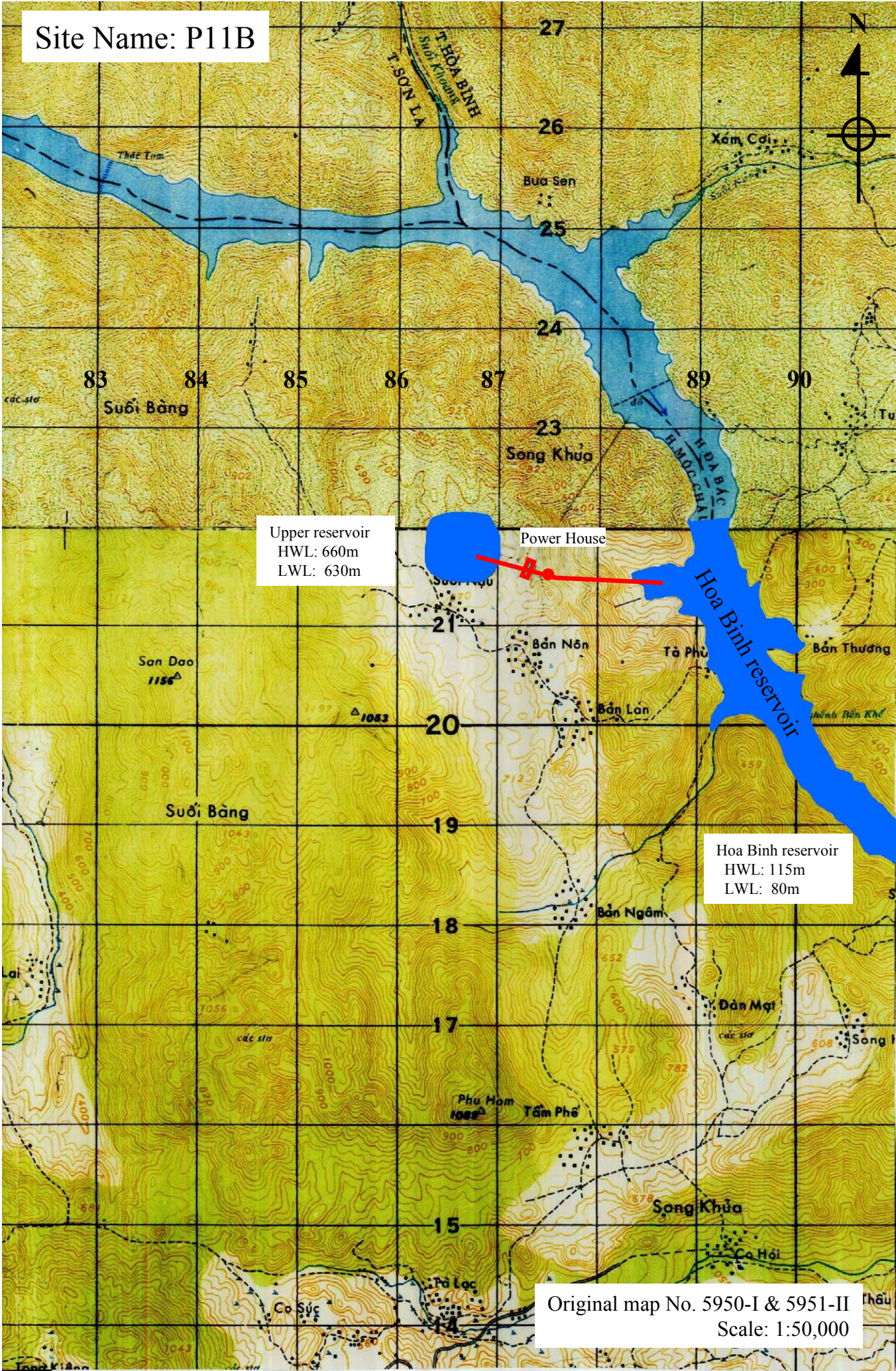


The features of promising potential sites for PSPP

Site Name		P 11 B	
Location (Name of River)		Upper dam/reservoir : Son La Province / Moc Chau District / Suoi Nau Commune (None) Lower dam/reservoir : Son La Province / Moc Chau District (Hoa Binh Lake)	
Project Parameter	Installed Capacity P(MW)	1,000	
	Design Discharge Qd(m ³ /s)	230	
	Effective Head He(m)	540	
	Peak Duration Time T(hrs)	7	
Topography and Geology	(Overall geological condition)	<ul style="list-style-type: none"> - The surveyed area is regionally around the center of the NNW-SSE systems of folded range group, which continued from the northwestern continental sedimentary rocks of Proterozoic-Paleozoic. - Da River fault as a noticeable tectonic line extends in NW-SE direction and passes the relatively near point as 20km of the surveyed area. - Sedimentary rocks as dominantly limestones and rarely changed from shale transitionally in some locations occupy in this region. Along the Da river, there are many of the steep slopes of outcropped limestone in higher level. - Some of the WNW-ESE system of branch faults from the Da River Fault are crossed by the La river in low angle. 	
	(Upper dam/reservoir)	<ul style="list-style-type: none"> - Topography and geology are flat terrace of Devonian limestone (D2mt/D2ebn) and Ordovician and Silurian limestone (O3-Ssv), this flat terrace is one of the abnormal forms in the less erosion resistance rock as limestone in this area. - The upper dam site can be accessed by a vehicle though Route 6 & 37 about 45 km long from Moc Chau and through the un-paved road about 20 km long from Ban Men. - The planned upper dam is different from the topographical map. - The mountains exist in the northeast of the reservoir, which can be made use of as a part of bank. - Since the upper dam has a flat topography, the total amount of excavation is presumed to be as much as the reservoir capacity. 	
	(Waterway • Power Station)	<ul style="list-style-type: none"> - Ordovician – Silurian limestone (O3-Ssv) occupy the Intake to underground powerhouse site. The bedding of this formation is gently or horizontally. - Precambrian dolomite (PR3sp) occupy the underground powerhouse to outlet. In the tunnel, this rock is clearly changed to Ordovician-Silurian limestone (O3-Ssv) along the local fault just before the outlet. - Although the access tunnel to the headrace and the penstock can be approached from the planned upper dam site, it is difficult to construct the access roads to the underground powerhouse and the tailrace due to the complicated topographical conditions. - It is thought that the inlet part around Soui Sa village is suitable for the location of the outlet. And it is necessary to examine the temporary waterproofing method and the underwater excavation method of a joint with Hoa Binh Lake. - Since the horizontal distance from Hoa Binh Lake to the underground power station is short, it is necessary for the permeability of the bedrock between them to be low. - It is necessary to construct the pump system for drainage from the underground powerhouse. 	

