Appendix 4-6-1-(2)

JN3; Results of the site survey

① Overall geological condition

This site is Devonian WNW-ESE system of sedimentary folding area, the rocks are composed of mainly shale and limestone. The fractured zone reported in the published geological map is along the geological boundaries inside the sedimentary rocks. Some formations include the serpentinite lens in the limestone or shale beds. Around this site, underground water level is nearly same as the ground surface. An ENE-WSW system of fault through the lower reservoir is reported in the published map.

② Site geology

A) Upper dam/reservoir

Rock around the Upper Reservoir is clayish shale or limestone (D2mt, D2ebn,D2g-D3bc). The conditions of rocks are hard and massive.

Some holes in the limestone were found along the road. The right side of the reservoir has steep slope composed of limestone outcrop, the left side of the reservoir has gentle slope composed of the same geology, and small streams are found in this side. There is a nearly NNE-SSW system of small hill in the center of the reservoir area, the geological condition of this hill is not clear.

＜Upper reservoir＞

Permeability around the upper reservoir seems generally low. The number of open holes and joints in the limestone is fewer than the other limestone areas.

No geological features of the fault inside the reservoir except along the road are understood.

The weathering condition around the reservoir is slight, some small valleys are existing on the boundaries in the Devonian sedimentary rocks (D2mt-D2ebn). The secondary sediments such as alluvial is not thick, generally less than 5-10m.

＜Dam site＞

Dam site is composed of mainly massive and hard limestone or limy shale, some secondary sediments or weathering in the reservoir is less than 5-10m thickness.

There are no features of fracture zone in the reservoir, but several outcrops of the fractured zone without clay are found along the road.

There are no serpentinite outcrops around the reservoir.

B) Lower Dam/reservoir

The geology is gently sloped clayish shale (D1st) and limy shale in partial in the whole area of Lower Reservoir and Dam site. An ENE-WSW system of structural line crosses the reservoir in the published geological map.

＜Reservoir＞

Geology around the Lower Reservoir is mainly composed of clayish shale (D1st), limy shale in partial, gently hard and massive, low permeability.

The hard and massive shale with nearly E-W bedding and dips nearly horizontal as 10-20degrees to the north (D1st) outcrops in the riverbed downstream of the Dam axis. There are no features of fractured zone around the reservoir but in the road.

＜Dam site＞

Mainly hard and massive clayish shale are found around the Dam site, limestone in partial in the riverbed downstream of the Dam axis. There are no weak zone nor strongly weathered zone around the reservoir and dam site. And there are no serpentinite around the reservoir.

