Ⅰst Layer: Alternating bed, rich in clay
From the surface to the average depth of 30 m (maximum depth: 40m)
Ⅱnd Layer: Alternating bed, rich in sand
To the average depth of 70 m (max. depth: 72 m)
Ⅲrd Layer: Clay bed, almost blue, hard clay
To the average depth of 90 m (max. depth: 97 m)
Ⅳth Layer: Sand bed and alternating bed, rich in sand:
To the maximum depth of 170 m

The Ⅰst and Ⅱnd Layers are to be of Holocene age, while the Ⅲrd and Ⅳth Layers are believed to be of Middle Pleistocene age.

However, the facies of Quaternary unconsolidated sediments in the vicinity of MCDC's well field vary to be abundant in clay as a whole to the east and the south. This variation of the facies seems to be influenced by the piedmont colluvial deposits from the western marginal highlands of the Shan Plateau. The variation is consistent with the change in the resistivity obtained from the electrical prospecting conducted by the JICA Study Team. That is, the lower resistivity zone is distributed suggesting existence of silt or clay rich layers in southeastern Mandalay (Refer to 3.2.1).

1.3 Hydrogeology

The Ⅰst, Ⅱnd and Ⅳth Layers are consistent with 1st to 3rd aquifers respectively. The bottom clayey layer of the Ⅰst Layer, and clay bed of the Ⅲrd Layer play a role of confining layers. Consequently, groundwater of the 1st aquifer is phreatic or unconfined and tapped by dug wells, while groundwater of the 2nd and 3rd aquifers is confined and drawn by installed shallow and deep tube wells. The 2nd aquifer, however, could partially be unconfined depending on the geological situations. For convenience, 1st to 3rd aquifers will also be called here Phreatic, Shallow Confined and Deep Confined Aquifers respectively. In the 3rd aquifer, two to three aquifers are sometimes found up to about 170m in depth, and in many places, the lower part of the 3rd Aquifer shows alternation of sand and clay. Such a geologic situation is treated as 'the 3rd Aquifer Group' for the groundwater simulation. Fig.1.2.3 shows the schematic geological profile. Aquifer constants of these layers are discussed in 3.2.3.

Because there are wells PTW-28 by MCDC and JICA No.1 to 4 by JICA drilled in 2001 and 2002, hydrogeology in the vicinity of these wells become clearer.