	(Lower dam/reservoir)	<ul style="list-style-type: none"> - Precambrian dolomite (PR3sp) and Ordovician-Silurian limestone (O3-Ssv) are contact along with the fault, the dips of these bedding are extremely high as vertical. - These formations are corresponding to the formation in upper reservoir, the opposite side of the WNW-ESE anticline system. - The well-jointed limestone is cropping out along the Da river on the water level in lower inclined as 20-30 degrees. - The water level of Hoa Binh Lake was 114 m of H.W.L. mostly.
Natural and Social Environment	Natural Park / Protected Area	The project site and its surrounding areas are not in any existing or proposed protected area.
	Prosperous fauna / flora	There is no important flora / fauna in the area.
	Minority	There are Muong and Thai ethnic groups living in the area, and it is expected that some of them will receive negative impacts. However, scales of the impacts are unknown.
	Resettlement / Compensatory assets	Resettlement may occur but the situation is not yet surveyed. Compensation for the agricultural land, houses and forest gardens will occur.
	Historical / Cultural Heritage	There is no historical / cultural site in and around the project site.
	Road / Traffic condition	There is a good road to the upper dam site, and it is necessary to construct a new one to the outlet and the underground powerhouse.
Others' Special Note		The site is situated about 50 km to Hoa Binh sub-station (500 kV).
Estimated Economic Value		770 mln US\$ (B/C=1.08)

Site Name: P11B



Upper reservoir
HWL: 660m
LWL: 630m

Power House

Hoa Binh reservoir
HWL: 115m
LWL: 80m

Original map No. 5950-I & 5951-II
Scale: 1:50,000



Photo 1

Planned reservoir condition
(View from the western slope of the reservoir)



Photo 2

Northeast of the reservoir
(View from the upstream of the reservoir)

- The mountains exist in the northeast of the reservoir.



Photo 3

Planned reservoir condition
(View from the western slope of the reservoir)

Since the upper dam has a flat topography, the total amount of excavation is presumed to be as much as the reservoir capacity.



Photo 4

Planned outlet condition
(View from a boat)

It is thought that the inlet part is suitable for the location of the outlet.



Photo 5

Planned outlet condition
(View from a boat)

There are many of the steep slopes of outcropped limestone in higher level.



Photo 6

Water level of the reservoir
(View from a boat)

Silurian well-jointed limestone outcropped around the water level in Hoa Binh Lake with 20-30 degrees of beddings and 40-60 degrees in some locations.