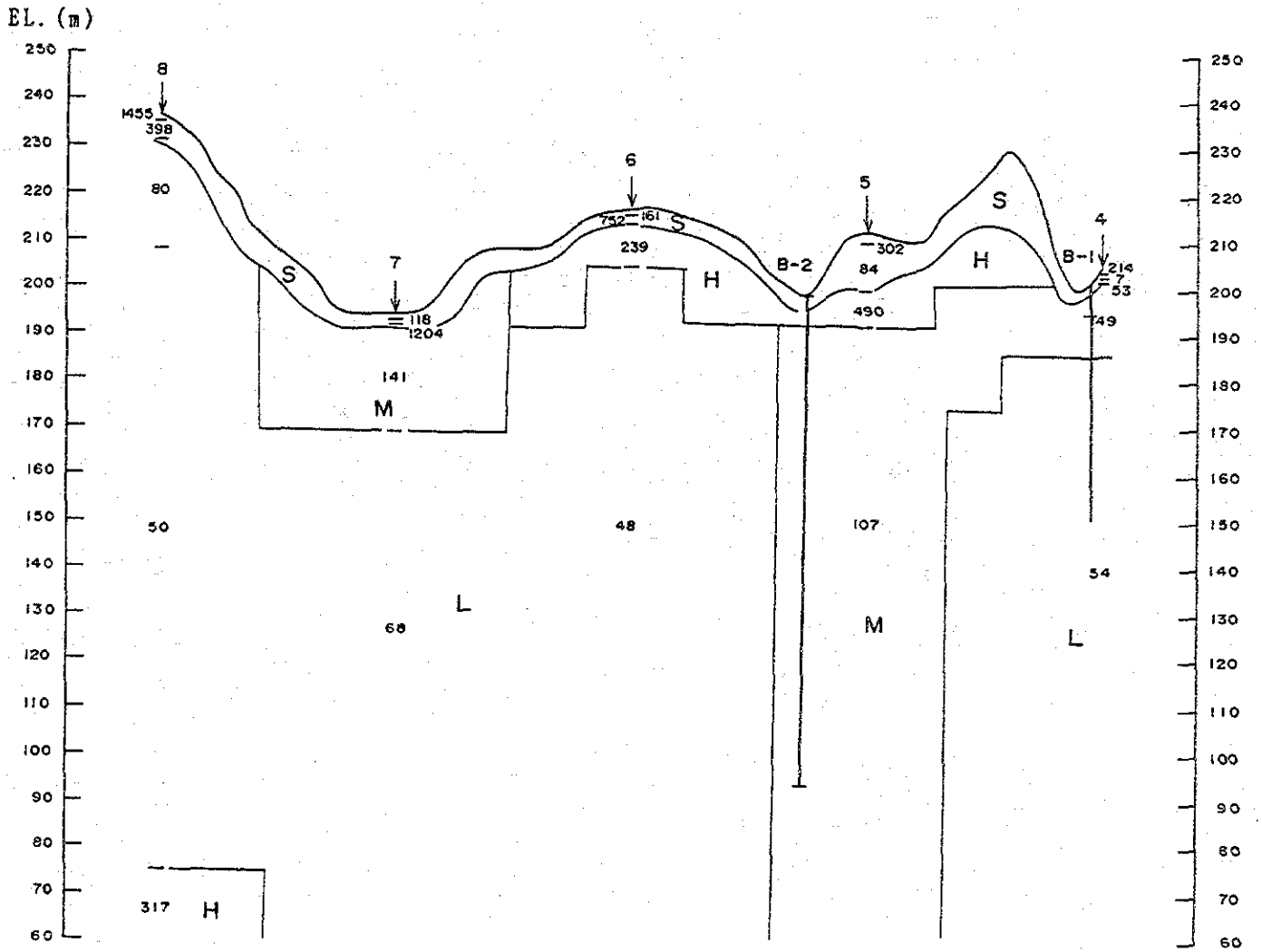


Fig.5-3-1 Resisitivity Cross Section

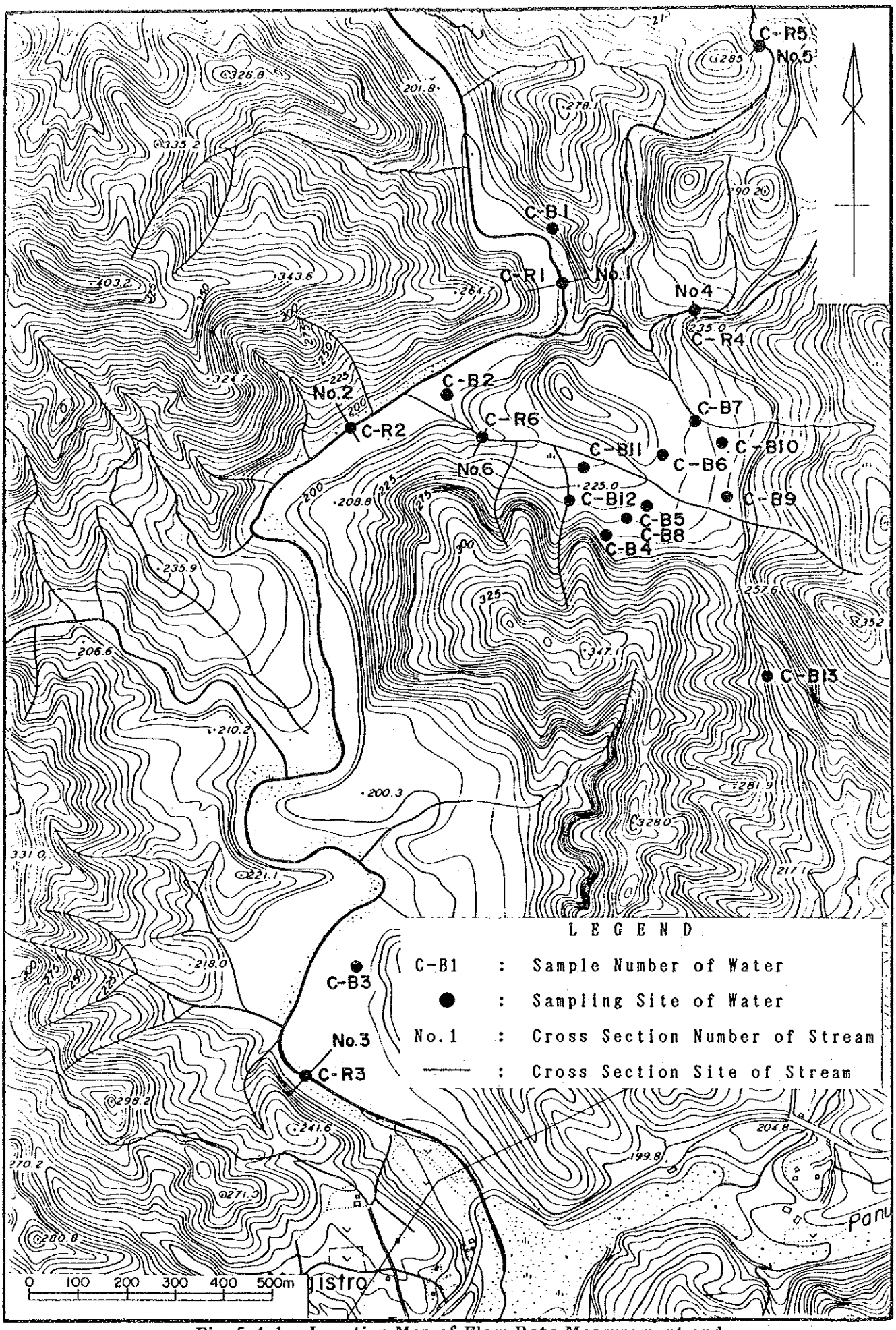


Fig. 5-4-1 Location Map of Flow Rate Measurement and Chemical Analysis of Water

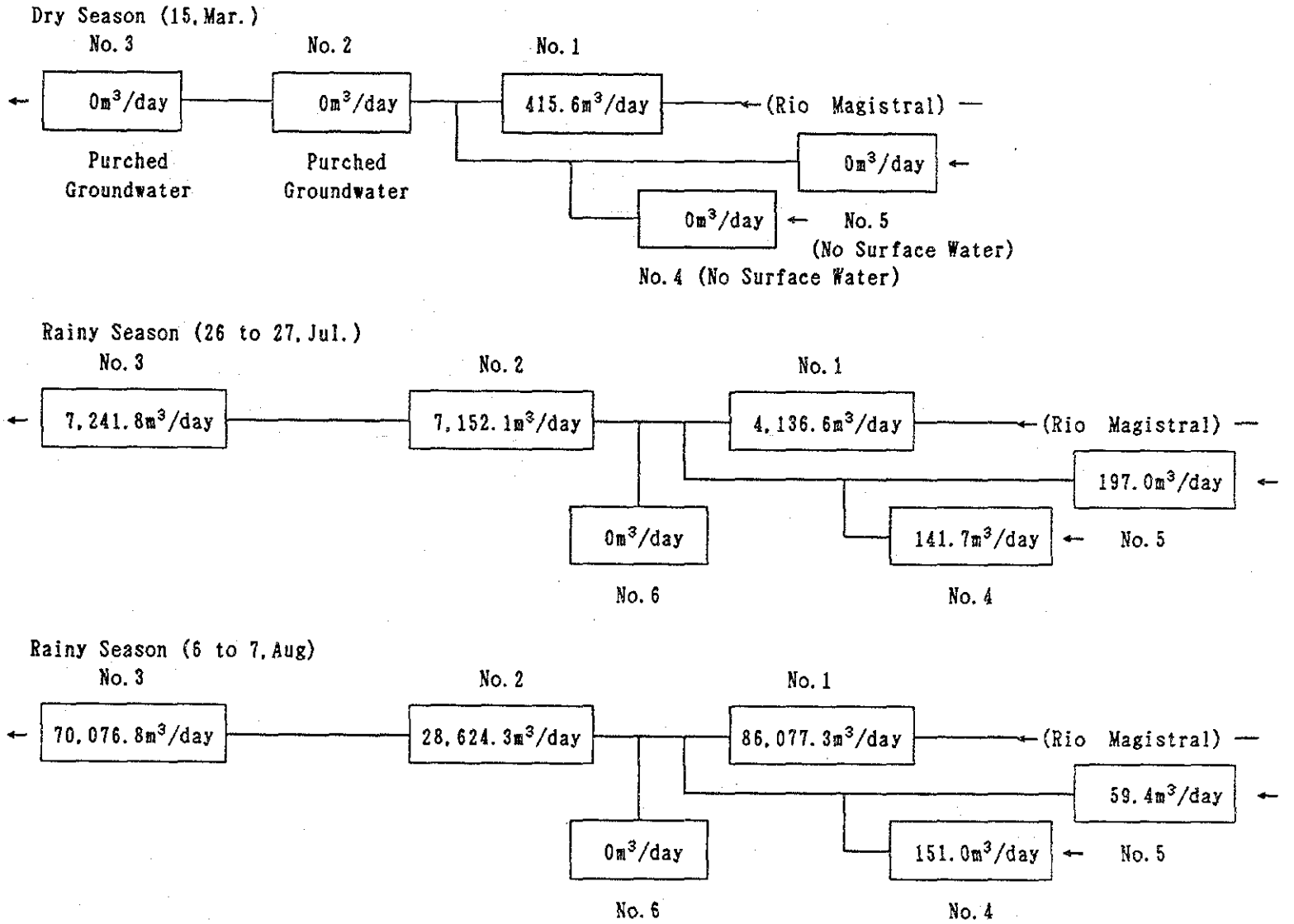


Fig. 5-4-2 Surface Water Balance (New El Coco)