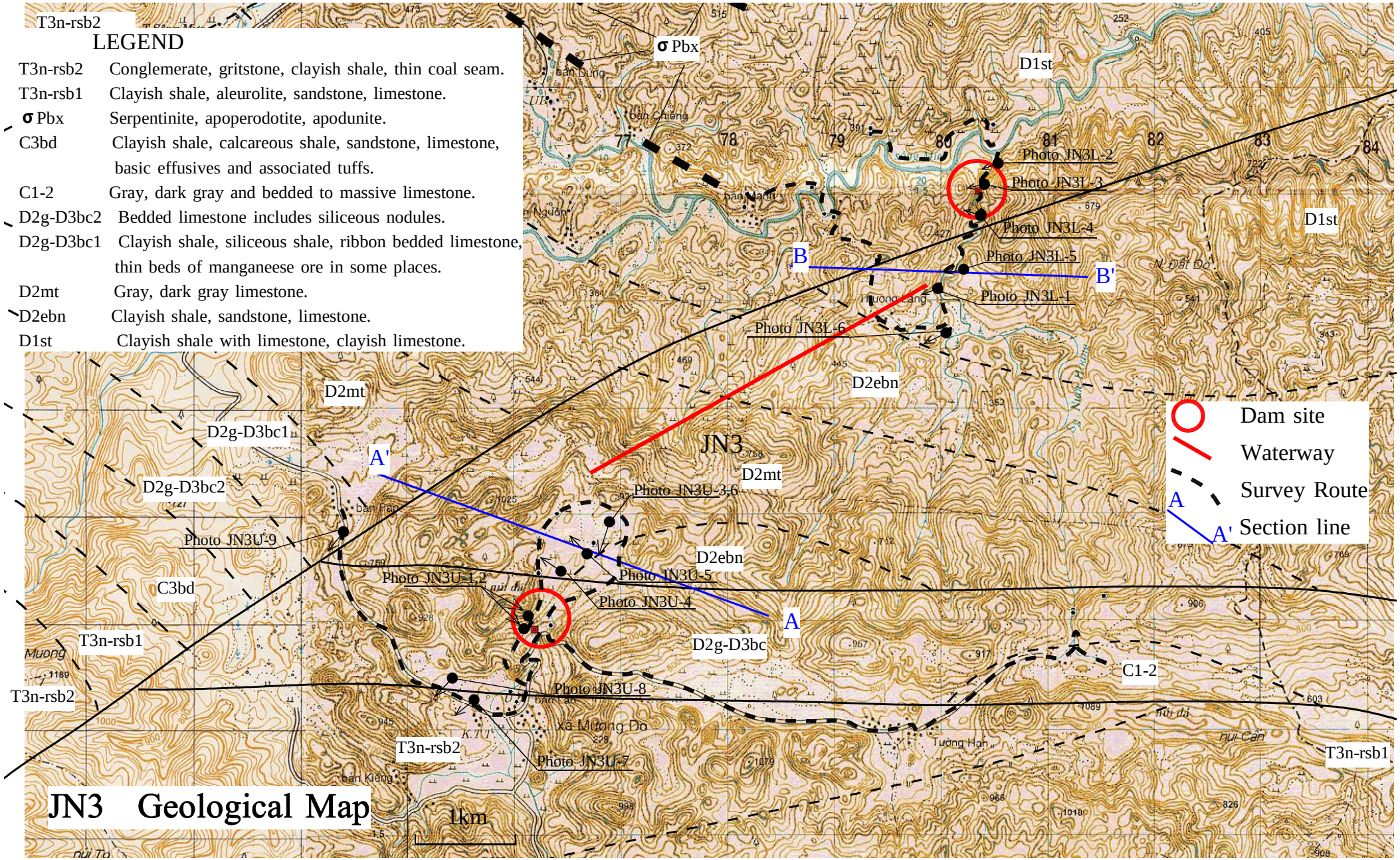
C) Waterway/Underground Power Station

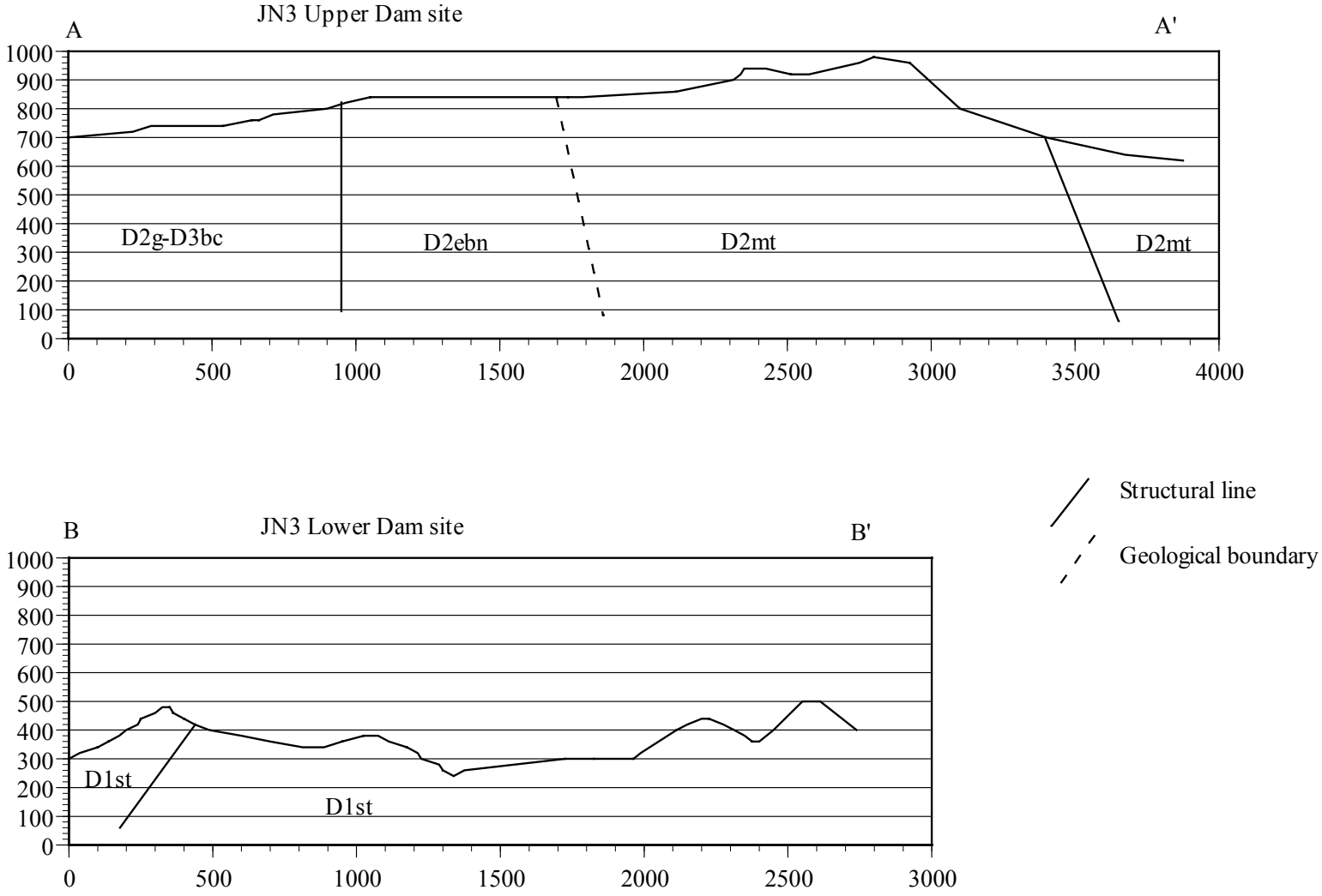
Geology around the waterway and underground power station site is limestone (D2mt) or shale (D2ebn) according to the published geological map. There are no features in the surface for the deeper part, permeability is depend on the kinds of rock such as limestone and shale. Strength of each rock are nearly same. There is a valley along the geological boundary of D2mt and D2ebn according to the published geological map.

There are no serpentinite outcrops around the reservoir.

D) Others and problems

- N-S systems of fault is passing through the upper reservoir, confirming the conditions of fracture zone with the detailed survey will be needed.
- Slightly thicker secondary sediments and deeper weathering in the lower reservoir than upper reservoir.
- Investigation for the distribution of serpentinite zones will be needed.


LEGEND
T3n-rsb2 Conglemerate, gritstone, clayish shale, thin coal seam.
T3n-rsb1 Clayish shale, aleurolite, sandstone, limestone.
σ Pbx Serpentinite, apoperodotite, apodunite.
C3bd Clayish shale, calcareous shale, sandstone, limestone, basic effusives and associated tuffs.
C1-2 Gray, dark gray and bedded to massive limestone.
D2g-D3bc2 Bedded limestone includes siliceous nodules.
D2g-D3bc1 Clayish shale, siliceous shale, ribbon bedded limestone, thin beds of manganeese ore in some places.
D2mt Gray, dark gray limestone.
D2ebn Clayish shale, sandstone, limestone.
D1st Clayish shale with limestone, clayish limestone.
Dam site
Waterway
Survey Route
Section line
JN3
Photo JN3L-1
Photo JN3L-2
Photo JN3L-3
Photo JN3L-4
Photo JN3L-5
Photo JN3L-6
Photo JN3U-1,2
Photo JN3U-3,6
Photo JN3U-4
Photo JN3U-5
Photo JN3U-7
Photo JN3U-8
Photo JN3U-9
A
A'
B
B'
JN3 Geological Map
1km



JN3 Geological Section