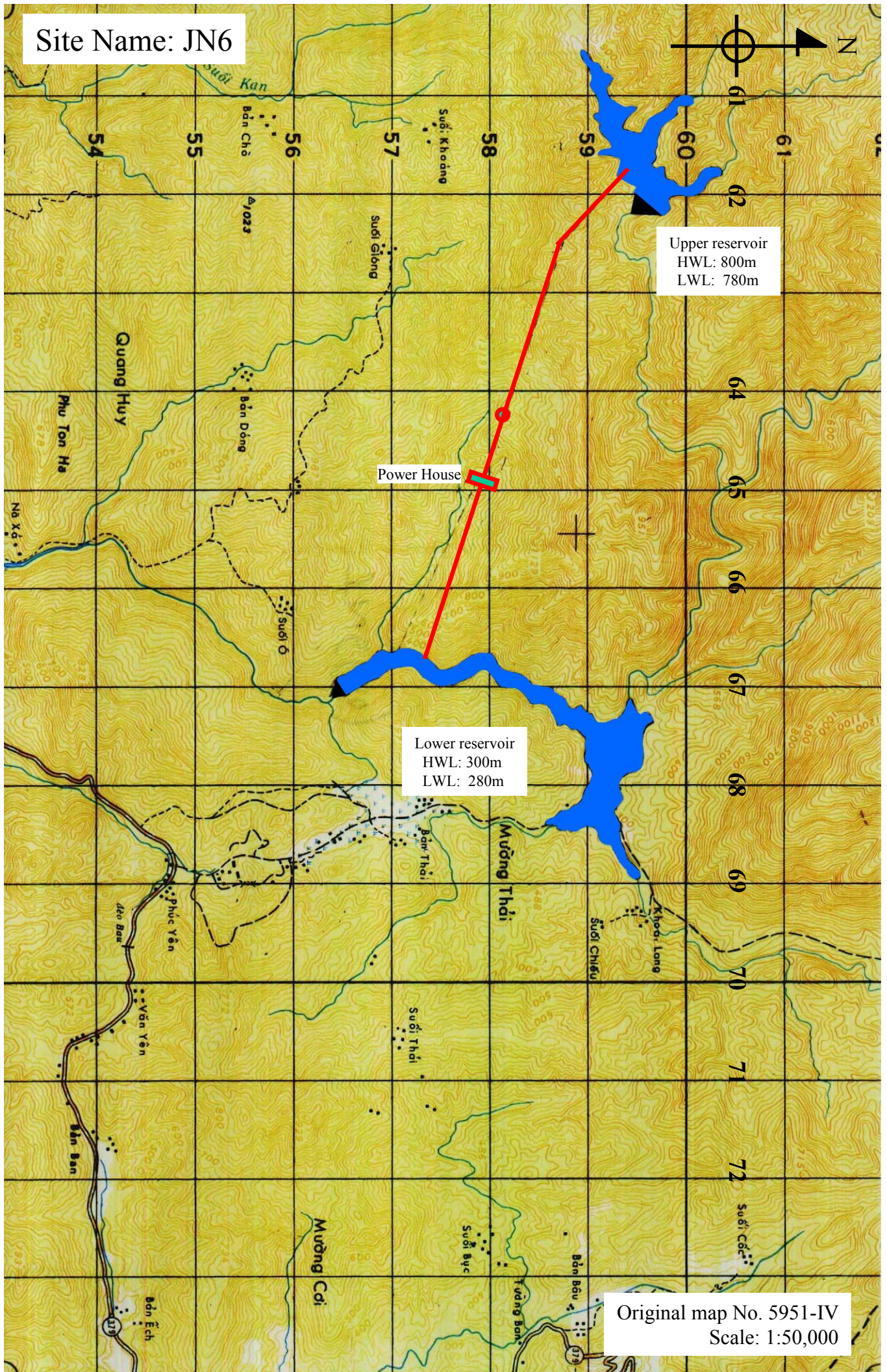


The features of promising potential sites for PSPP

Site Name		JN 6	
Location (Name of River)		Upper dam/reservoir : Son La Province/Phu Yen District/ Suoi To Commune (Suoi Ngong River) Lower dam/reservoir : Son La Province/Phu Yen District/ Muong Thai Commune (Suoi Lat (Suoi Toc) River)	
Project Parameter	Installed Capacity P(MW)	1,000	
	Design Discharge Qd(m ³ /s)	260	
	Effective Head He(m)	480	
	Peak Duration Time T(hrs)	7	
Topography and Geology	(Overall geological condition)	<ul style="list-style-type: none"> - Sedimentary rocks and comparable volcanic rocks occupy this area. The surveyed area is near the boundary of these different kind of rocks. - In the eastern side of the surveyed area, Permian-Triassic sedimentary rocks contains some limestone thin beds (P2-T1vn/D2ebn/D2mt/T3n-rsb2/T3n-rsb1), some faults disorder the strike and dip of these sedimentary formations. - Permian-Triassic sedimentation and volcanic activities were occurred alternatively, and later Jurassic-Cretaceous volcanic activities disturb these already existed sedimentary formations. - The oldest volcanic rock is Permian-Triassic basaltic porphyry ~ tuffs (P2-T1vn) along with the older sedimentary rocks in this region, - Jurassic-Cretaceous acidic volcanic rocks as rhyolite~rhyolitic tuff(J-K?bh and K2sb)is the center of the survey area, and the later Cretaceous basic tuffs (K2sb) are cropped out surrounding this acidic center. -Faults had been active after the volcanic activities, some volcanics are cut by one of this fault system. On the slope of the access road to the village along the river, some volcanics crop out with shear zone or hydrothermal alterations. Rhyolite and tuff are massive and hard rocks, there are some weathering with some meters of thickness near the fault. 	
	(Upper dam/reservoir)	<ul style="list-style-type: none"> - Crustic acidic tuffs of Cretaceous (K2sb) out crops around the upper Dam site, some porphyritic rocks are found on the ground. Some of the matrix of these volcanics are very soft. - NS system of fault along with the Suoi Kan stream pass through the center of the upper reservoir, a lot of the sheared and altered outcrops are found on the slope of the access road along the river. The weathered zone of the volcanics is relatively thick on the few meters surface. - There are some probability of the cooling joint system in rhyolite and welded tuff in underground. - Recent constructed road from Phu Yen to Suoi Khoang leads us to the 2.5km south of the upper dam site by automobile. But remaining elevation 400m up and 10km horizontally access road will be needed additionally. - Other hand, approach from the lower dam site is more useful than the upper road mentioned above in the point of economically advantages to the underground powerhouse, still require the 2.5km tunnel and 3km road. - It sounds a lot of the quantity of water flows in the river. From the villagers information, three streams are gathers in the upstream of surveyed area. - The left side slope of the upper reservoir is gently and narrow ridge viewing from the right side. 	
	(Waterway • Power Station)	<ul style="list-style-type: none"> - The same rock as tuff (K2sb) in upper reservoir occupy this area from the Inlet/underground Powerhouse to outlet. - Total distance of Headrace is relatively long as 4.5km, some adits will be required in some section. - The location of underground powerhouse should be decided with the economical comparison for the shaft penstock and sloped penstock. 	