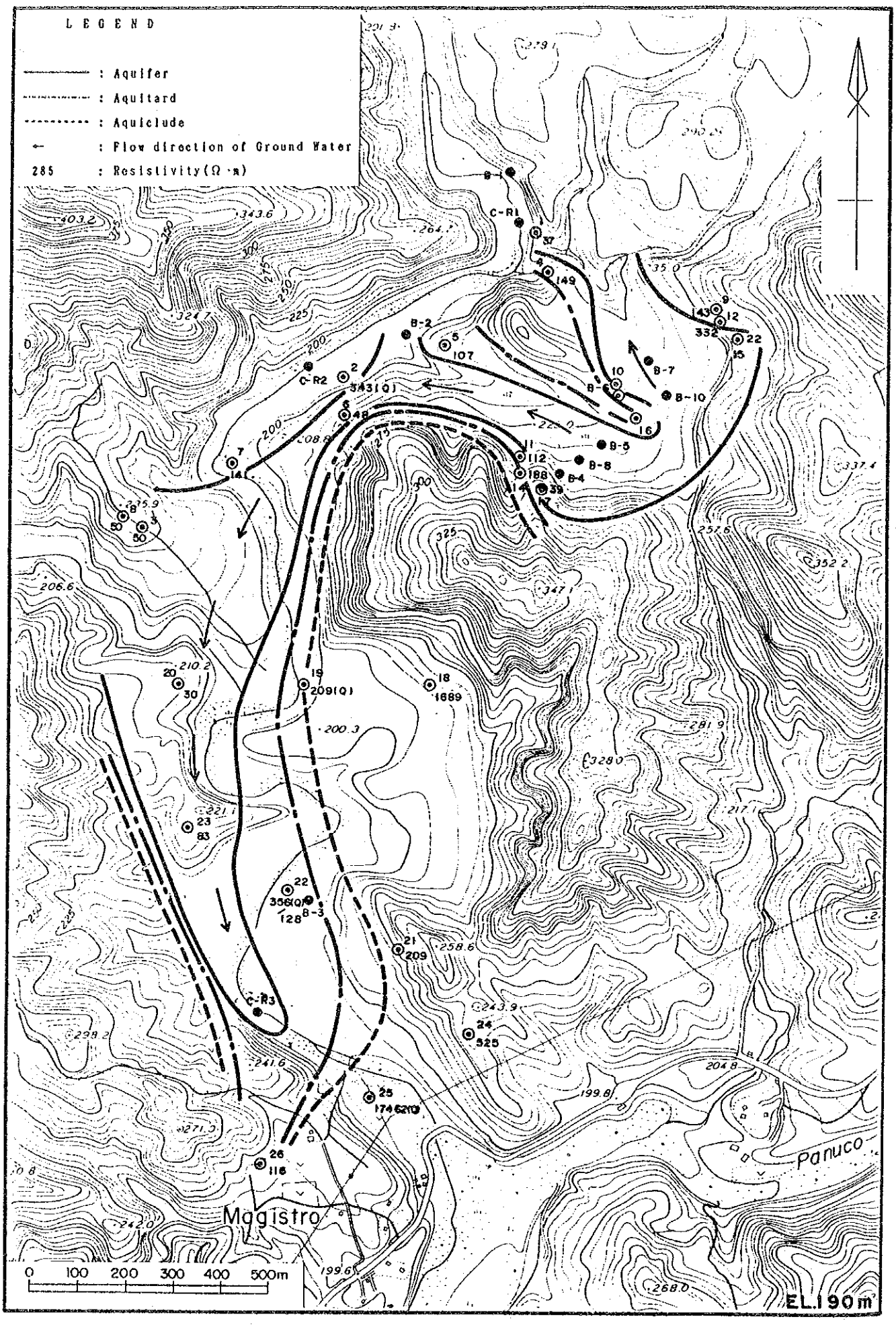


Fig.5-4-3 Analysis Map of Ground Water Reservoir (Plane)

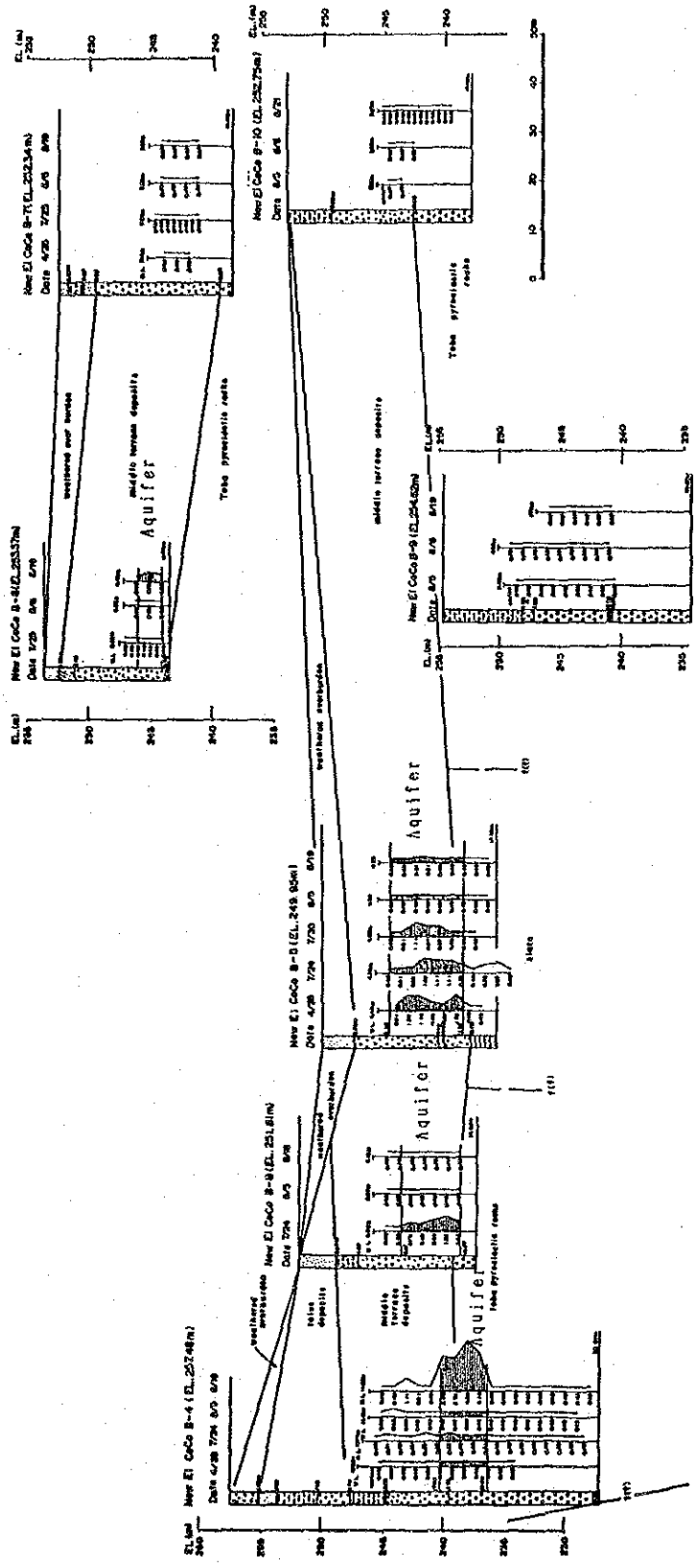


Fig.5-4-4 Analysis Map of Ground Water Reservoir (Cross Section)