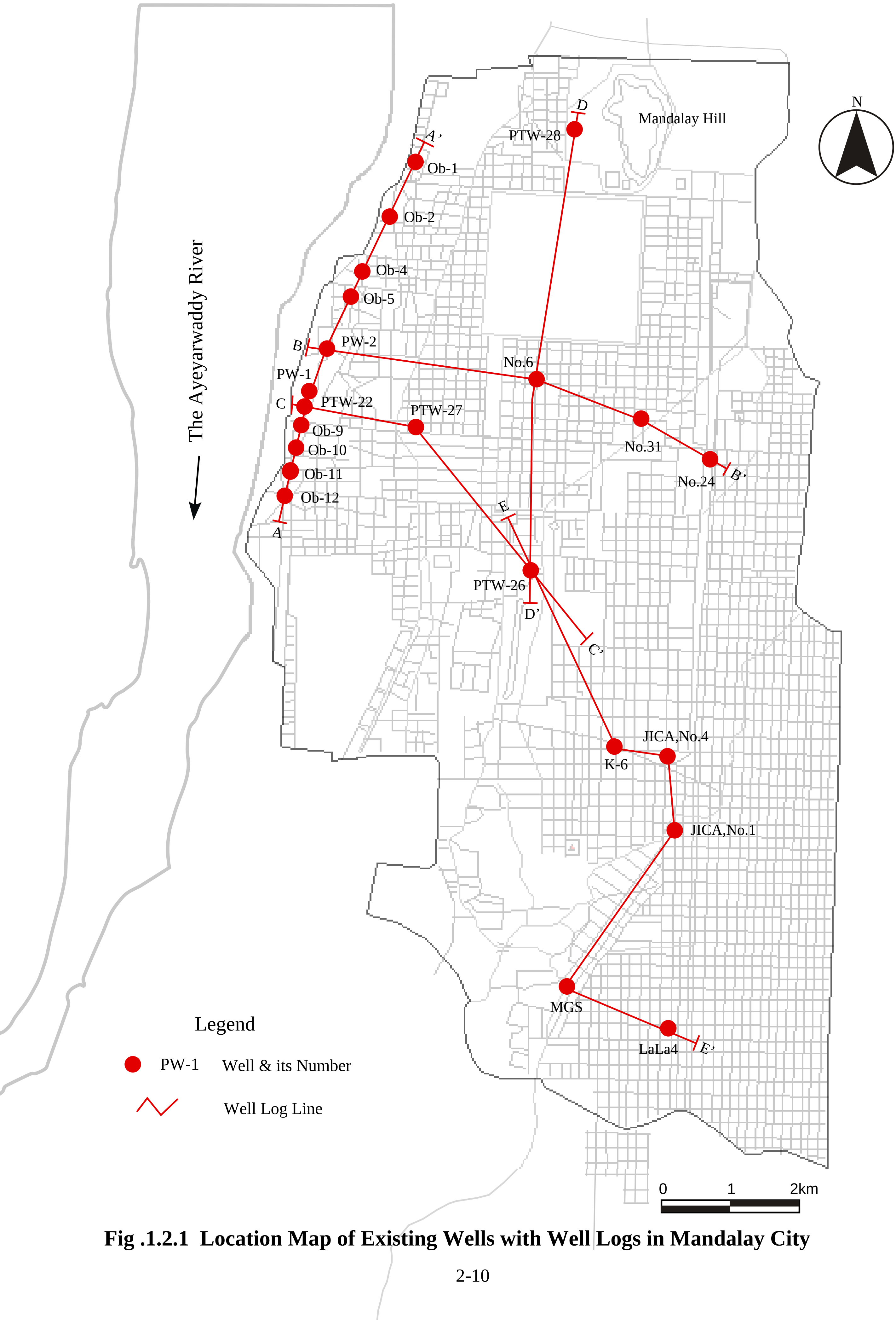
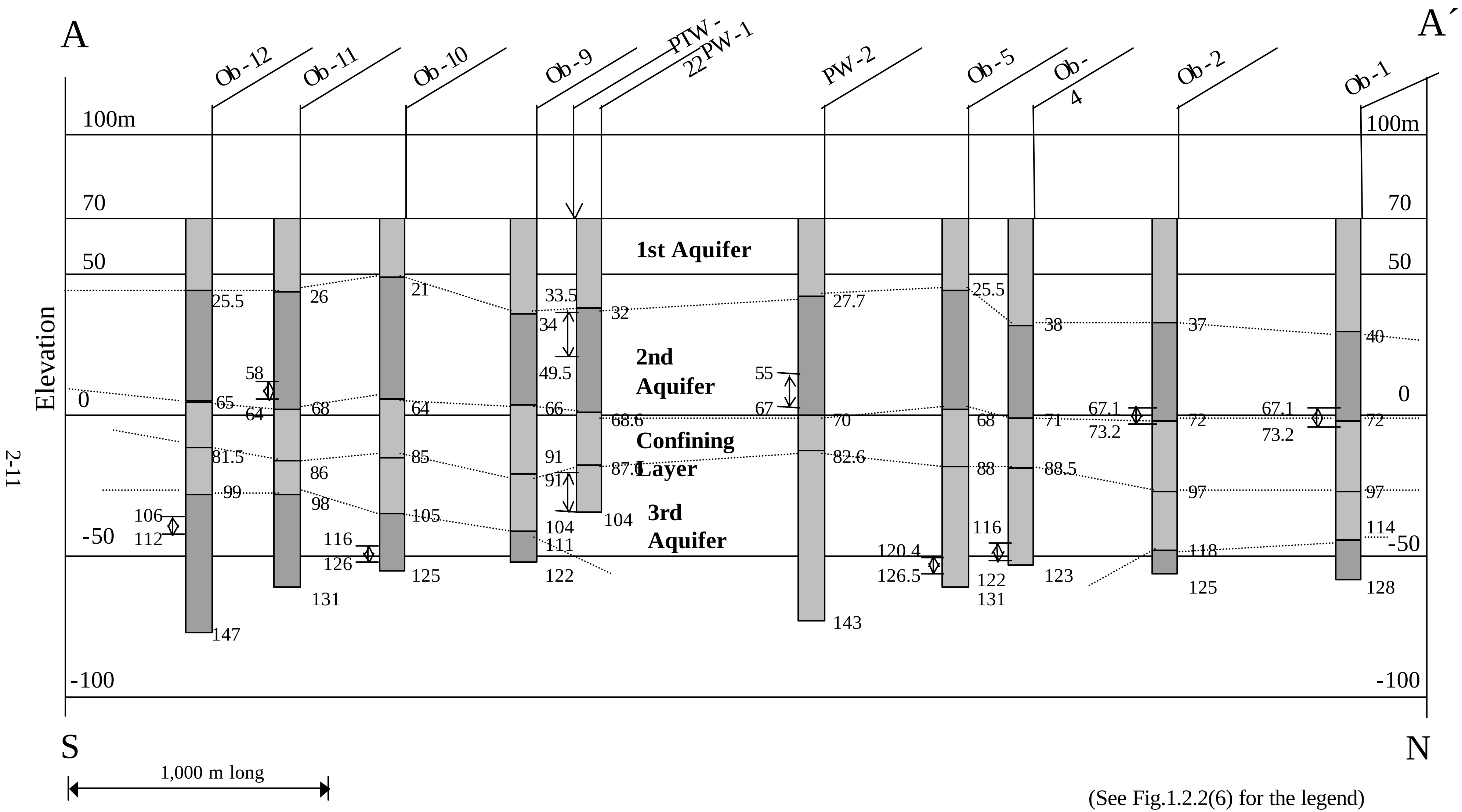