	(Lower dam/reservoir)	<ul style="list-style-type: none"> - Slightly basic tuff (P2-T1vn) occupy around the lower dam site. The geology around the lower reservoir is same as upper reservoir of tuff (K2sb). -Weathered red-purple colored tuff outcrop around the lower Dam site. This rock is hard and massive originally, partially have schistosity of bedding (N30W/30SW). -MARD has planned irrigation dam at the same site and topographical survey and core drillings has already been carried out. -The dam height of the MARD plan is 25m. Therefore it is necessary to rise about 5m when reviewing the plan as joint project between MARD and EVN. -River bed condition is available for concrete gravity dam. -Water discharge is about 2m³/s. -Existing road is there from route No. 379 to Ban Chien village, which is submerged. The road is necessary to upgrade and extension to the construction site including building new bridges.
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 are relatively intact forests left north of the proposed lower reservoir and there is a possibility that the forests will receive secondary negative impacts such as secondary developments, illegal logging and poaching. The forest around the proposed upper reservoir is used as a community forest of the local people. There still are large mammals and some important plant species in the area.
	Minority	There is a village of Muong ethnic group, and it is expected that they will receive negative impacts. However, scales of the impacts are unknown.
	Resettlement / Compensatory assets	Resettlement and compensation will occur because of project activities such as expanding an access road and the reservoirs. MARD has already started to survey the proposed lower reservoir to construct a irrigation reservoir, and it seems that there is an agreement between the local village and the district office on their resettlement and compensation.
	Historical / Cultural Heritage	There is no historical / cultural site in and around the project site.
	Road / Traffic condition	There is no good road to the project site and it is necessary to construct new roads to the site.
Others' Special Note		Distance from Hoa Binh 500kv substation is about 90km.
Economic Value		760 mln US\$ (B/C=1.09)

Site Name: JN6



Upper reservoir
HWL: 800m
LWL: 780m

Power House

Lower reservoir
HWL: 300m
LWL: 280m

Original map No. 5951-IV
Scale: 1:50,000



Photo 1

It is necessary to construct a new approach road about 10 km long to the site.
(View from the southern slope of a footpath)



Photo 2

In the case of accessing from the planned lower dam site, it is necessary to construct a new approach tunnel of about 2.5 km long and a new road of about 3 km long.
(View from the top of the right-bank)



Photo 3

The ridge of the left-bank of the planned upper dam site is thin and has a gentle slope.
(View from the top of the right-bank)



Photo 4

Concrete gravity dam is suitable for this lower reservoir based on the topographical condition.



Photo 5

Dam site is located at the same location where MARD plans to build an irrigation dam.



Photo 6

Water flow of the river is about 2.0 m³/s.



Photo 7

There are relatively intact forests north of the proposed lower reservoir. Large mammals still exist there.



Photo 8

The village in the proposed lower reservoir seems to be relatively well off.



Photo 9

The people of the village want to continue their rice cultivation even after they are resettled.



Photo 10

They take some small fishes in the streams for their own consumption. This is fishing equipment for their fishery.