

**Geological Assessment of the Site Proposed for Construction of Scientific Land Fill Project Plant under Solid Waste Management Near Satpuli at Km 2.0 of Satpuli-Raitpur Motor Road , District Pauri (Garhwal)**

**Dr. Tushar Sharma**

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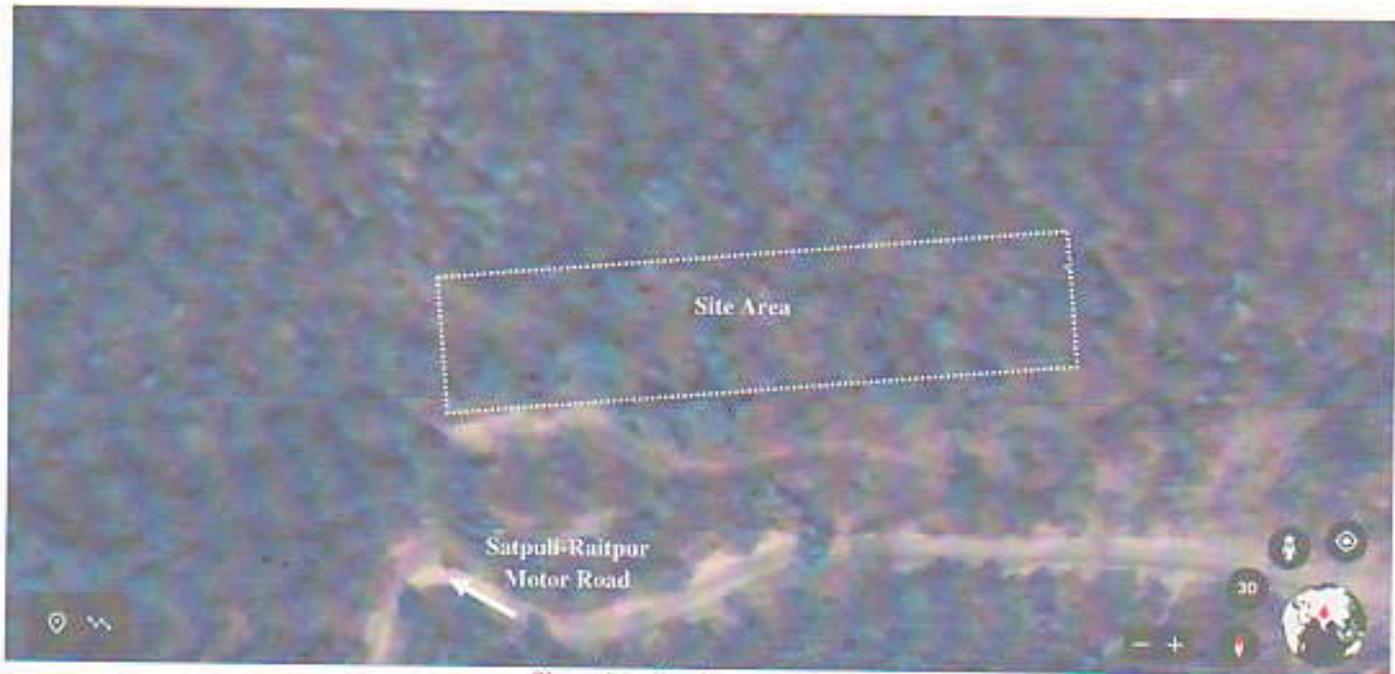
**1- Introduction:-** Nagar Panchayat Satpuli of district Pauri Garhwal has been entrusted for the construction of Scientific Landfill Project Plant under Solid Waste Management, near Satpuli at Km 2.0 of Satpuli-Raitpur motor road, district Pauri (Garhwal). For the assessment of the site Mr. Sushil Bahuguna (Executive Officer) Nagar Panchayat Satpuli, Pauri (Garhwal) asked for a geologist to make a site visit. Consequent to his request a site visit was made on 27/01/2021; Mr. Sushil Bahuguna (Executive Officer) Nagar Panchayat Satpuli, Pauri (Garhwal) were present during the site visit.