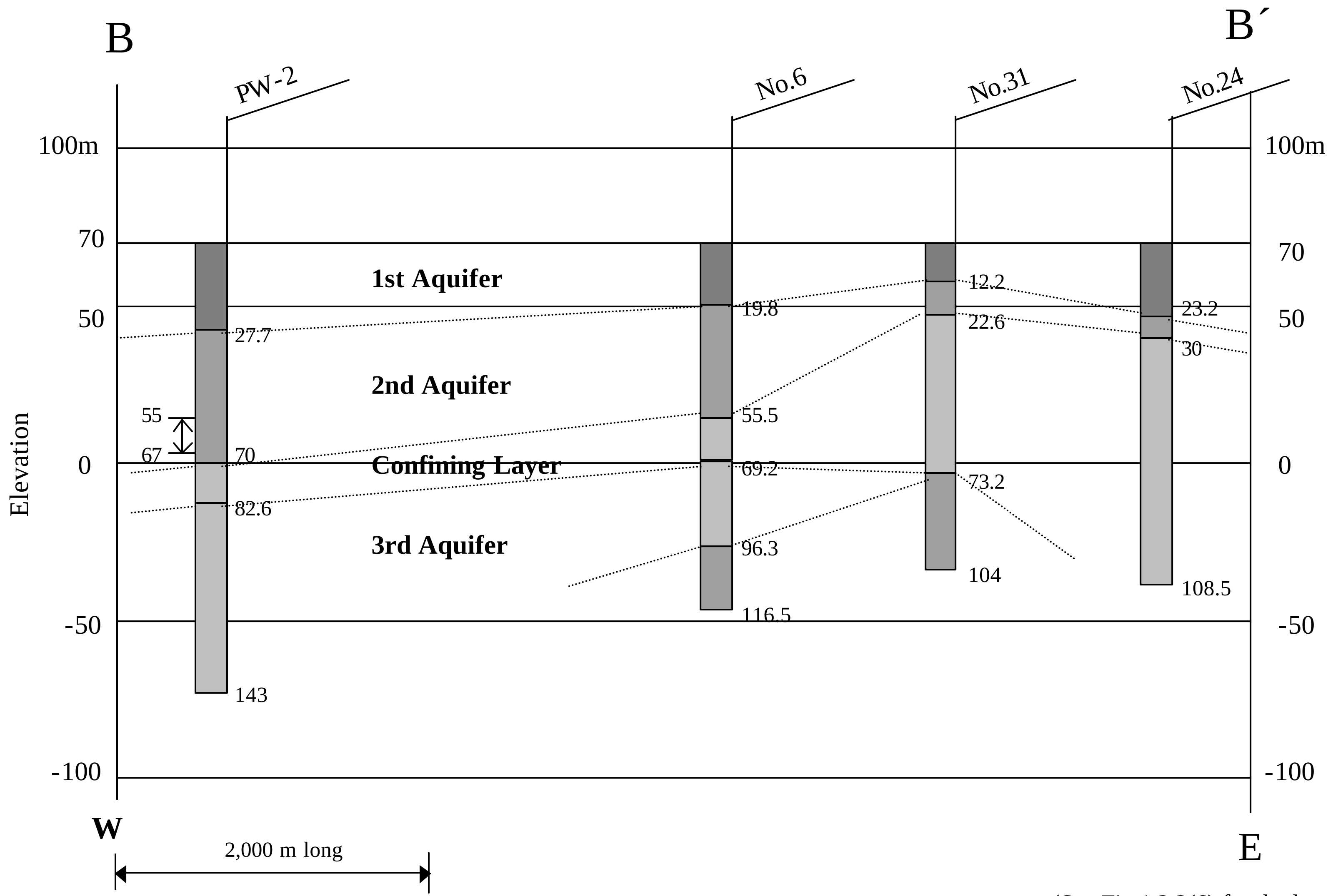


