

# Geohydrology of Chukudum Source of Kewzing Bakhim Source, Ravongla South Sikkim

## **Introduction:**

In Bhutia Language the word “**Chukudum**” means “**constant**” or **equal**, which indicates the discharge of water was constant. The area is covered by dense vegetation but discharge of water was very low because the area is dominated by red soil, which is good for moisture holding only but it does not allow the rain water to percolate down to the aquifer. The rain water flows quickly due to gravity flow. Therefore, the discharge of chukudum spring was very low before artificial intervention was done.

## **Rock types:**

The Chukudum Spring is largely covered by Quartzite and mica bearing Phylite. The contact of quartzite and phylite help to emerged the spring as a **contact spring**. The capacity of hold water in the phylite is higher than quartzite. There we seen fracture strike between 104 degree to 284 degree and this fracture zone is good zone for recharge activities from where optimum level of rain water can be in filtered through artificial recharge by making tranches and khal (large tranches). The dip amount of rock is 35 degree dipping towards 10 degree north (dip direction). As per dip direction, underground water of this aquifer is flowing from southward direction to northward direction. So that artificial intervention should be select in south east direction for better result.

## **Type of spring:**

The contact of quartzite and mica bearing phylite help to identified this spring as a ‘contact spring’. In some area there we saw faulting of rock. The topography of Chukudum Spring is not same, as we move towards (upward) eastward direction we can see gentle slope and at the same time after short distance there we seen steep slope. According to these unequal slopes we can identify this as a Depression Spring. But it is impossible to identify it as a depression spring because total area is covered by dense vegetation. So that Chukudum Spring is identified as a “Contact Spring”.

### Discharge of water:

The present discharge of water is 100 liters per 1 minute. As we compared with previous date 40 liters is increased within 1 minute. In the month of June 2010 there was 60 liters in 1 minute; no doubt, it is due to DHARA VIKASH work. For references, some data are displaying here, they are following:

Sl.no	Date	Liter per minute	Remark
1	24:05:2009	60 ltr/1 minute	First survey (last year)
2	19:05:2010	60 ltr/1 minute	Started Dhara Vikash
3	03:06:2010	60 ltr/1 minute	Moonsoon started
4	18:06:2010	60 ltr/1 minute	Rainfall
5	03:07:2010	60 ltr/1 minute	Heavy rainfall
<b>6</b>	<b>18:07:2010</b>	<b>100 ltr/1 minute</b>	<b>Discharge increase</b>
7	30:07:2010	100 ltr/ 1minute	constant
8	10:08:2010	100 ltr/ minute	constant
9	09:09:2010	100 ltr/ minute	constant

### Water quality:

The different parameter indicates the quality of water of Chukudum Spring. The TDS ( Total dissolved solid)in the water is very low which is only 50.5 ppm , indicating it to be travelled a very short distance or transitivity is very high through fracture which we seen just above the spring. The PH Value is 6.99 which are normal. The EC is also very low which is only 70.6 microcemens.It also indicates the water is travelled from short distance.The salinity is only 36.1 ppm and temperature is 16.5 degree centigrade. All these parameter indicates the water of Chukudum Spring is very fresh and safe for drinking because there is no chemical contamination but bacteriological test is not performed till now.

### GPS Point:

The Chukudum Spring extend at the elevation of 6671feet.The latitudinal extend is 27.16.752 and longitude is 88.21.073.

**Conclusion:**

The Tangaymendang ward under Kewzing Bakhim GPU suffering acute water problem from many years, because it is situated near about 6000 feet, there is no option for another water source. About 75 household are depends on this source only from Tangaymendang ward. Recently the public of New Sada ward under Barfung Zarrong GPU also selected the same source for drinking water supply. The population and household are increasing day by day and availability of water is decreasing gradually which is not a good sign for future. In future, the scarcity of water will be solved through artificial intervention (Dhara Vikash) only. To meet the demand of water supply each and every people have to aware about source development work and its importance but proper planning is lacking behind. Due to implementation of Dhara Vikash work, the discharge of water of above said spring is increasing now a day. Therefore, the public of Tangaymendang ward express their thankfulness to RM&DD Gangtok, SIRD and BAC Ravangla for implementation of Dhara Vikash and ACWADAM Pune and PSI Deheradun for guidance