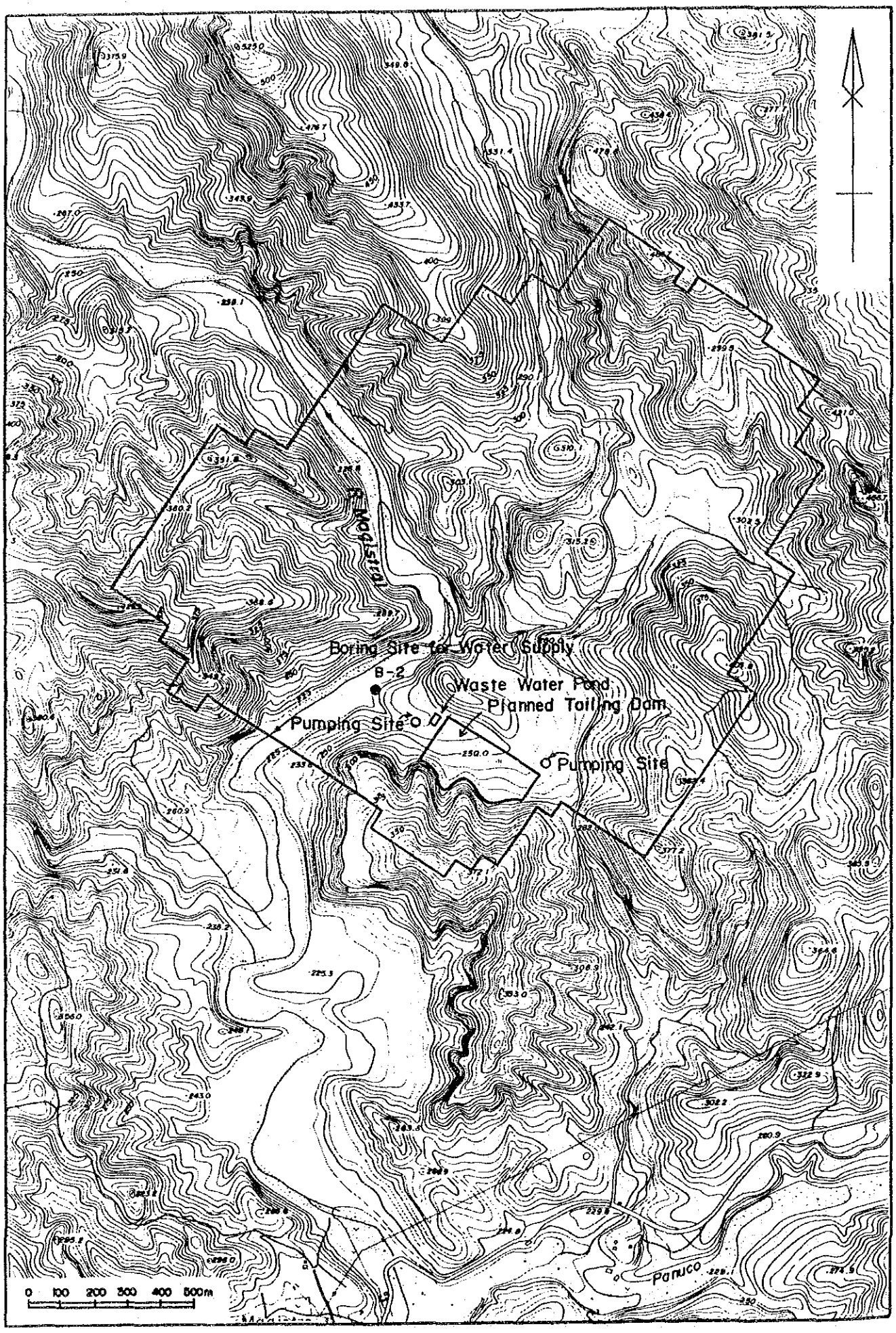


Fig.5-4-5 Groundwater Simulation Area

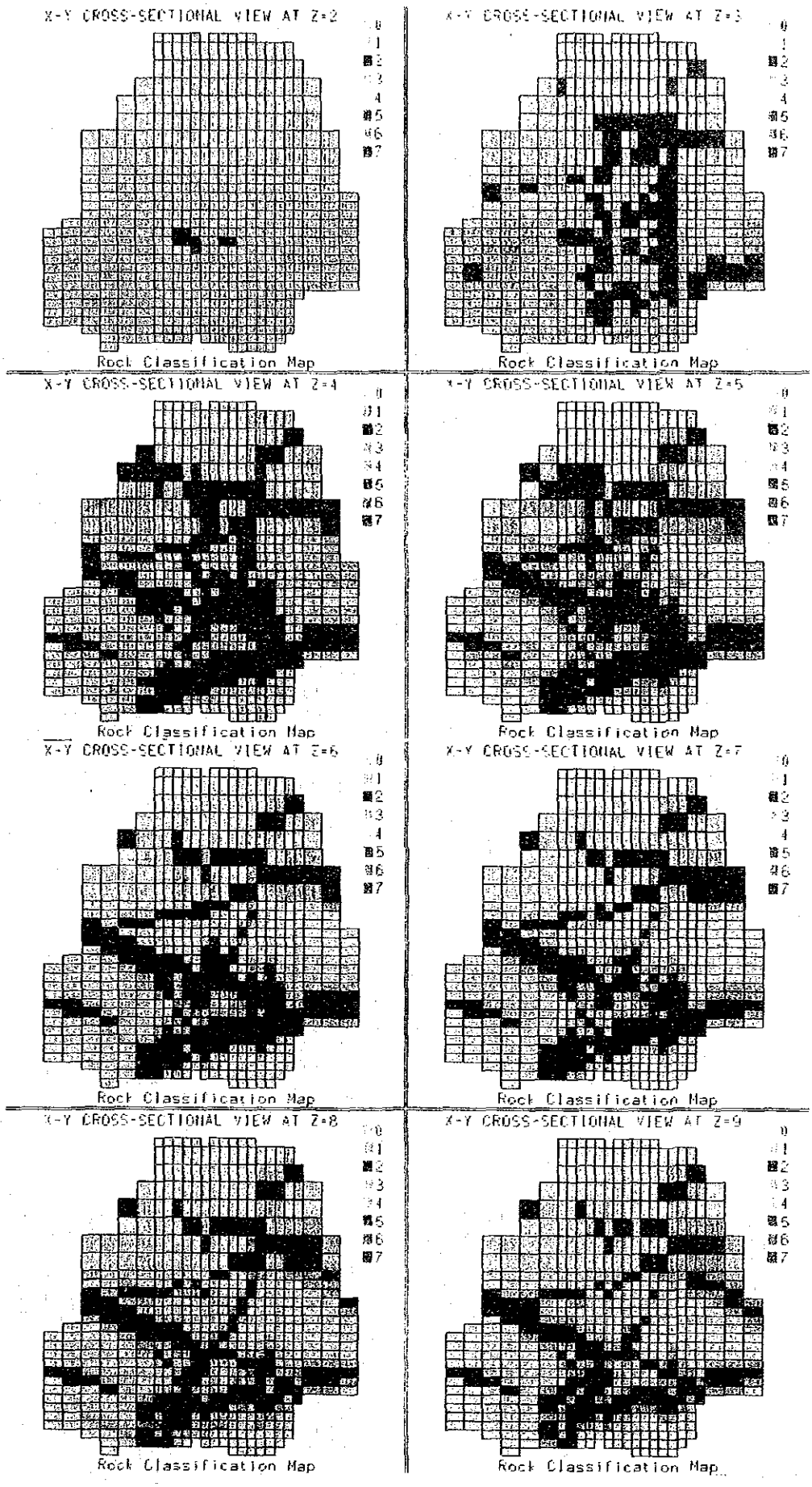


Fig.5-4-6 Rock Classification Map (1)

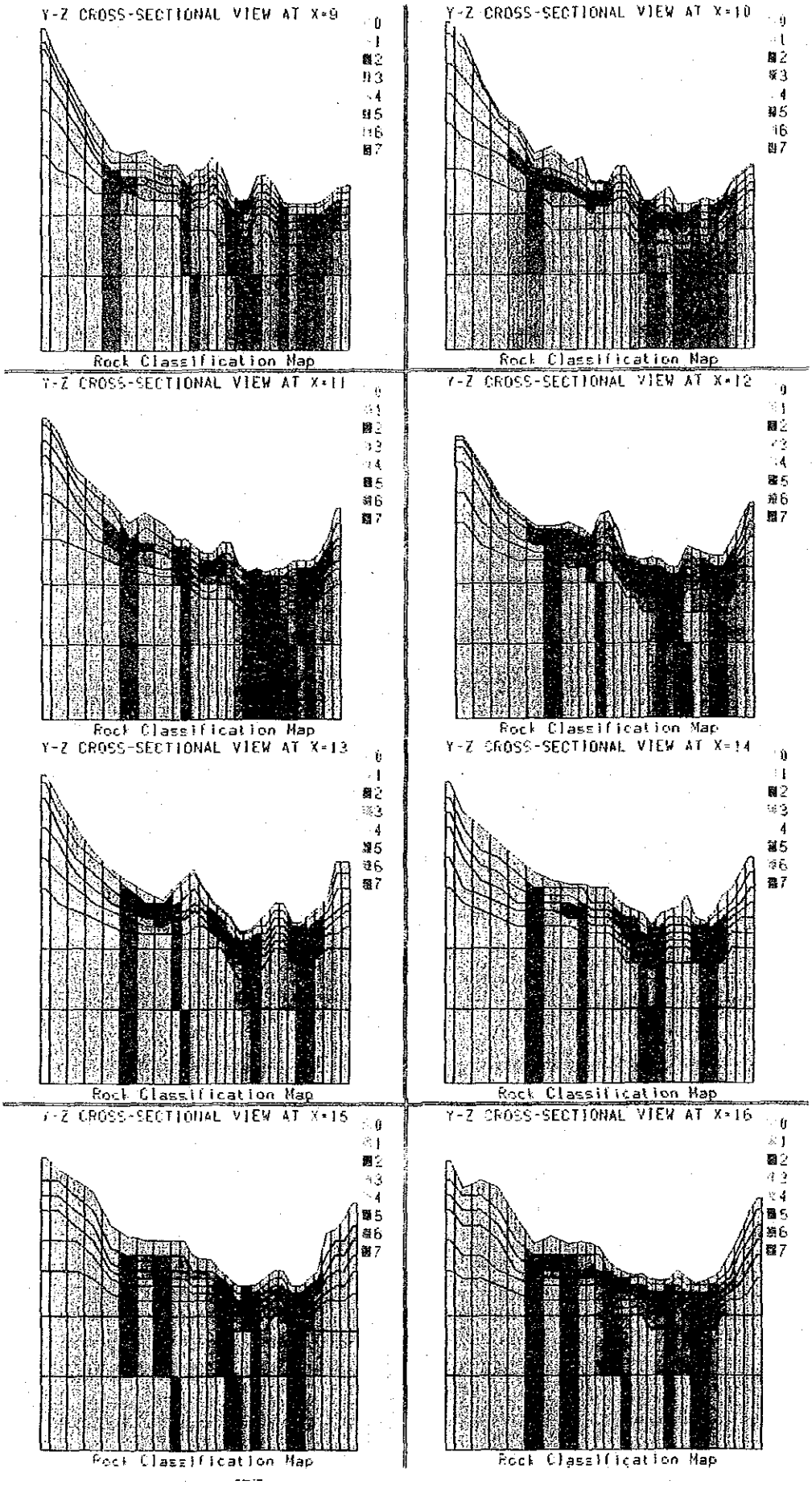


Fig.5-4-6 Rock Classification Map (2)

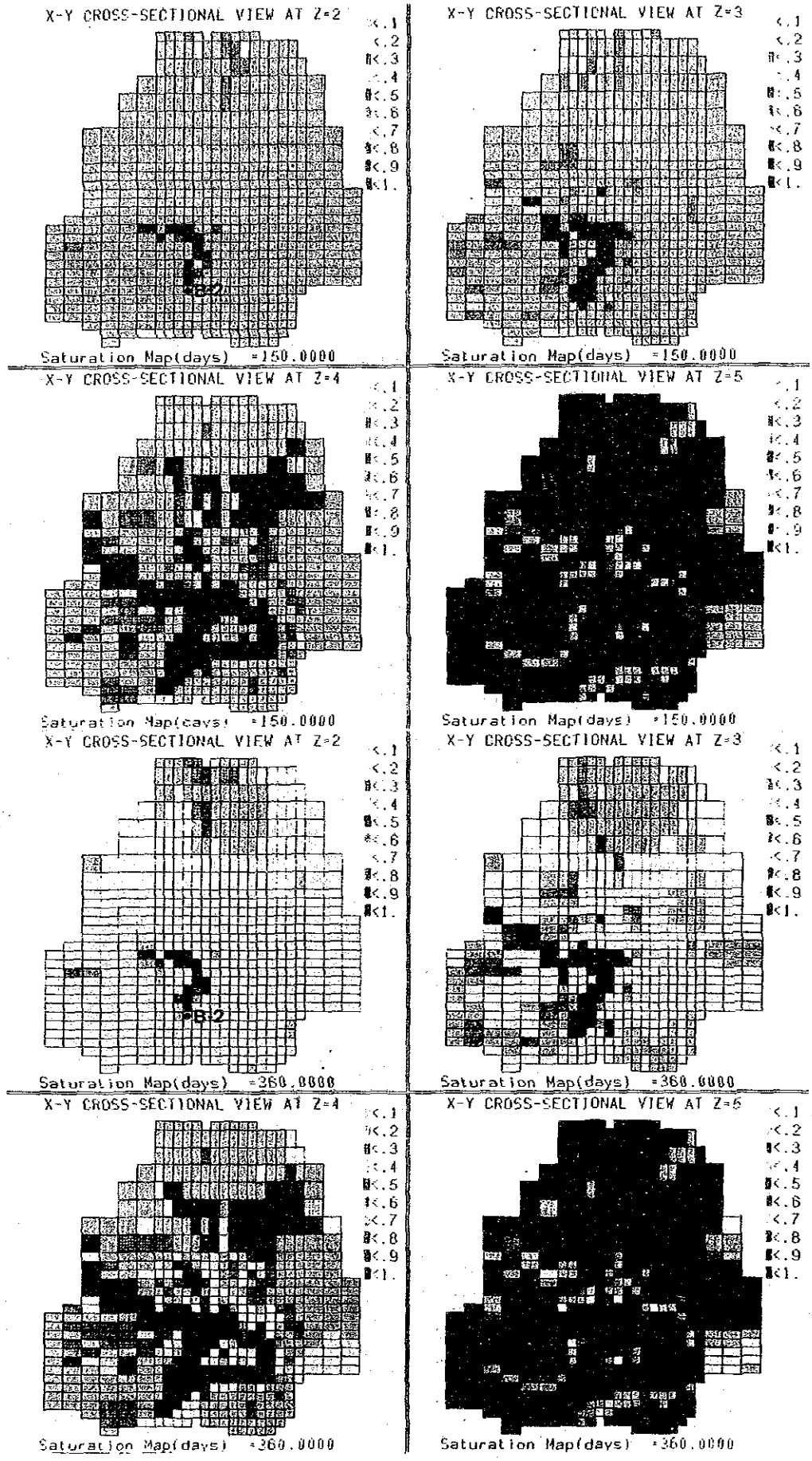
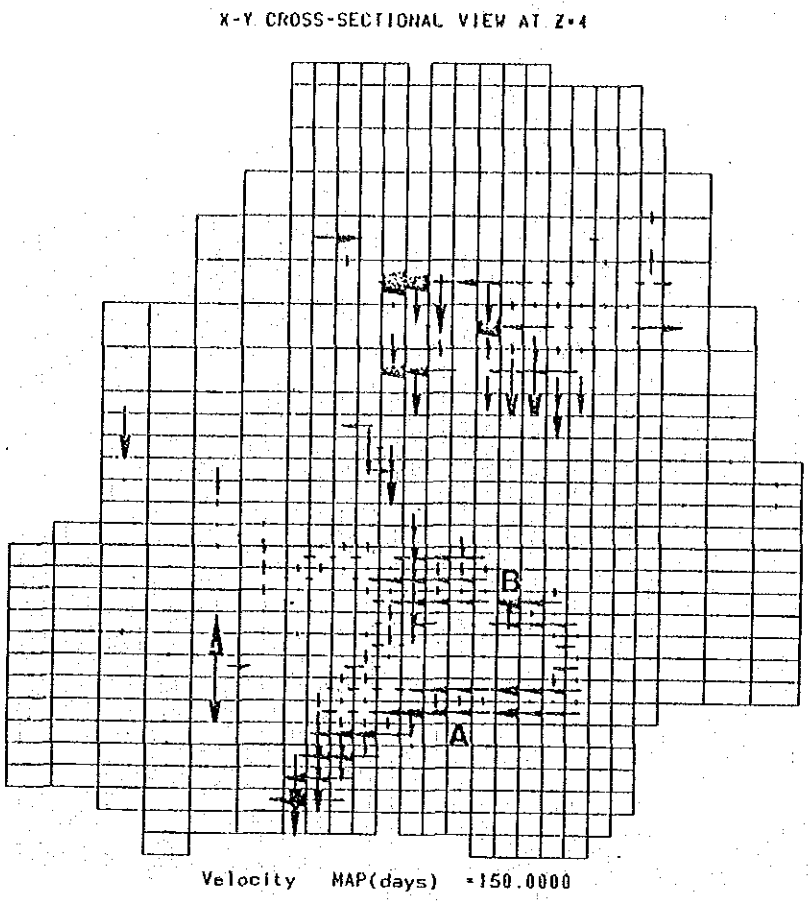


