

**RECONNAISSANCE GEOLOGICAL REPORT OF PROPOSED SITE OF**  
**SHRI KRIPALU S/O SHRI LACHU FOR THE CONSTRUCTION OF**  
**OWNER DRIVEN CONSTRUCTION FOR HOUSING (ODCH)**  
**VILLAGE-KOTLA, TEHSIL- BARKOT, DIST.- UTTARKASHI**  
**KHASARA NO – 763(b) & AREA – 0.020 ha**

**Date of Inspection: 23-12-2013**

In a 'World Bank' funded programme, Government of Uttarakhand has provided teams of Consultant Geologists and Consultant Associate Geologists to Director, Geology and Mining Unit, Uttarakhand for geological studies in proposed sites for Owner Driven Construction For Housing (ODCH) in disaster affected districts of Uttarakhand. Director, Geology and Mining Unit, Directorate of Industries, Uttarakhand has issued an Office Order No.1612 Aa. Pra./Bhu.Ni./Bhu.Khani.E./2013-14 dated 10<sup>th</sup> December 2013 regarding geological studies in disaster affected five districts of Uttarakhand. District Uttarkashi is one of them where the undersigned took traverses and collected field geological observations under the management of cosignatory departmental 'Assistant Geologist'.

In the above mentioned questioned area, the reconnaissance geological investigation was carried out in the presence and co-operation of Shri Sardar Singh Rana, Revenue Sub-Inspector, Kotla. The site is 12km approximately from Tehsil Barkot, District Uttarkashi, Uttarakhand by motor on NH-123 (Delhi-Yamunotri National Highway) via Naugaon-Pounti-Rajgarhi road till Kudpul and then 5km on foot by bridle path. It falls on coordinates – N 30°53.564' E 78°10.545' and elevation 1805m. The plot boundaries are present and there is medium population in the village.

The proposed site is situated on a hill top of Village Kotla. The overburden thickness in the proposed site is about 1-5m approximately with phyllite fragments of 5-30cm size. The uphill slope is 10°-15° in SSW direction which increases after 100m from the site to 40°-55° towards SSW direction. The downhill slope from the East side of the plot for about 100m is steep approximately 75°-80° towards East direction and from the South side the slope is 40°-55° towards SSW direction. There is perennial 'Marsali Khad' Nala about 180-200m from the site in South direction and another 'Jakhali Khad' Nala about 150m in East direction from the site and the vertical distance from both the Nala is 150-200m. About 60-70m uphill of the proposed site there are dense Deodar forests.

Phyllite outcrop of 3x3m size is found in NNW direction at about 30m from the proposed site. The foliation plane is dipping 30° toward N170° with N-S strike. It is grey colored, thinly foliated with minor folding and there are 2-5cm quartz veins along the foliation plane of the rocks. The rocks are moderately strong and slightly weathered. The site is consolidated and appears to be stable.



**Phyllite outcrop at the proposed site in Kotla Village.**

There is an active landslide of 20 x 50m in the Northern direction about 40-50m from the site. The slide debris includes fallen trees, fragments of phyllite varying in size from 5-30cm and boulders of 1-3m size. The causative factors for the landslide in this area are the weak phyllite rocks dipping towards the valley side, steep slope and saturation of rock mass during rains. The proposed site depending on the geotechnical observations is stable for the construction of the house.

\*There are two to three houses on the Eastern side which are being affected by the slide and the steep slope which require attention for their safety in the near future.\*

**Proposed construction site**



**A Side view of the site from West direction.**



**Landslide at the back of the Village in N-direction.**


## RECOMMENDATIONS:

Based on above surface geological observations of the proposed area the following remedial measures for construction of a geologically suitable house are recommended:


1. The foundation of the house must be on the in-situ rocks.
2. An inclined CC retaining of 3-4m in South direction from the site and another retaining of 5-6m in East direction in two steps into the in-situ rocks must be constructed with perforated walls for enhanced stability of the plot.
3. The weep-holes passage should be clear for discharge of subsurface water to maintain stability of foundation of the house.
4. A minimum gap of 0.3-0.5m should be kept between the backside boundary and the back wall of the house to avoid seepage into the house.
5. The back, sides and premises of the houses must be made cemented to prevent subsurface seepage and a proper drainage system with discharge along a channel towards SW direction needs to be developed.
6. As the area falls in Lesser Himalayan earthquake zone IV, light weight roof, deep column, framed structure, and single storied house construction is preferable.

## CONCLUSION:

Prima-facie, presently, the proposed site of Shri Kripalu S/o Shri Lachu, is geologically feasible for the proposed construction, only if, the above mentioned recommendations will be followed strictly, otherwise, in their contravention; geological suitability will be deemed annulled.

  
(Anupriya Shah)  
Consultant Associate Geologist

Date: 5<sup>th</sup> Jan, 2014  
Place: Camp Uttarkashi

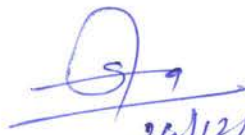
  
(Deepak Singh)  
Consultant Geologist

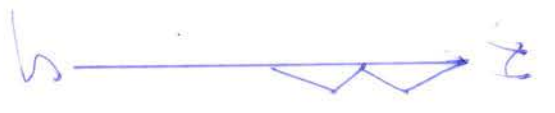
  
(Dipender Singh Chand)  
Assistant Geologist  
Mob: 8192802331  
Email id: [aqddn-dqm-uk@nic.in](mailto:aqddn-dqm-uk@nic.in)

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कमल खसरा ग्राम कोरला में पट्टी बनाने के लिए जमीन का कालाबंदी का काम  
 जिला सहायक जमीन अधीन चरण कृपालू ३० लाख के अति  
 मध्य निर्माण के अन्तर्गत है

| खसरा<br>नं० | खसरा<br>का<br>खसरा | खसरी<br>का<br>खसरा | नाम अधीन                            | विषय |
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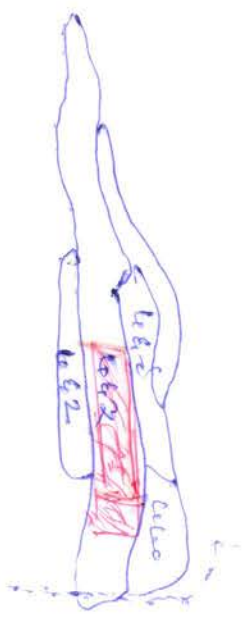
  
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पर्वत शृंखला का चित्र देकर 30 मिनट का सैर का कार्यक्रम तैयार करो।  
 इसका 50 मिनट का मालिका बनाकर प्रस्तुत करें।

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थीमा - 34'-4 मिनट



चित्र

- 1) विकास का चित्र देकर 30 मिनट का सैर का कार्यक्रम तैयार करो।
- 2) इसका 50 मिनट का मालिका बनाकर प्रस्तुत करें।

- 1) एक सैर के चित्र देकर 30 मिनट का सैर का कार्यक्रम तैयार करो।
- 2) इसका 50 मिनट का मालिका बनाकर प्रस्तुत करें।

24/12/13  
 R-5.5 marks