**2- Topographical Information/Location:** The above said site is 0.600 Hectare land in area belonging to village Satpuli Malli located above Km 2.0 of Satpuli-Raitpur motor road in district Pauri (Garhwal). The co-ordinates along with elevation, masl of the site are as follows-

Latitude	: 29° 54' 28.06"
Longitude	: 78° 42' 34.74"
Approximate Elevation	: 661 m

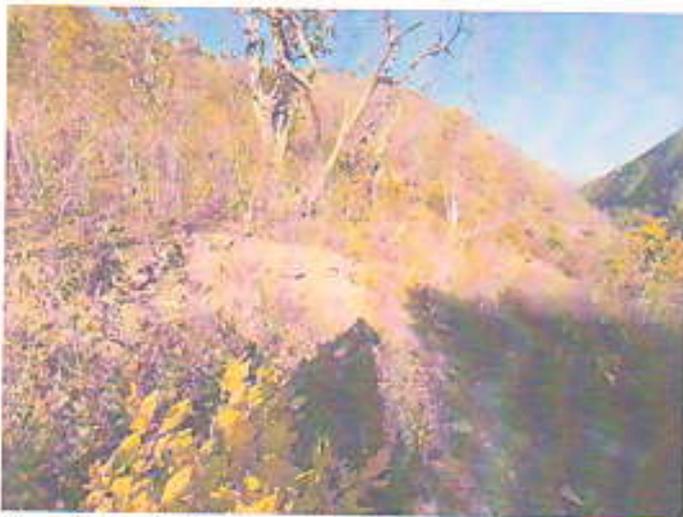


*Wider Satellite View of the Site*



*Closer Satellite View of the Site*

- 3- Geological Assessment :-** Geologically, the site falls in the North Eastern extremity of Garhwal Syncline which contains Lesser Himalayan Meta-sedimentary rocks in Garhwal Himalayas. The site area lies in river Madhuganga valley which is a perennial tributary of Eastern Nayaar river and joins it at its left bak. The bed rock outcrop exposed in the area consists of dolomitic limestone with patches of reddish shale belonging to Krol and Blaini formations of Mussoorie group. However, hill slope at the site area is covered with thin to thick layer of overburden (OB) and slope was material (SWM) along with a few weathered patches of bed rock. The hill slope is gentle (to an extent flatter) for around 10 to 30 m and gradually gets steeper (30-40°) while moving ahead towards the hill side.



*View with gentle hill slope at the site covered with vegetation.*



*Another view of the gentle hill slope covered with vegetation.*

The site area is covered with vegetation/trees (Oak, Devdar & Rhododendron). The approximate strength of exposed rock mass is around ~50-100 MPa and has undergone  $W_0$  to  $W_3$  weathering grade. At the left extreme end of the site while moving towards upstream of the valley there is a small seasonal steep nalla which may damage the site area especially during rainy season.

- 4- **Seismicity of the area:** According to Indian Standard code the site falls in seismic zone IV of seismic zoning Map of India (IS 1893, part 1, 2002) which corresponds to intensity VIII on MM scale.

On the basis of the geological inspection of the site studies carried and the facts given above, the following recommendations are being made for the construction of the proposed site failing to these recommendations this report will be automatically treated as cancelled.

5- **Recommendations:**

1. Use of explosives for site development is to be avoided as it can trigger the problem of landslide and mass wasting.
2. It is advised to dispose the muck and debris on the identified muck disposal site.
3. Construction of building should be carried on a deep and strong foundation as rock outcrop is not consistent and the construction site is generally covered with overburden.
4. Proper drainage provisions are to be made sure around the construction site as the construction is being done on overburden and slope material which during water saturation may tend to subside/slide under the weight of the building structure, hence causing damage to the building.
5. It is advised to protect the site area especially around left extreme end of the site (while moving towards upstream of the valley) as there is a small dry/seasonal steep nalla which may damage the site area especially during rainy season by eroding the OB and SWM covered slope.
6. As the construction site lies in seismic zone IV of seismic zoning Map of India therefore, the buildings must be constructed according to proper earthquake resistant design.
7. All the construction activities ought to be carried out as per the standard codes of practice laid by the BIS and MORTH.

**6- Conclusion:** On the basis of the geological / geotechnical studies carried at the site and with the above recommendations, the site proposed for the construction of Scientific Landfill Project Plant under Solid Waste Management, near Satpuli at Km 2.0 of Satpuli-Raitpur motor road, District Pauri (Garhwal), was found geologically suitable for the construction.

**Note:** On the basis of the geological studies/observations carried at the site this is a generalized report. The conditions of the site are likely to change after the construction and protection work, in case if the problem of slide/subsidence is encountered and during or after construction work then the work should be immediately stopped the geologist should be separately communicated.

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