Fig.6-4-7 · Groundwater Saturation Map



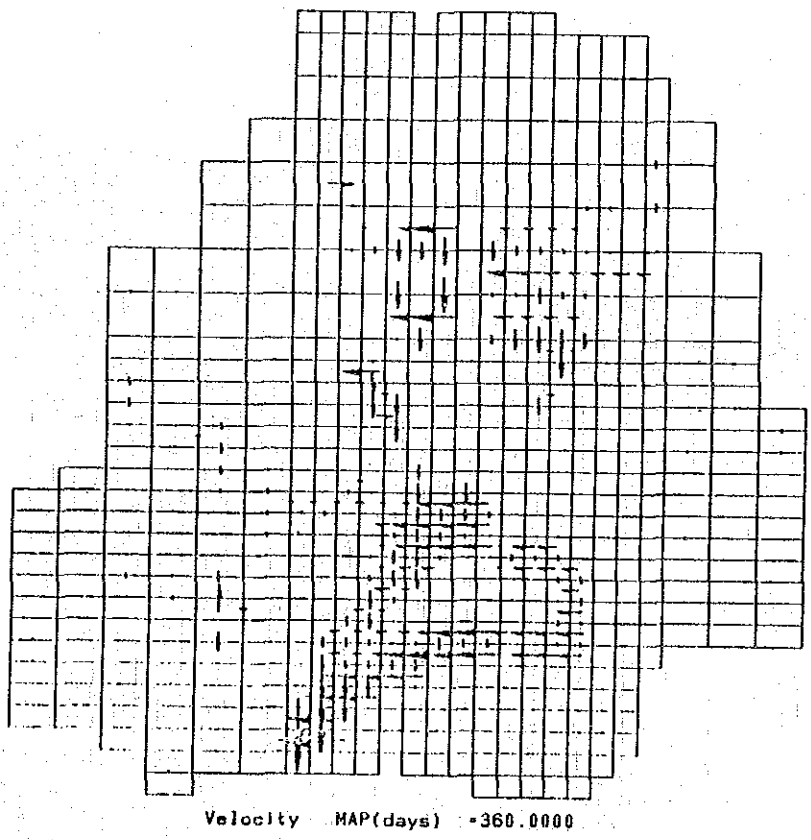
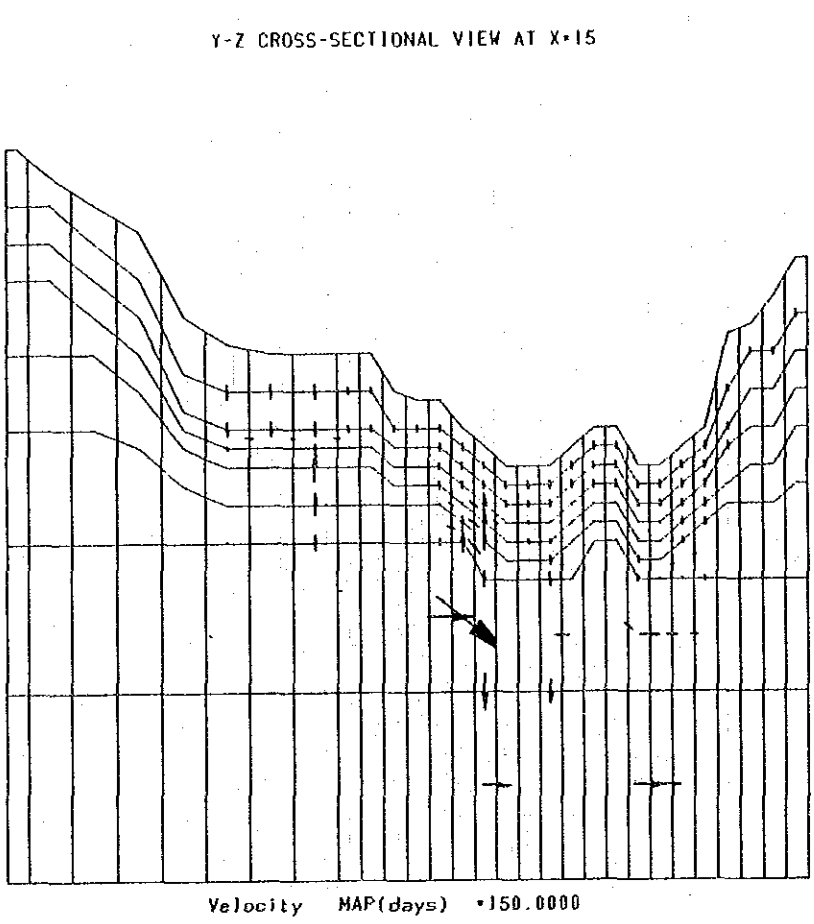


Fig.5-4-8 Groundwater Velocity Map (1)



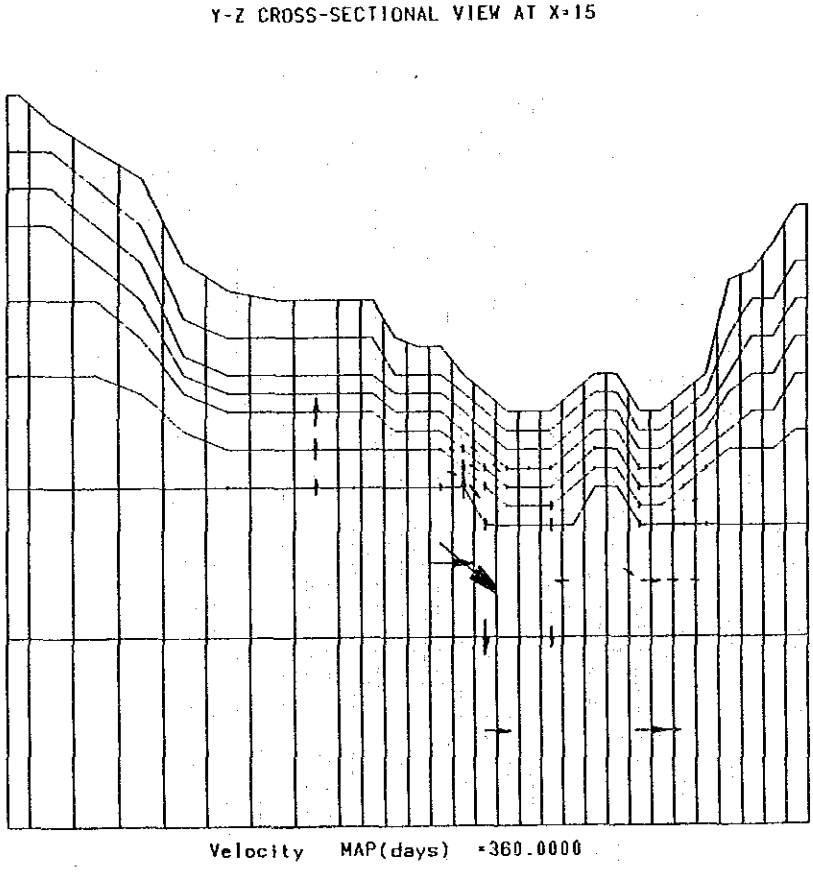


Fig.5-4-8 Groundwater Velocity Map (2)

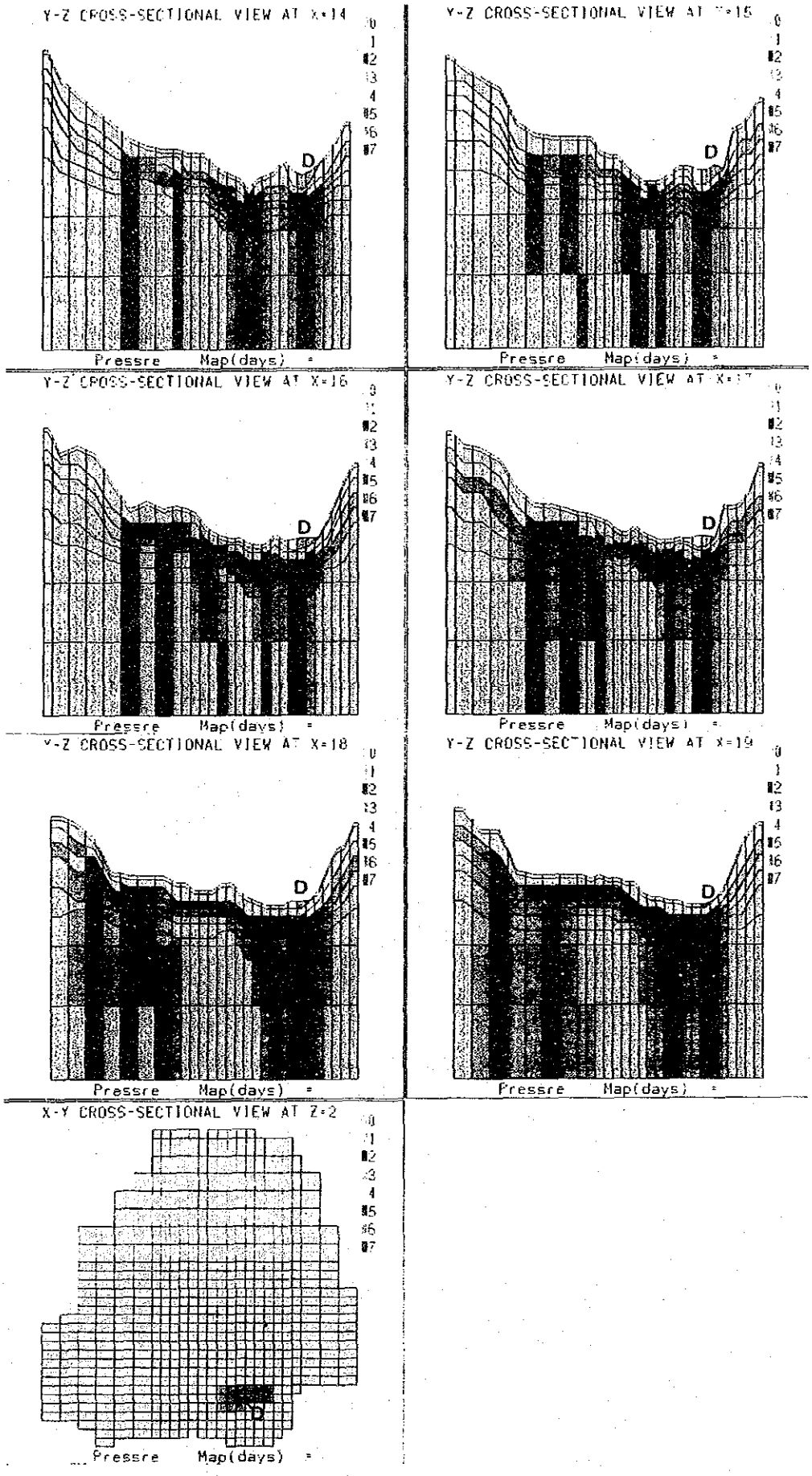


Fig.5-4-9 Rock Classification Map (after Setting up a Tailing Dam)

