

**RECONNAISSANCE GEOLOGICAL REPORT OF PROPOSED SITE OF SHRI SUSHIL S/O SHRI DHAN SINGH FOR THE CONSTRUCTION OF OWNER DRIVEN CONSTRUCTION HOUSING (ODCH) VILLAGE PALLA GAON, TEHSIL- BHATWARI- DISTRICT UTTARKASHI, UTTARAKHAND**  
**KHASARA NO – 2211 & AREA – 1 NALI**

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

**INTRODUCTION:**

In a 'World Bank' funded programme, Government of Uttarakhand has consummate teams of undersigned for geological studies in proposed site for Owner Driven Construction House (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.

In the above mentioned questioned area, the reconnaissance geological investigation was carried out in the presence and co-operation of Shri Subodh Singh Rana, Revenue Sub-Inspector, Maneri for proposed site of Shri Sushil S/o Shri Dhan Singh, Village- Palla Gaon, Tehsil- Bhatwari, Khasara No- 2211, Area-1 Nali. The site is 14km approximately from District Headquarter Uttarkashi, Uttarakhand and is 100m approximately from the UJVN private road through bridle path. It falls on coordinate – N 30° 44.477' E 78° 31.947' elevation 4453 feet. The site is on the right bank of river Bhagirathi and is about 200 m approximate distance from the Bhagirathi river bank, in SW direction.

**GEOMORPHOLOGICAL OBSERVATION OF THE AREA:**

The uphill slope is 24° towards South direction and downhill slope is 18° in Southward direction. The site has an overburden of about 5m-7m thickness and comprises rock boulders from 20cm to 1m size approx. A 'Khir Gaad' is passing nearby from site at about 85m distance flowing in NE direction. There is a mountain range named Bandini Tok at 250m from the site in North direction. The site is a man made terrace for farming and there is low vegetation around the proposed site. The mountain range at the backside of the site is covered with some shrubs and grasses.

**GEOLOGICAL OBSERVATION OF THE AREA:**

**Regional Geology**

Uttarkashi valley exhibits characteristic rugged topography of the Lesser Himalayan terrain. The ground elevations generally vary between 1150m to 2000m above msl. The hill slopes in the area are generally observed to comprise of rocky outcrops, rocky cliffs and mantle of colluviums. The hill slopes in the area is generally moderately steep (25°- 35°) to steep (36°- 45°) while few escarpments or cliffs (> 50°) are also present.

Uttarkashi town is located in the Lesser Himalayan geotectonic block and it is bound by two major Thrust fault i.e. Main Central Thrust (MCT) and Srinagar Thrust (ST). The MCT can

be traced to the northeast of Uttarkashi while the Srinagar Thrust lies in the southwest. Phyllite, metabasic and quartzite of Garhwal Group are exposed around the area.

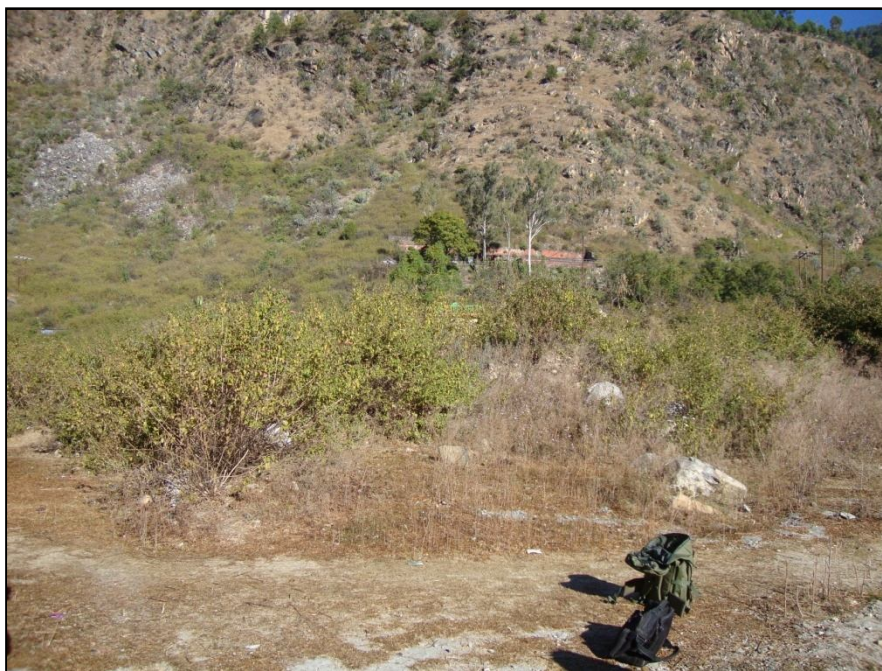
Geologically, the area falls in the region of rocks of Netala Formation of Lesser Himalayan terrain. Quartzite with bands of limestone, phyllite and slate is fine grained, compact, massive in general, but jointed and fractured at places. The slope of the hill ranges between 25°-30° towards eastern direction. At few places insitu rocks are exposed in the plot whereas maximum plot area is covered with overburden. This overburden material comprising soil, hillwash and debris of varying size consisting of brown colored, fine to medium grained silty to gravely matrix with angular fragments of dolomitic limestone and a few brown fine grained shale etc., in which percentage of the angular fragments is more than the matrix. The major joint trends 240°/30° NW (Oblique to foliation plane) whereas minor joint trends 265°/40° NW.

### **Geology of Site**

At the proposed site, no insitu rock is found. The site is stable and compact. Quartzite outcrops observed at around 500 m from the site. The beds are dipping towards N 120° with a dip of 35° and strike is N 30°. There are three prominent joint sets found with orientation direction J1 along the dip, J2 parallel to strike and J3 is seen randomly. The joint spacing of 0.4-0.5 cm is observed at some places. The rocks are fractured and lightly weathered.

### **GEOTECHNICAL OBSERVATION OF THE AREA:**

The site is covered by alluvial soil and there are small quartzite rock fragments of size 1-2cm in the soil matrix. There is no landslide history for more than 50 years around the site as per discussion with the villagers. At the proposed site the soil is consolidated and there is no plot boundary. Already few houses have been constructed in the nearby vicinity of the site.




**A close view of the proposed site for construction**

**CONDITIONS AND RECOMMENDATIONS:**

1. The site is nearby a 'Perennial Khir Gaad' which is active in its flow and water discharge. At proposed site, the slope and the landmass is consolidated and stable.
2. A proper foundation with depth as per the overburden's compactness is recommended to stabilize the site.
3. The back, sides and premises of the proposed house to be made cemented with proper drainage system for discharge of water.
4. Framed structure must be used as the area falls in the earthquake zone IV, and it is essential that the house must be constructed with latest earthquake resistive techniques.

**CONCLUSION:**

Prima-facie, the proposed site of Shri Sushil S/o Shri Dhan Singh is geologically feasible for construction of house, only if, the above mentioned recommendations will be followed strictly, otherwise, in its contravention; geological suitability will be deemed voided.

  
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