

**RECONNAISSANCE GEOLOGICAL REPORT OF PROPOSED SITE OF SHRI  
DHARAM SINGH S/O SHRI KALIRAM SINGH FOR THE CONSTRUCTION OF  
OWNER DRIVEN CONSTRUCTION HOUSING (ODCH)  
TOK SHIVDUALH, VILLAGE NAITALA, TEHSIL- BHATWARI- DISTRICT  
UTTARKASHI, UTTARAKHAND  
KHASARA NO – 3453 & AREA – 200 m<sup>2</sup> (1 Naali)**

**Date of Inspection: 11/12/13**

**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 Shiv Prasad Bijalwan, Revenue Sub-Inspector, Maneri for proposed site of Shri Kamal Singh S/o Shri Chatar Singh falls in Village Naitala, Tehsil- Bhatwari, Khasara no.-3453 and area 200m<sup>2</sup>, 8Km approx from District Headquarter Uttarkashi, Uttarakhand. It falls on coordinate – N 30<sup>o</sup> 44.716' E 78<sup>o</sup> 29.138' elevation 4137feet. The approach to the site is 200 m approx from NH-108 (Gangotri-Dhrasu National Highway) through bridle path on the right bank of river Bhagirathi and is about 100-120 m approx horizontal distance from the Bhagirathi river bank.

**GEOMORPHOLOGICAL OBSERVATION OF THE AREA:**

The proposed land site is on a gently 17<sup>o</sup>-20<sup>o</sup> dipping slope towards SW direction and the uphill direction is NE. The thickness of the overburden is 15approx and man-made terrace farming is present at the site. The vertical height of the proposed site is 15-20m. At about 650m from the site there is a nala 'Khilyara Khala Nala' is north-westward direction from the proposed site.

**GEOLOGY OF OBSERVATION OF THE AREA:**

**Regional Geological Details**

Uttarkashi valley exhibits characteristic rugged topography of the Lesser Himalayan terrain. The ground elevations generally vary between 1150 to 2000 meters 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<sup>o</sup> - 35<sup>o</sup>) to steep (36<sup>o</sup> - 45<sup>o</sup>) while few escarpments or cliffs (> 50<sup>o</sup>) 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 gravelly 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.

### **Local Geological Observation**

There is no insitu rock found on the site and the area shows colluvial as well as fluvial deposits. Boulders of varying sizes from 0.5 to 2m are present. The site is stable and compact.



**The proposed site for the construction**

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


The land is not affected by any landslides for the past 45years and also with a least possibility of slope failure. The soil type is alluvial and in the soil matrix there are upto 2cm rock fragments of quartzite. The proposed site is less populated and there was no plot boundary. The proposed site is less vegetated.


### CONDITIONS AND RECOMMENDATION:

1. The proposed site is recommended as a good site as the site is about 200m from the river and the 'Khilyara Khala Nala' is also about 650m approx and no landslide in last 45years has occurred in the uphill side.
2. Recommended is to develop proper drainage pattern and the foundation must be constructed upto a sufficient depth with proper engineering consideration.
3. Inclined retaining wall of 2x1m dimension with provision of weep holes, at specific distance.
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.Dharam Singh S/o Shri. Kaliram Singh is geologically feasible for the construction of house, only if the above mentioned recommendations will be followed strictly, otherwise, in its contravention; geologically suitability will be deemed voided.

  
(Shashank Sharma)  
Consultant Associate  
Geologist

  
(Anupriya Shah)  
Consultant Associate  
Geologist

  
(Vijai Kr. Sen)  
Consultant Geologist

Date: 19 Dec 2013  
Place: Uttarkashi

  
(Dipender Singh Chand)  
Assistant Geologist