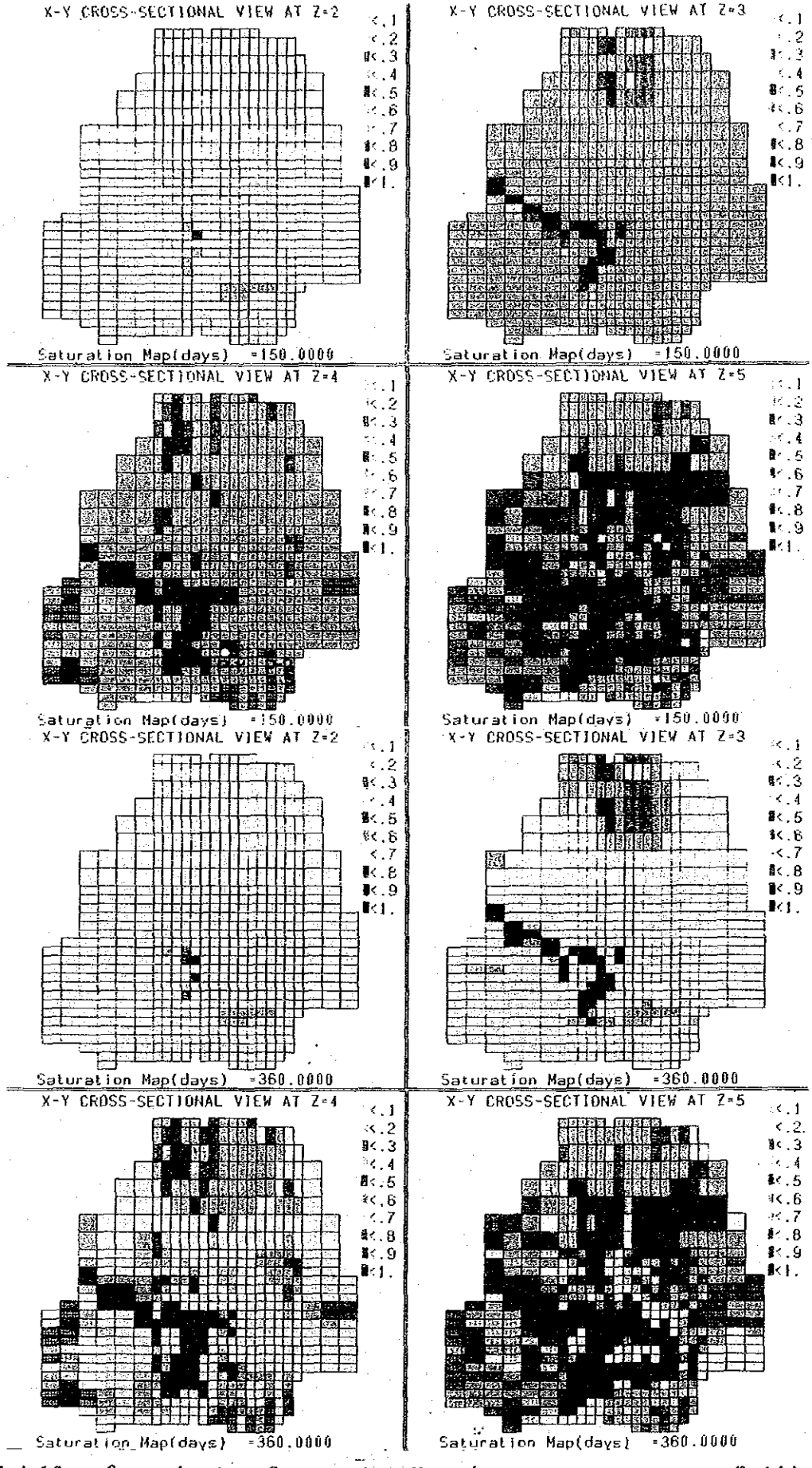
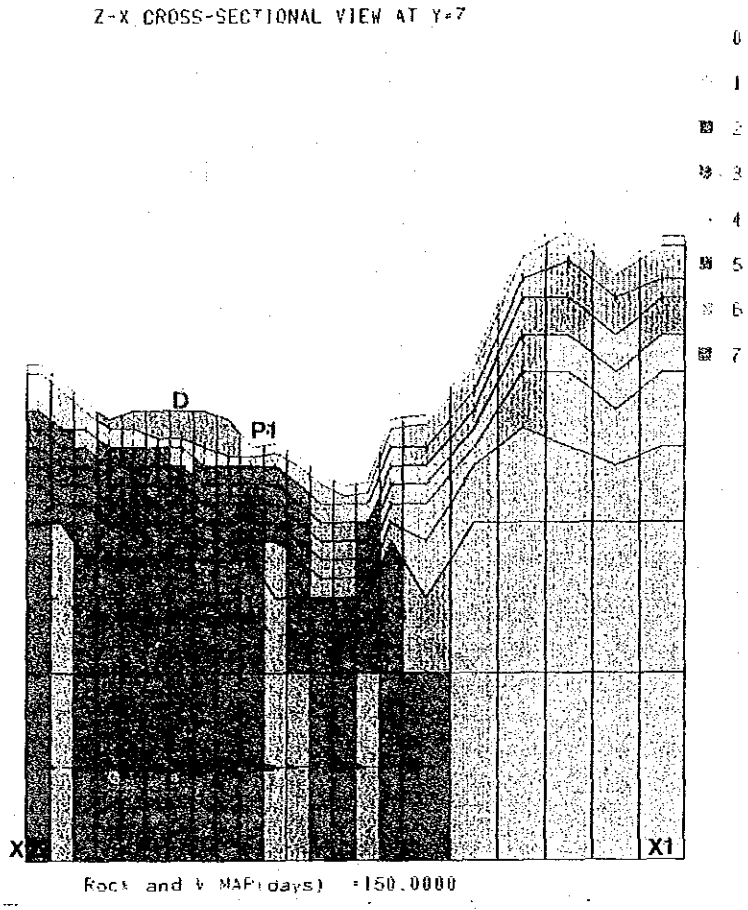


Fig.5-4-10 Groundwater Saturation Map (after Setting up a Tailing Dam)



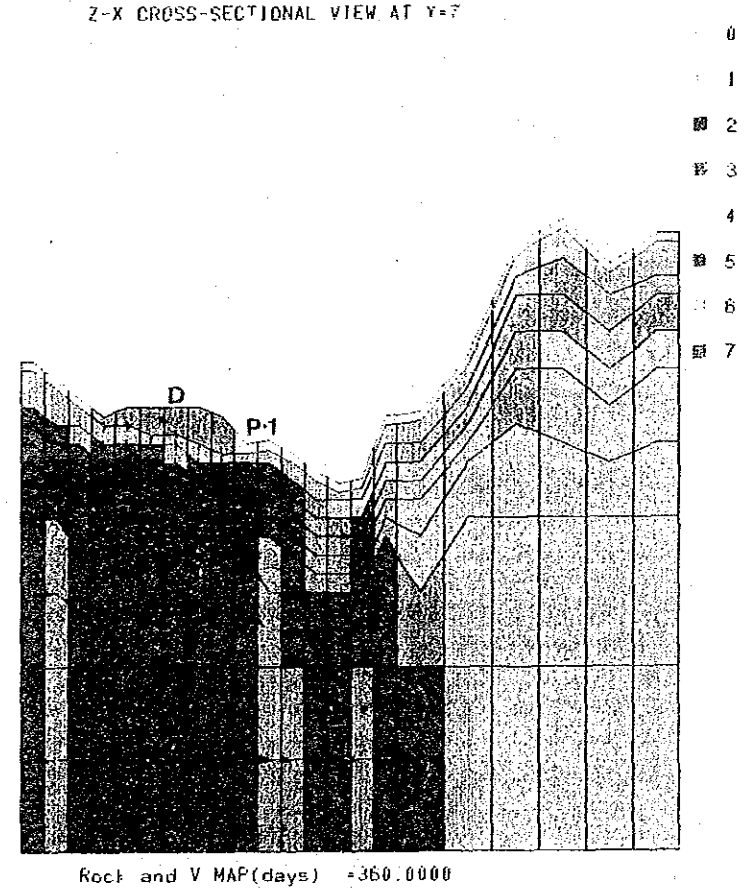


Fig.5-4-11 Groundwater Velocity Map (after Setting up a Tailing Dam)

