

**RECONNAISSANCE GEOLOGICAL REPORT OF PROPOSED SITE OF SHRI DHARAM SINGH S/o SHRI SUNDER SINGH FOR THE CONSTRUCTION OF OWNER DRIVEN CONSTRUCTION FOR HOUSING (ODCH) TOK SURKHIRLA, VILLAGE VARNIGAD MUGARSANTI, TEHSIL- BARKOT- DISTRICT UTTARKASHI, UTTARAKHAND**  
**KHASARA No. – 1017(a) & AREA – 0.025 ha.**

**Date of Inspection: 24/12/13**

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, Uttarkashi is one of them. Thus, undersigned have taken geological observation during traverses and collected field geological data 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 Bhagat Singh Rawat, Revenue Sub-Inspector, Tiyan. It is 23Km approx from Tehsil Headquarter Barkot, Uttarkashi, Uttarakhand and the site is 17Km approx on Kanakopnal Motarmarg from NH-123 (Delhi-Yamunotri National Highway). It falls on coordinate – N 30<sup>o</sup> 43.220 E 78<sup>o</sup> 08.125 El. 4337feet. The proposed site is in Surkhirla Tok of village Varnigad mugarsanti which is least populated.

The proposed site is on colluvial overburden material varying in thickness range from 3-4m. Man-made cultivated terraces are present with boulders of varying size intact in the soil at and around the proposed site. The uphill slope at the proposed site is 45<sup>o</sup>-48<sup>o</sup> and the downhill slope is 25<sup>o</sup>-27<sup>o</sup> approx sloping in N 345<sup>o</sup> direction. The proposed site is on the left bank of 'Varnigad', a tributary of Yamuna river, flowing almost 200-300m vertical distance from the proposed site in N 270<sup>o</sup> direction. Around the proposed site location moderate mix vegetation is present at about 70-80m approx.



**Far view of the proposed site**

At the toe of the proposed site, at about 10m Limestone in-situ rock with quartz vein is exposed which is lightly weathered. The orientation of the beds of the in-situ rock is towards the hillside and is as - Dip amount  $35^{\circ}$ - $38^{\circ}$  dipping in N  $160^{\circ}$  direction.

At the proposed site, thick dark brownish colluvial soil cover is present and with boulders of size 30cm to 1.5m approx. Small rock fragments in the soil matrix are present. The soil is consolidated; the rate of infiltration is low making the soil water saturation low. At around the proposed site location the water seepage is low. The tree at the uphill side and around the site is standing straight.

### RECOMMENDATIONS:

1. Inclined retaining wall at the southern backside with depth of foundation more than the foundation depth of the house, with provisions of weep holes and sufficient gap of about 2-3feet in between the backside retaining wall and the proposed construction should be constructed. And also, proper drainage system between the retaining wall and the wall of house should be developed.
2. The surface drainage should be properly planned through lined drain/pipe, so both rain water as well as waste water from the existing houses to be release safe place at down-hill along a channel.
3. The foundation depth of the houses must be as per the compactness of the overburden material in the proposed site.
4. Massive plantation of trees, bushes and grasses which can hold the soil mass and retain the debris with dense and long rooted, wide leafed flora must be done to protect the soil erosion and minimize the surface erosion of sub-surface rock.
5. The soak pits and toilet foundations must be quiet away from the house so that the foundations are not directly affected from subsidence due to excessive seepage.
6. The premises of house must be made 'pukka' in order to avoid excessive seepage of the surface water.
7. Framed structure with light roof must be constructed as the area falls in the earthquake zone IV, so it is essential that the house must be constructed with latest earthquake resistive techniques.

### CONCLUSION:

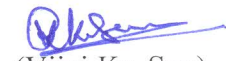
Prima-facie, presently, the proposed site of Shri. Dharam Singh S/o Shri. Sundar Singh is geologically feasible for the proposed construction, only if, the above mentioned recommendations will be followed strictly, otherwise, in their contravention; geologically suitability will be deemed annulled.

  
(Shashank Sharma)


Consultant Associate Geologist

**Date:**

**Place: Camp Uttarkashi**

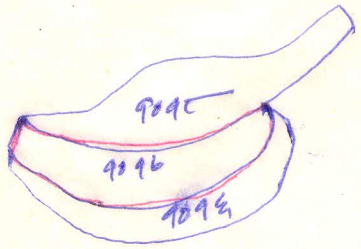
  
(Vijai Kr. Sen)

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नक्सा आम - वसिगाड (पुंगसरी) पदी-पुंगसरी, वरसी-वसुव  
 की धमसिटे, अरकोरसिटे कु सुन्दरसिटे आम - वजवाडी,

पत्रा 64 = 1 मीटर



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प्रस्तावित स्थल

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