Fig .1.2.1 Location Map of Existing Wells with Well Logs in Mandalay City



(See Fig.1.2.2(6) for the legend)

Fig. 1.2.2 (1) Hydrogeological Cross Section A-A´



(See Fig.1.2.2(6) for the legend)

Fig. 1.2.2 (2) Hydrogeological Cross Section B-B´

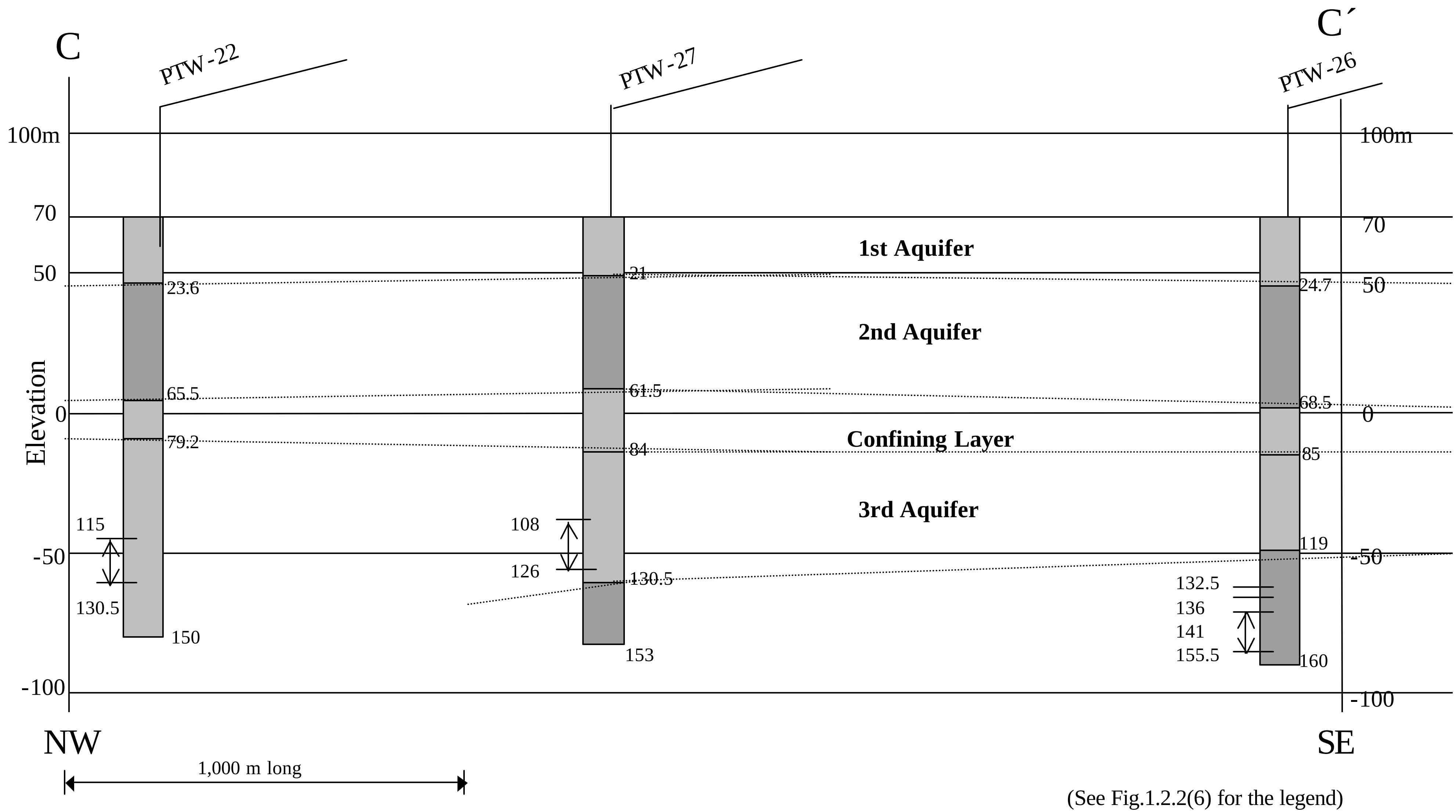
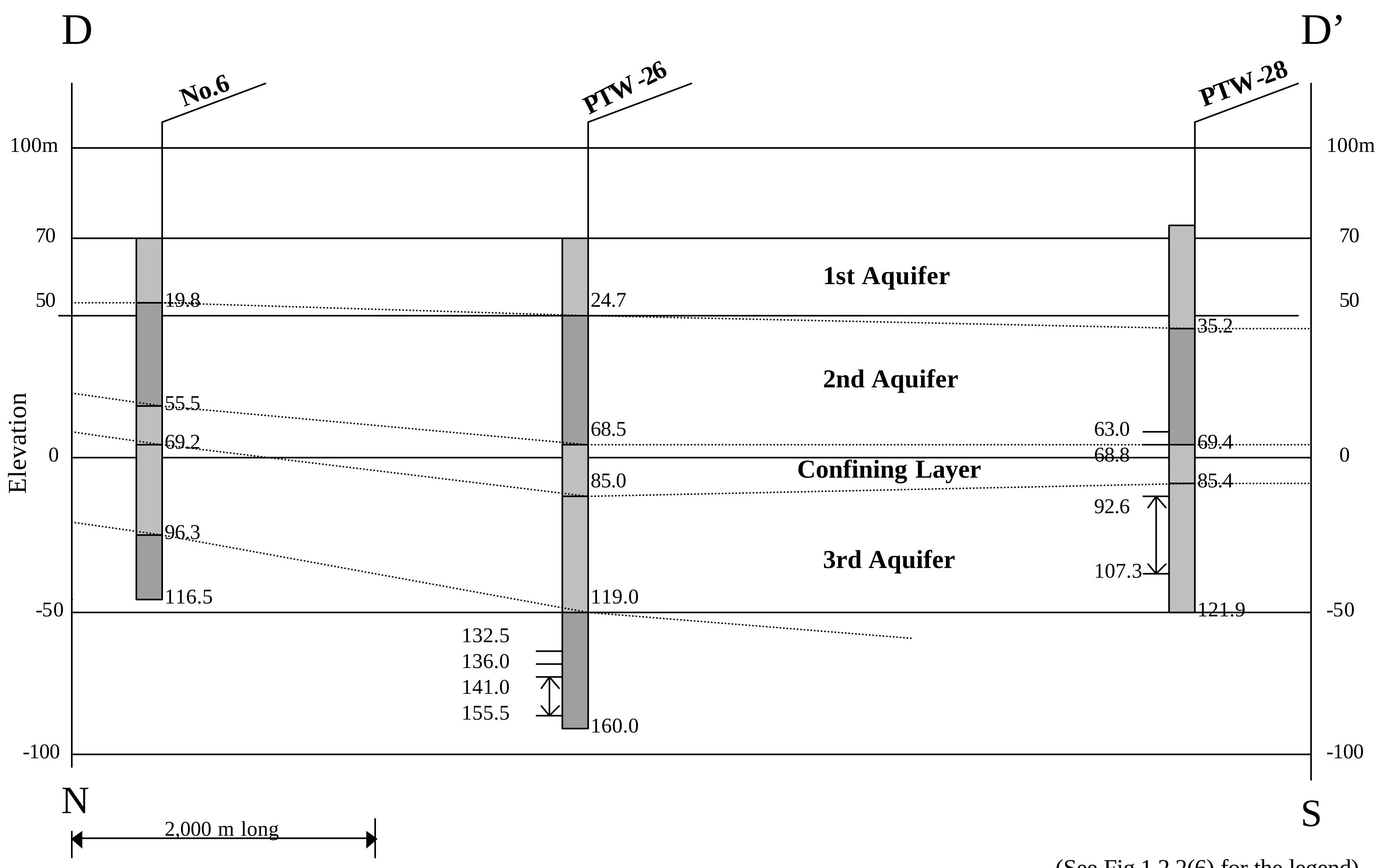
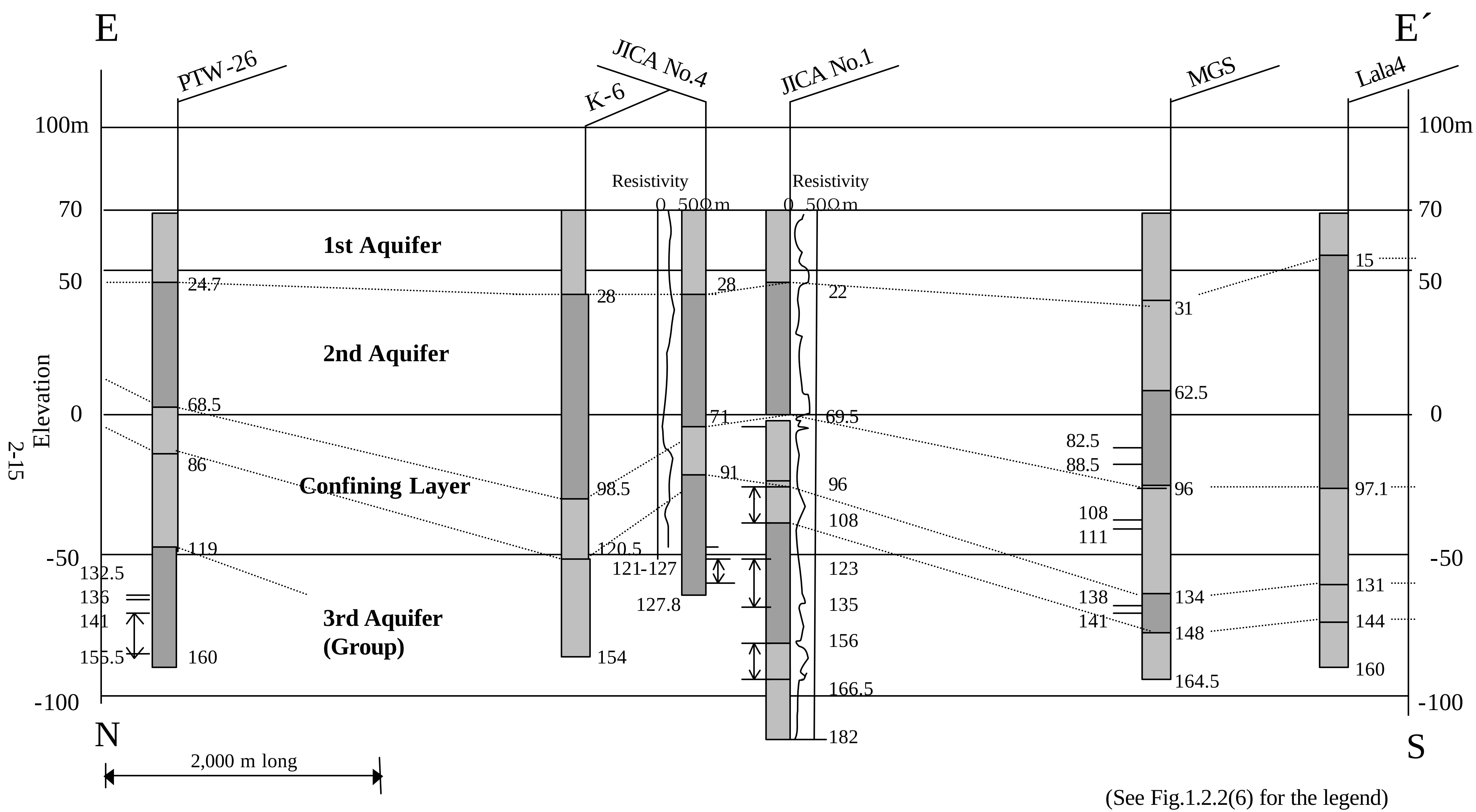