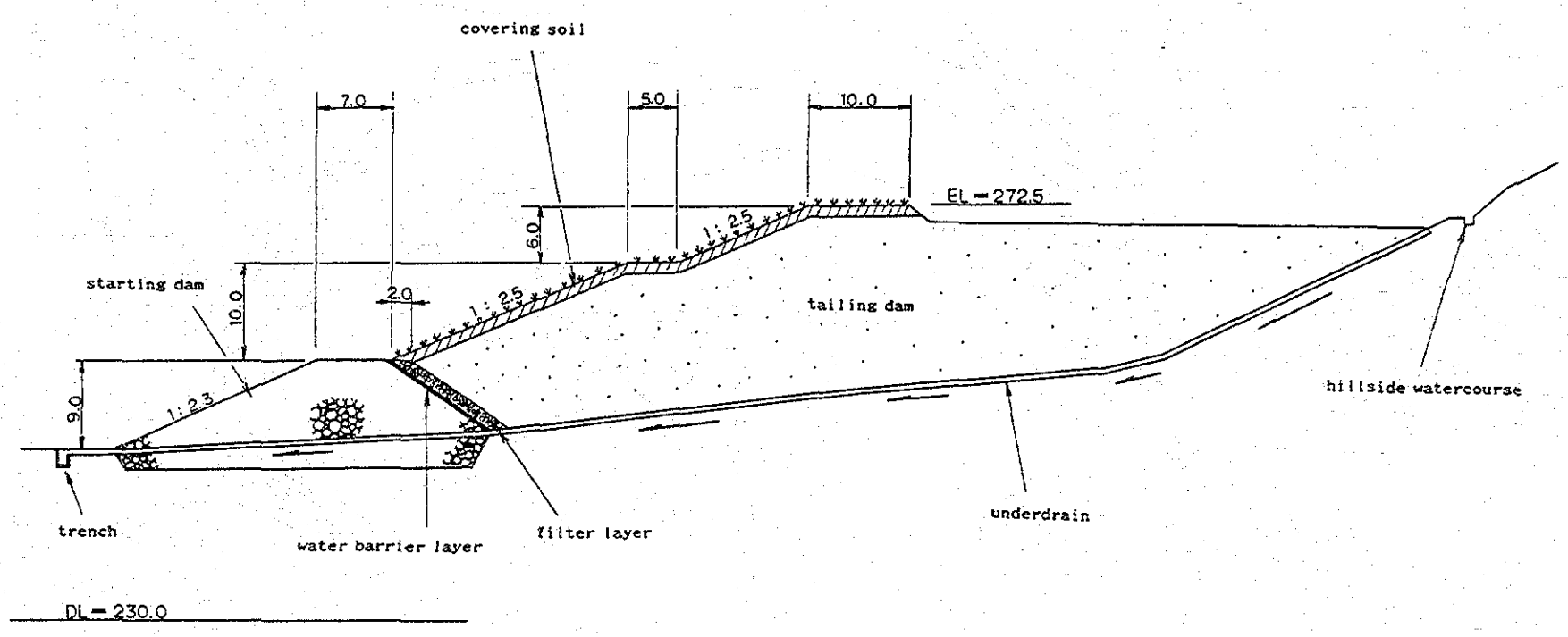


Fig.5-6-1 Model of New El Coco Tailing Dam

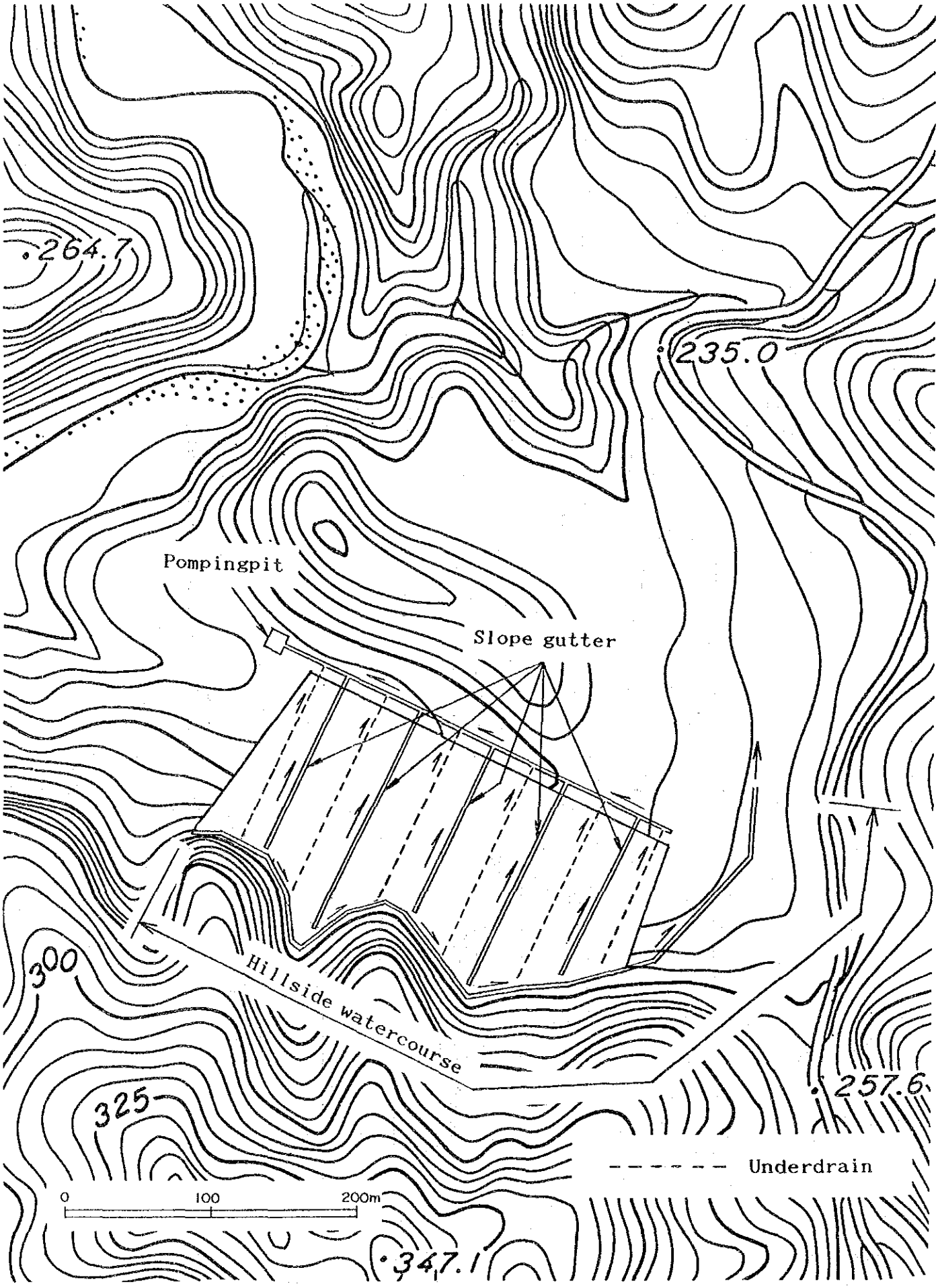


Fig.5-8-1 New El Coco Tailing Dam Drainage Plan

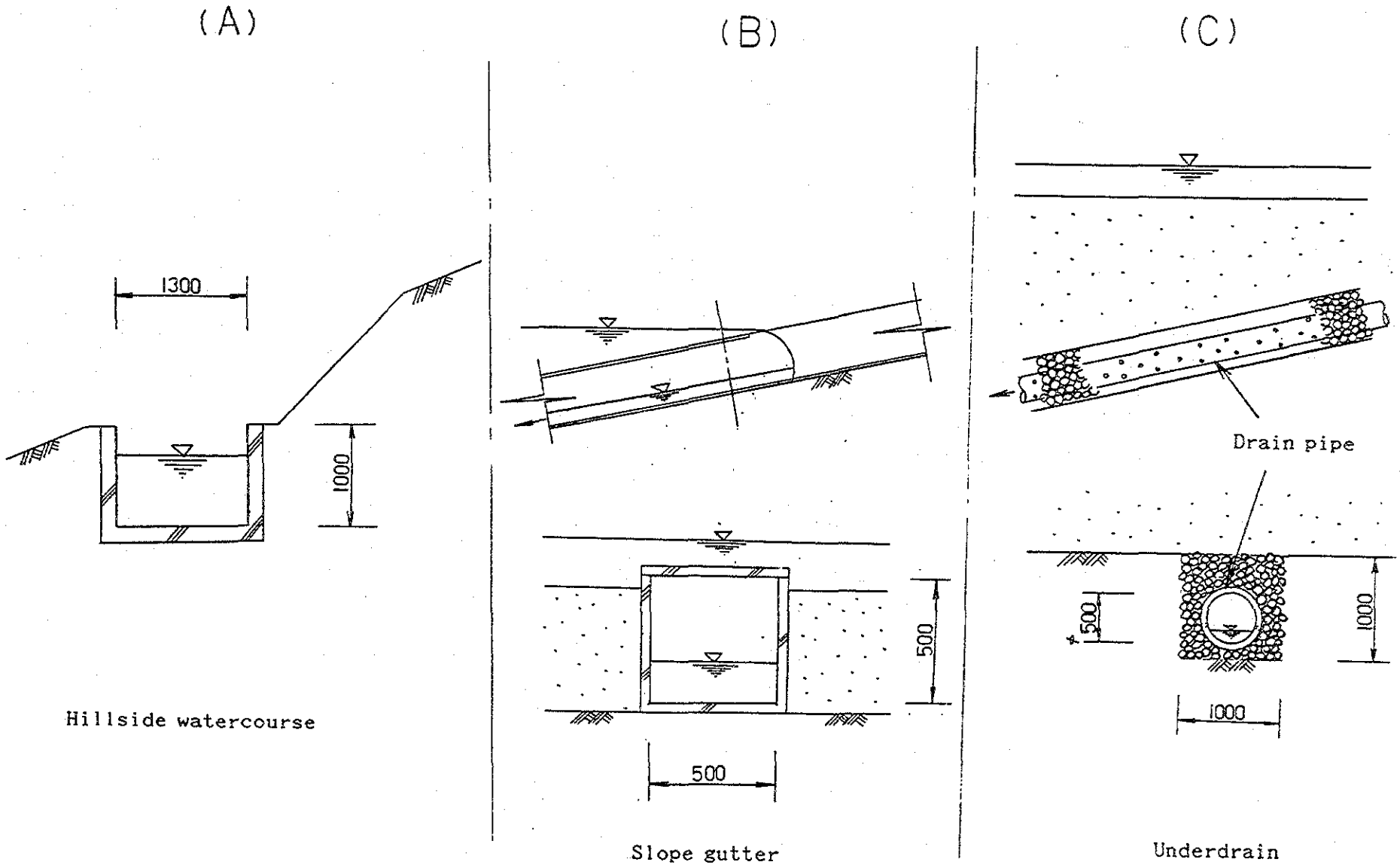


Fig.5-8-2 Typical Cross Section of Drainage

Table 2-1 Total Amount of Electric Exploration and Boring Works

Survey Area	El Bote	Parral	New El Coco
Elec. Exploration (Dry Season)	49 stations	60 stations	26 stations
Boring Works (Dry Season)	No. Depth(m) Riverside B-1 10 B-2 30 B-3 20 3 60 Damsite D-1 29 D-2 19 D-3 15 3 63	No. Depth(m) Riverside B-1 10 B-2 15 B-3 40 3 65 Damsite D-1 17 D-2 12 2 29	No. Depth(m) Riverside B-1 50 B-2 105 B-3 20 B-4 30 B-5 14 B-6 10 B-7 14 B-8 14 8 257
Sub Total	6holes 123m	5holes 94m	8holes 257m
(Rainy Season)	NONE	Riverside B-4 15 Damsite D-3 17	Riverside B- 9 20 B-10 15 B-11 15 B-12 15 B-13 10 5 75
Sub Total		2holes 32m	5holes 75m
TOTAL	6holes 123m	7holes 126m	13holes 332m

Remarks: Riverside borings were aimed at ground water movement but not always located in the vicinity of a river, while damsite borings were drilled in a tailing dam to study the property of soil. Refer to Location of the Drill Holes.

Table 3-4-1 Hydrologic Measurement of Surface Water (El Bote)

Site	Season	Date	Section of Flow (m^2)	Velocity (m/sec)	Flow Rate (m^3/sec)	Daily Flow (m^3/day)
No. 0	Rainy	12, Aug.	0.16	0	0	0
No. 1	Dry	20, Mar.	0.0480	0.2122	1.019×10^{-2}	880.4
	Rainy	13, Aug.	0.0578	0.0896	5.177×10^{-3}	447.3
No. 2	Dry	20, Mar.	0	0	0	0
	Rainy	13, Aug.	0.0114	0.2313	2.631×10^{-3}	227.3
No. 3	Dry	20, Mar.	0.0112	0	0	0
	Rainy	12, Aug.	0.0127	0.0477	6.042×10^{-3}	522.0
No. 4	Dry	20, Mar.	0.0590	0.2380	1.404×10^{-2}	1,213.1
	Rainy	12, Aug.	0.0795	0.1767	1.405×10^{-2}	1,213.9
No. 5	Dry	20, Mar.	0.0318	0.2082	0.662×10^{-2}	572.0
	Rainy	12, Aug.	0.0735	0.1909	1.403×10^{-2}	1,212.3
No. 6	Dry	20, Mar.	0.0450	0.1051	0.473×10^{-2}	408.7
	Rainy	12, Aug.	0.0513	0.1048	5.372×10^{-3}	464.2

Table 3-4-2 Background and Water Supply Ceiling of Chemical Components in Water

(ppm)

Background Value	Cu	Pb	Zn	Fe	Cd	Total Cr	As	Hg	Cr^{6+}	CN
Fresh Water	0.003	0.003	0.020	0.1	0.032×10^{-3}	0.001	0.002	0.07×10^{-3}	0.001	0
Water Supply Ceiling	1	0.05	5	0.3	0.01	0.05	0.05	0.002	0.05	0

after Rose, W., Hawkes, H. E., and Webb, J. S. (1979): Geochemistry in Mineral Exploration
Water Supply Ceiling is by U.S. Enviromental Protection Agency (1977)

Table 3-4-3 Chemical Analysis of Surface Water

Site	Season	Date	Cu (ppm)	Pb (ppm)	Zn (ppm)	Fe (ppm)	Cd (ppm)	Total Cr (ppm)	As (ppm)	Hg (ppm)	Cr^{6+} (ppm)	CN (ppm)	pH
B-R1	Dry	20, Mar.	0.37	0.019	4.9	1.9	0.09	n.d.	n.d.	n.d.	n.d.	n.d.	7.93
	Rainy	13, Aug.	0.037	0.32	4.9	0.68	0.13	n.d.	0.003	0.0002	n.d.	n.d.	7.89
B-R2	Dry	20, Mar.	240	1.5	7,800	910	55	0.33	5.2	0.0004	n.d.	n.d.	2.54
	Rainy	12, Aug.	85	0.54	1,100	190	12	0.11	0.29	n.d.	n.d.	n.d.	2.56
B-R3	Dry	20, Mar.	0.03	1.0	6.5	0.31	0.12	0.009	0.03	n.d.	n.d.	n.d.	7.94
	Rainy	12, Aug.	0.005	n.d.	2.1	0.23	0.076	n.d.	0.003	0.0001	n.d.	n.d.	8.18
B-R4	Dry	20, Mar.	0.011	0.06	3.3	0.53	0.09	0.013	0.01	n.d.	n.d.	n.d.	8.15
	Rainy	12, Aug.	0.036	0.015	3.9	0.40	0.11	0.003	0.002	n.d.	n.d.	n.d.	7.76
B-R5	Dry	20, Mar.	0.33	0.09	5.3	1.4	0.12	0.02	0.003	n.d.	n.d.	n.d.	8.10
	Rainy	12, Aug.	0.019	0.002	3.2	0.54	0.11	n.d.	0.001	0.0004	n.d.	n.d.	7.75
B-R6	Rainy	12, Aug.	0.030	0.003	4.3	1.6	0.11	n.d.	0.008	n.d.	n.d.	n.d.	7.77
B-R7	Rainy	13, Aug.	0.059	0.022	3.9	1.7	0.065	0.001	n.d.	n.d.	n.d.	n.d.	7.72
B-D1	Dry	20, Mar.	0.06	0.21	10.4	1.2	0.21	0.04	0.003	n.d.	n.d.	n.d.	7.51
	Rainy	13, Aug.	0.092	0.37	6.9	1.3	0.25	0.055	n.d.	0.0011	n.d.	n.d.	7.77
B-W1	Rainy	13, Aug.	0.19	0.60	1.7	2.5	0.11	0.065	n.d.	n.d.	n.d.	n.d.	7.43

Electric Conductivity (μs/cm) is:
B-R1(Dry)=45, B-R1(Rainy)=38, B-R2(Dry)=340, B-R2(Rainy)=160,
B-R3(Dry)=49, B-R3(Rainy)=40, B-R5(Dry)=42, B-R5(Rainy)=40,
B-R6(Rainy)=26, B-R7(Rainy)=35, B-D1(Dry)=65, B-D1(Rainy)=60,
B-W1(Rainy)=62

R:River, D:Tailing Dam, W:Waste Water

Table 3-4-4 Charcteristic of Aquifer

Site	Season	Date	Elevation (m)	Thickness of Aquifer	Flow Rate (m/sec)	Flow in Bore Hole(m^3/day)	Width of Aquifer	Total Flow (m^3/day)
B-2	Dry	19, Apr.	2,308 to 2,310	2m	0.0040	34.6	250m	172,800
	Rainy	12, Aug.			0.0044	38.0		190,080
		15, Aug.			0.0071	61.3		306,720
	Dry	19, Apr.	2,315 to 2,320	5m	0.0048	103.7		518,400
	Rainy	12, Aug.			0.0040	86.4		432,000
		15, Aug.			0.0052	112.3		561,600
B-3	Dry	19, Apr.	2,302 to 2,314	12m	0.0073	378.4	—	—
	Rainy	12, Aug.			0.0093	482.1		
		15, Aug.			0.0150	777.6		

Table 3-4-5 Chemical Analyses of Ground Water

Site	Season	Date	Cu (ppm)	Pb (ppm)	Zn (ppm)	Fe (ppm)	Cd (ppm)	Total Cr (ppm)	As (ppm)	Hg (ppm)	Cr^{6+} (ppm)	CN (ppm)	pH
B-B1	Rainy	13, Aug.	0.039	0.065	0.43	0.89	0.006	0.012	0.002	n.d.	n.d.	n.d.	7.97
B-B2	Dry	20, Mar.	0.13	0.14	n.d.	1.3	n.d.	0.04	n.d.	n.d.	n.d.	n.d.	7.70
	Rainy	12, Aug.	0.015	0.080	0.52	2.8	0.007	0.010	n.d.	0.0003	n.d.	n.d.	7.33
B-B3	Dry	20, Mar.	0.11	0.27	n.d.	2.0	n.d.	0.05	n.d.	n.d.	n.d.	n.d.	7.48
	Rainy	12, Aug.	0.014	0.021	0.41	1.2	0.011	0.022	n.d.	0.0004	n.d.	n.d.	7.53
B-M1	Rainy	13, Aug.	0.042	0.12	1.7	0.65	0.17	0.031	n.d.	0.0016	n.d.	n.d.	7.52
B-M2	Rainy	14, Aug.	0.21	0.14	140	2.1	2.5	0.032	n.d.	0.0006	n.d.	n.d.	6.35
B-M3	Rainy	14, Aug.	0.071	0.11	3.9	1.6	0.13	0.043	n.d.	n.d.	n.d.	n.d.	7.30

B:Drilling Hole, M:Interior of Mine

Electric Conductivity (μ m/cm) is;
B-B1(Dry)=30, B-B2(Dry)=16, B-B2(Rainy)=91, B-B3(Dry)=93,
B-B3(Rainy)=91, B-M1(Rainy)=40, B-M2(Rainy)=45, B-M3(Rainy)=46

Table 3-4-6 Permeability and Porosity Model

Legend No.	Matrix Permeabilty pkm(cm/sec)	Fracture Permeability pkf(cm/sec)	Fracture Zone Width hef(m)	Matrix Porosity porm(%)	Fracture Porosity porf(%)
1 (Vein)	10^{-8}	0	0	30	30
2 (Aquifer)	5×10^{-4}	10^{-2}	0	30	30
3 (Aquitard)	10^{-4}	10^{-3}	0	20	30
5 (Aquiclude)	10^{-6}	10^{-3}	0	15	30
7 (Aquifuge)	10^{-7}	10^{-3}	0	5	30

Model's Block Permeability(K) = (hef/△x)×pkf+(1-hef/△x)×pkm

△x = block width(m)

Table 4-4-1 Hydrologic Measurement of Surface Water (Parral)

Site	Season	Date	Section of Flow (m^2)	Velocity (m/sec)	Flow Rate (m^3/sec)	Daily Flow (m^3/day)
No. 1	Dry	11, Mar.	0	0	0	0
	Rainy	30, Aug.	0	0	0	0
No. 2	Dry	11, Mar.	0.0305	0.1777	0.542×10^{-2}	468.3
	Rainy	30, Aug.	0.014	0.2754	0.386×10^{-2}	333.1
No. 3	Dry	11, Mar.	0.1875	0.0983	1.843×10^{-2}	1,592.4
	Rainy	30, Aug.	11.182	1.3077	14.623	1.263×10^{6}
No. 4	Dry	11, Mar.	0.0785	0.2143	1.682×10^{-2}	1,453.2
	Rainy	30, Aug.	14.380	1.5829	22.763	1.967×10^{6}
No. 5	Dry	11, Mar.	0.0265	0.4132	1.095×10^{-2}	946.1
	Rainy	30, Aug.	17.0575	1.5071	25.707	2.221×10^{6}

Table 4-4-2 Background and Water Supply Ceiling of Chemical Components in Water

(ppm)

Background Value	Cu	Pb	Zn	Fe	Cd	Total Cr	As	Hg	Cr^{6+}	CN
Fresh Water	0.003	0.003	0.020	0.1	0.032×10^{-3}	0.001	0.002	0.07×10^{-3}	0.001	0
Water Supply Ceiling	1	0.05	5	0.3	0.01	0.05	0.05	0.002	0.05	0

after Rose, W., Hawkes, H.E., and Webb, J.S. (1979): Geochemistry in Mineral Exploration
Water Supply Ceiling is by U.S. Enviromental Protection Agency (1977)

Table 4-4-3 Chemical Analysis of Surface Water (El Bote)

Site	Season	Date	Cu (ppm)	Pb (ppm)	Zn (ppm)	Fe (ppm)	Cd (ppm)	Total Cr (ppm)	As (ppm)	Hg (ppm)	Cr^{6+} (ppm)	CN (ppm)	pH
P-R1	Dry	11, Mar.	0.10	1.1	2.2	43	0.009	0.003	0.36	0.002	n.d.	0.1	8.40
	Rainy	30, Aug.	0.30	0.15	0.11	0.47	0.001	0.013	1.0	0.0009	n.d.	0.1	9.23
P-R2	Dry	11, Mar.	5.0	0.14	1.2	1.4	0.006	0.10	0.04	n.d.	0.04	4.2	8.20
	Rainy	30, Aug.	0.29	0.30	0.20	1.2	0.003	0.022	0.13	n.d.	n.d.	n.d.	9.00
P-R3	Dry	11, Mar.	n.d.	n.d.	n.d.	0.18	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	8.42
	Rainy	30, Aug.	0.017	0.085	0.080	0.84	0.004	0.025	0.028	0.0043	n.d.	n.d.	7.80
P-R4	Dry	11, Mar.	4.9	0.07	0.86	0.07	0.01	0.08	n.d.	n.d.	0.045	3.9	8.37
	Rainy	30, Aug.	0.023	0.053	0.085	1.3	0.002	0.030	0.025	0.0012	n.d.	n.d.	7.92
P-R5	Dry	11, Mar.	0.03	0.23	0.08	1.2	0.004	0.008	0.03	n.d.	n.d.	n.d.	8.48
	Rainy	30, Aug.	0.017	0.040	0.091	0.89	0.002	0.035	0.023	0.0008	n.d.	n.d.	7.93
P-R6	Rainy	30, Aug.	0.020	0.047	0.085	0.95	0.001	0.043	0.022	0.0007	n.d.	n.d.	7.97
P-R7	Rainy	30, Aug.	0.022	0.048	0.057	0.84	0.002	0.051	0.021	0.0004	n.d.	n.d.	7.87
P-D1	Dry	11, Mar.	16	0.47	0.16	0.12	0.009	0.06	0.004	0.0003	n.d.	10	8.90
	Rainy	30, Aug.	43	0.44	25	0.72	0.10	0.059	n.d.	0.0077	n.d.	150	11.05
P-W1	Rainy	31, Aug.	40	0.37	33	0.88	0.058	0.056	n.d.	0.0004	n.d.	120	11.50

Electric Conductivity (μs/cm) is:
P-R1(Dry)=82, P-R1(Rainy)=95, P-R2(Dry)=85, P-R2(Rainy)=50,
P-R3(Dry)=43, P-R3(Rainy)=45, P-R4(Dry)=43, P-R4(Rainy)=45,
P-R5(Dry)=43, P-R5(Rainy)=45, P-R6(Rainy)=45, P-R7(Rainy)=44,
P-D1(Dry)=120, P-D1(Rainy)=155, P-W1(Rainy)=150

R:River, D:Tailing Dam, W:Waste Water

Table 4-4-4 Charcteristic of Aquifer

Site	Season	Date	Elevation (m)	Thickness of Aquifer	Flow Rate (m/sec)	Flow in Bore Hole(m^3/day)	Width of Aquifer	Total Flow (m^3/day)
B-1	Dry	9, Mar.	1,727 to 1,731	4m	0.0040	69.1	—	—
	Rainy	29, Aug.			0.0120	207.4		
		2, Sep.			0.0073	126.1		
B-2	Rainy	29, Aug.	1,732 to 1,735	3m	0.0070	220.3	—	—
		2, Sep.			0.0055	71.3		
B-3	Dry	9, Mar.	1,712 to 1,742	14m	0.0103	622.9	150m	1.869×10^6
	Rainy	29, Aug.		10m	0.0191	825.1		2.475×10^6
		2, Sep.		30m	0.0298	3,862.1		11.586×10^6
	Rainy	29, Aug.	1,742 to 1,745	3m	0.0395	511.9		1.536×10^6
		2, Sep.			0.0438	567.6		1.703×10^6
B-4	Rainy	29, Aug.	1,744 to 1,745	1m	0.0135	58.3	250m	0.175×10^6
		2, Sep.			0.0070	30.2		0.091×10^6

Table 4-4-5 Chemical Analyses of Ground Water

Site	Season	Date	Cu (ppm)	Pb (ppm)	Zn (ppm)	Fe (ppm)	Cd (ppm)	Total Cr (ppm)	As (ppm)	Hg (ppm)	Cr^{6+} (ppm)	CN (ppm)	pH
P-B1	Dry	11, Mar.	0.06	0.50	0.52	28	0.006	0.02	0.04	0.0003	n.d.	n.d.	7.45
	Rainy	29, Aug.	0.014	0.063	0.13	0.52	0.003	n.d.	0.0011	0.0031	n.d.	n.d.	7.34
P-B2	Rainy	29, Aug.	0.010	0.051	0.13	0.73	0.003	0.010	0.0003	0.0009	n.d.	n.d.	7.46
P-B3	Dry	11, Mar.	0.04	0.54	4.3	1.7	0.009	0.009	0.005	n.d.	n.d.	n.d.	4.35
	Rainy	29, Aug.	0.020	0.12	35	0.79	0.088	0.019	n.d.	n.d.	n.d.	n.d.	6.70
P-B4	Rainy	29, Aug.	0.056	0.13	0.15	3.4	0.007	0.033	0.013	0.0003	n.d.	n.d.	8.83
P-M1	Rainy	30, Aug..	0.033	0.11	0.067	0.35	0.007	0.035	0.003	0.001	n.d.	n.d.	7.28
P-M2	Rainy	31, Aug.	0.033	0.11	0.055	0.39	0.007	0.041	0.001	0.0058	n.d.	n.d.	7.69
P-M3	Rainy	31, Aug.	0.049	0.17	15	0.44	0.074	0.046	n.d.	0.0049	n.d.	n.d.	4.83

Electric Conductivity (μ s/cm) is;
P-B1(Dry)=38, P-B1(Rainy)=37, P-B2(Rainy)=38, P-B3(Dry)=135,
P-B3(Rainy)=56, P-B4(Rainy)=41, P-M1(Rainy)=47, P-M2(Rainy)=45,
P-M3(Rainy)=150

B:Drilling Hole, M:Interior of Mine

Table 4-4-6 Permeabllity and Porosity Model

Legend No.	Matrix Permeabilty pkm(cm/sec)	Fracture Permeability pkf(cm/sec)	Fracture Zone Width hef(m)	Matrix Porosity porm(%)	Fracture Porosity porf(%)
1 (Vein)	10^{-3}	0	0	100	30
2 (Aquifer)	10^{-6}	10^{-3}	25	15	30
3 (Aquitard)	10^{-6}	10^{-3}	12	15	30
5 (Aquiclude)	10^{-5}	10^{-3}	6	15	30
7 (Aquifuge)	10^{-7}	10^{-3}	0	5	30