Fig. 1.2.2 (3) Hydrogeological Cross Section C-C´



(See Fig.1.2.2(6) for the legend)

Fig. 1.2.2 (4) Hydrogeological Cross Section D-D´



(See Fig.1.2.2(6) for the legend)

Fig. 1.2.2 (5) Hydrogeological Cross Section E-E´

Electrical logging shows that resistivity of aquifers generally indicate higher values of 20O?m to 60O?m. In addition, gamma ray logging shows that higher gamma ray values are observed in confining layers (See Fig. 1.2.2(5) and also 3.2.1).

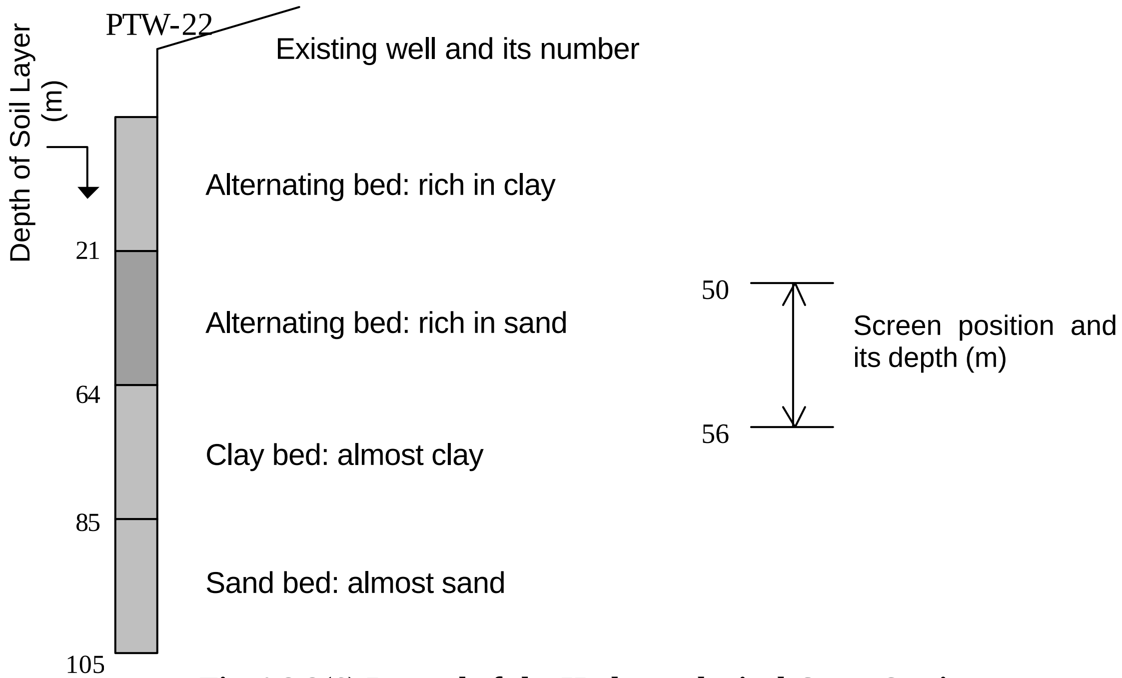
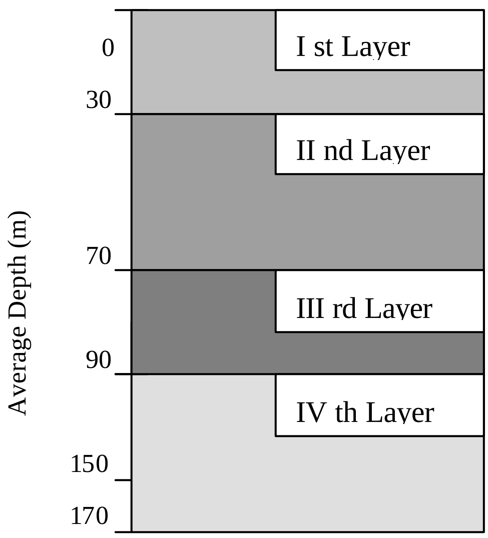


Fig. 1.2.2(6) Legend of the Hydrogeological Cross Section



Ist Layer (30 m): Alternating Bed, rich in clay*
(1 st Aquifer, Phreatic (unconfined) Aquifer, dug well)
IInd Layer (40 m): Alternating Bed, rich in sand
(2 nd Aquifer, Shallow Confined Aquifer (partially unconfined), shallow tube well)
IIIrd Layer (20 m): Clay Bed, almost clay
(Confining Layer)

IVth Layer (70 m +): Sand & sand rich alternating bed
(3 rd Aquifer, Deep Confined Aquifer, deep tube well)

* Bottom clayey zone could be a confining layer of IInd Layer.

Fig. 1.2.3 Schematic Geological Profile in the Vicinity of the MCDC's Well Field