Model's Block Permeability(K) = $(hef/\triangle x)\times pkf+(1-hef/\triangle x)\times pkm$

$\triangle x$ = block width(m)

Table 5-4-1 Hydrologic Measurement of Surface Water

Site	Season	Date	Section of Flow (m^2)	Velocity (m/sec)	Flow Rate (m^3/sec)	Daily Flow (m^3/day)
No. 1	Dry	15, Mar.	0.4012	0.0120	0.481×10^{-2}	415.6
	Rainy	26, Jul.	0.1575	0.3040	4.788×10^{-2}	4,136.6
	Rainy	6, Aug.	1.6660	0.5980	0.963	86,077.3
No. 2	Dry	15, Mar.	1.1338	0	0	0
	Rainy	26, Jul.	1.2950	0.0639	8.278×10^{-2}	7,152.1
	Rainy	7, Aug.	2.0888	0.1587	0.3313	28,624.3
No. 3	Dry	15, Mar.	0.5225	0	0	0
	Rainy	27, Jul.	1.0183	0.0823	8.382×10^{-2}	7,241.8
	Rainy	6, Aug.	4.5850	0.1769	0.811	70,076.8
No. 4	Dry	15, Mar.	0	0	0	0
	Rainy	26, Jul.	0.0232	0.0706	0.164×10^{-2}	141.7
	Rainy	6, Aug.	0.0144	0.1537	0.175×10^{-2}	151.0
No. 5	Dry	15, Mar.	0	0	0	0
	Rainy	26, Jul.	0.0351	0.0650	0.228×10^{-2}	197.0
	Rainy	6, Aug.	0.0083	0.0833	0.069×10^{-2}	59.4
No. 6	Rainy	27, Jul.	0.0570	0	0	0
	Rainy	7, Aug.	0.0570	0	0	0

Table 5-4-2 Background and Water Supply Ceiling of Chemical Components in Water

(ppm)

Background Value	Cu	Pb	Zn	Fe	Cd	Total Cr	As	Hg	Cr^{6+}	CN
Fresh Water	0.003	0.003	0.020	0.1	0.032×10^{-3}	0.001	0.002	0.07×10^{-3}	0.001	0
Water Supply Ceiling	1	0.05	5	0.3	0.01	0.05	0.05	0.002	0.05	0

after Rose, W., Hawkes, H. E., and Webb, J. S. (1979): Geochemistry in Mineral Exploration

Water Supply Ceiling is by U.S. Enviromental Protection Agency (1977)

Table 5-4-3 Chemical Analysis of Surface Water

Site	Season	Date	Cu (ppm)	Pb (ppm)	Zn (ppm)	Fe (ppm)	Cd (ppm)	Total Cr (ppm)	As (ppm)	Hg (ppm)	Cr^{6+} (ppm)	pH
C-R1	Dry	15, Mar.	n.d.	n.d.	0.005	0.28	n.d.	n.d.	n.d.	n.d.	n.d.	6.88
	Rainy	26, Jul.	0.012	n.d.	0.085	0.29	n.d.	0.001	0.003	n.d.	n.d.	7.28
C-R2	Dry	15, Mar.	n.d.	n.d.	0.01	0.06	n.d.	n.d.	0.027	n.d.	n.d.	7.28
	Rainy	26, Jul.	0.004	0.002	0.089	0.25	n.d.	0.002	0.004	n.d.	n.d.	7.68
C-R3	Dry	15, Mar.	0.001	n.d.	n.d.	0.03	n.d.	n.d.	n.d.	n.d.	n.d.	8.44
	Rainy	27, Jul.	0.003	0.009	0.090	0.31	n.d.	0.001	0.003	n.d.	n.d.	7.52
C-R4	Rainy	26, Jul.	0.005	n.d.	0.082	0.79	n.d.	0.003	0.026	n.d.	n.d.	7.40
C-R5	Rainy	26, Jul.	0.004	n.d.	0.079	0.24	n.d.	0.001	0.058	n.d.	n.d.	7.01
C-R6	Rainy	27, Jul.	n.d.	n.d.	0.028	0.95	n.d.	0.001	n.d.	n.d.	n.d.	6.58
	Rainy	21, Aug.	0.006	0.17	0.12	0.86	n.d.	0.048	0.003	n.d.	n.d.	6.88

Electric Conductivity (μ mho/cm) is;
C-R1(Dry)=43, C-R1(Rainy)=45, C-R2(Dry)=45, C-R2(Rainy)=46,
C-R3(Dry)=44, C-R3(Rainy)=47, C-R4(Rainy)=43, C-R5(Rainy)=49,
C-R6(Rainy)=42, 43

R:River

Table 5-4-4 Charcteristic of Aquifer

Site	Season	Date	Elevation (m)	Thickness of Aquifer	Flow Rate (m^3/sec)	Flow in Bore Hole (m^3/day)	Width of Aquifer	Total Flow (m^3/day)
B-1	Dry	25, Apr.	187 to 192	5m	0.0054	116.6	100m	233,280
	Rainy	26, Jul.			0.0042	90.7		181,440
		6, Aug.			0.0074	159.8		319,680
		20, Aug.			0.0069	149.0		298,080
	Dry	25, Apr.	200 to 208	8m	0.0069	238.5		476,930
	Rainy	26, Jul.			0.0070	241.9		483,840
		6, Aug.			0.0112	387.1		774,140
		20, Aug.			0.0040	138.2		276,480
	Dry	25, Apr.	210 to 221	11m	0.0074	351.6		703,300
	Rainy	26, Jul.			0.0074	351.6		703,300
		6, Aug.			0.0192	912.4		1,824,770
		20, Aug.			0.0041	194.8		389,660
B-2	Dry	25, Apr.	141 to 144	3m	0.0097	125.7	90m	226,280
	Dry	25, Apr.	165 to 184	19m	0.0310	2,544.5	80m	4,071,170
	Rainy	25, Jul.			0.0210	1,723.7		2,757,890
		5, Aug.			0.0295	2,421.4		3,874,180
		7, Aug.			0.0246	2,019.2		3,230,670
		20, Aug.			0.0479	3,931.6		6,290,610
	Dry	25, Apr.	216 to 220	4m	0.0063	108.9	100m	217,730
	Rainy	25, Jul.			0.0040	69.1		138,240
		5, Aug.			0.0040	69.1		138,240
		7, Aug.			0.0040	69.1		138,240
		20, Aug.			0.0044	76.0		152,060
B-3	Rainy	20, Aug.	201 to 202	1m	0.0087	376.	250m	187,920
B-4	Dry	25, Apr.	236 to 240	4m	0.0040	69.1	—	—
	Rainy	24, Jul.			0.0047	81.2		
		5, Aug.			0.0040	69.1		
		19, Aug.			0.0264	456.2		
B-5	Dry	25, Apr.	238 to 244	6m	0.0091	235.9	100m	471,740
	Rainy	24, Jul.			0.0089	230.7		461,380
		30, Jul.			0.0065	168.5		336,960
		5, Aug.			0.0040	103.7		207,360
		19, Aug.			0.0043	111.5		222,910
B-6	Rainy	19, Aug.	244 to 246	2m	0.0069	59.6	—	—
B-8	Rainy	24, Jul.	239 to 244	5m	0.0081	175.0	—	—

Table 5-4-5 Chemical Analyses of Ground Water

site	Season	Date	Cu (ppm)	Pb (ppm)	Zn (ppm)	Fe (ppm)	Cd (ppm)	Total Cr (ppm)	As (ppm)	Hg (ppm)	Cr^{6+} (ppm)	pH
C-B1	Dry	15, Mar.	0.03	0.13	0.16	30	n.d.	0.007	0.25	n.d.	n.d.	7.60
	Rainy	26, Jul.	n.d.	0.020	0.11	1.5	n.d.	0.001	0.14	n.d.	n.d.	7.61
C-B2	Dry	15, Mar.	0.01	0.91	0.044	1.9	0.001	n.d.	n.d.	n.d.	n.d.	8.87
	Rainy	26, Jul.	0.003	0.029	0.12	1.3	n.d.	0.006	0.001	n.d.	n.d.	8.46
C-B3	Dry	16, Mar.	0.03	n.d.	0.05	3.8	n.d.	0.003	0.015	n.d.	n.d.	8.71
	Rainy	27, Jul.	0.039	5.3	0.22	12	0.002	0.036	0.018	n.d.	n.d.	7.26
C-B4	Dry	15, Mar.	0.02	0.011	0.04	9.3	n.d.	0.009	0.024	n.d.	n.d.	7.45
	Rainy	27, Jul.	0.011	0.042	0.06	8.0	n.d.	0.020	0.010	n.d.	n.d.	7.40
	Rainy	19, Aug.	0.009	0.037	0.11	0.93	n.d.	0.005	0.032	n.d.	n.d.	7.38
C-B5	Dry	15, Mar.	0.03	0.05	0.075	22	0.003	0.006	0.045	n.d.	n.d.	8.64
	Rainy	27, Jul.	0.014	0.12	0.044	6.3	n.d.	0.008	0.030	n.d.	n.d.	7.60
	Rainy	19, Aug.	0.10	0.033	0.14	0.58	0.0006	0.006	0.014	n.d.	n.d.	7.77
C-B6	Rainy	27, Jul.	0.093	0.11	0.085	20	0.0008	0.037	0.041	n.d.	n.d.	7.53
	Rainy	19, Aug.	0.022	0.045	0.043	1.7	n.d.	0.012	0.031	n.d.	n.d.	7.69
C-B7	Dry	15, Mar.	0.03	0.1	0.06	5.2	0.002	n.d.	0.12	n.d.	n.d.	7.94
	Rainy	27, Jul.	0.048	0.15	0.20	30	0.0004	0.058	0.10	n.d.	n.d.	7.45
	Rainy	22, Aug.	0.008	0.001	0.009	2.0	0.001	0.017	0.075	n.d.	n.d.	6.71
C-B8	Rainy	27, Jul.	0.022	0.20	0.10	16	0.003	0.029	0.026	n.d.	n.d.	7.41
	Rainy	19, Aug.	0.010	0.001	0.055	1.7	n.d.	0.024	0.019	0.004	n.d.	7.71
C-B9	Rainy	19, Aug.	0.007	0.059	0.080	1.9	n.d.	0.033	0.011	0.001	n.d.	7.86
C-B10	Rainy	9, Sep.	0.015	0.032	0.25	0.77	n.d.	0.003	0.019	n.d.	n.d.	-
C-B11	Rainy	9, Sep.	0.033	0.093	0.17	2.2	0.001	0.010	0.011	0.001	n.d.	7.95
C-B12	Rainy	9, Sep.	0.045	0.12	0.15	2.4	0.001	0.006	0.005	n.d.	n.d.	7.71
C-B13	Rainy	19, Aug.	0.011	0.026	0.091	1.8	n.d.	0.045	0.005	n.d.	n.d.	7.55

Electric Conductivity (μ m/cm) is;
C-B1(Dry)=59, C-B1(Rainy)=46, C-B2(Dry)=53, C-B2(Rainy)=50,
C-B3(Dry)=47, C-B4(Rainy)=49, C-B4(Dry)=45, C-B4(Rainy)=41, 44,
C-B5(Dry)=45, C-B5(Rainy)=44, 44, C-B6(Rainy)=48, 47, C-B7(Dry)=48,
C-B7(Rainy)=47, 45 C-B8(Rainy)=45, 48, C-B9(Rainy)=45, C-B11(Rainy)=42,
C-B12(Rainy)=43, C-B13(Rainy)=41

Table 5-4-6 Permeability and Porosity Model

Legend No.	Matrix Permeabilty pkm(cm/sec)	Fracture Permeability pkf(cm/sec)	Fracture Zone Width hef(m)	Matrix Porosity porm(%)	Fracture Porosity porf(%)
1 (Aquiclude)	5×10^{-5}	10^{-3}	0	15	30
2 (Aquifer)	10^{-6}	10^{-3}	20	10	30
3 (Aquitard)	10^{-4}	10^{-3}	0	20	30
4 (Aquifuge)	10^{-7}	10^{-3}	0	5	30

Model's Block Permeability(K) = $(hef/\triangle x)\times pkf+(1-hef/\triangle x)\times pkm$

$\triangle x$ = block width(m)