

## CHAURASTHAL MINING FOR SOFT STONE

Case history of a 'minor mining lease' covering an area of 85ha with potential for major ecological disasters. The location is Chaura-Loharkhet micro-watershed of Saryu catchment near Kapkot, Almora (U.P.)

### Process of leasing

The Department of Geology and Mines, U.P. Govt. is repository of the information on the minerological deposits in the state. The surveys undertaken by the Department report the sites and the area of occurrence of a specific mineral.

Depending upon the value and the area of occurrence a permanent or a temporary lease is categorised as a minor or major lease.

For a minor lease a contractor can apply for lease for extraction of the mineral through the Tehsil office, where it is examined by the SDM. The scrutiny is done by the departments of 'Drinking Water Scheme, Forestry, Soil conservation and Revenue'. With no objection from these departments, the application for mining is recommended for temporary lease to the Directorate of Geology and Mines, U.P. for sanction.

The application was made by a local contractor for a minor mining activity to extract 'soapstone' from the above mentioned site. It did not require any clearance from the environmental angle. A temporary 'dead rent lease' was sanctioned at the payment of royalty at nominal rates ( dead rent lease is given for an area where no road is available for transporting the mined product - active lease rent was to be charged after the completion of the road). The period of lease was 20 years.

The digging for extraction of soft stone was initiated in November, 1984 and the mined material was carried by mule-trains.

### Peoples' Protest

The local inhabitants and also activists of a few voluntary organisations started protest against this mining activity for

the reasons of environmental degradation it brought in the area and also that this land was earmarked for the use of 27 villages. It was to become Block Head Quarter, to set up a degree college and a centre of <sup>town</sup> community development.

On the request of local voluntary organisations 'Gramin Uthan Samiti', Gramin Chetna Manch and Lok Chetna Manch, Ranikhet, the area under mining was visited in October, 1985. The report follows:

#### Location

The site is located beside village Chaura, which is approximately 2 kms. above of Loharkhet. This area constitutes a micro-catchment of Saryu river inhabiting a hamlet of 6 villages namely Loharkhet, Song, Suding, Chaura, Chaurasthal, Pethi, Kafli and Kamera. The area presently under soft stone mining is a pasture land (with no trees) shared by the above villages. Besides it feeds four major Nalas (Gadheras) - three draining on the Northern slope and one on the southern. Out of these four, three are perennial and one seasonal. Total area of this pasture is about one square km. The mining activity is going on the top of this pasture.

#### Vegetation on the slopes

The slopes around the pasture land are harbouring a mixed oak forest where most these trees have been heavily lopped for fodder except those of northern slope which is densely forested because of its steepness and unapproachability. Besides oak trees much of the vegetation comprises of bushes like Berberis, Prinsepia, Rosa spp. and a few trees of Rhododendron, Cinnamomum, Pyrus, Myrica nagi and Alnus. In addition to this wild vegetation cover, the nearby villagers have cultivated much of the N.E. slope and trees like Castanopsis, Juglans etc. have been introduced.

#### Agricultural practices

The mountain slopes especially facing North Eastern direction

have been cleared for crops and grown among these are: wheat, barley, sarsoon (mustard) and peas during Rabi season. Various kharif crops include Paddy, Amaranthus, soyabean, moong and urad, and maize.

Vegetable crops include brinjal, dioscorea (ghenti), sem, raddish, tori, loki, kakri and rajmah.

#### Other minor economic crops

These include both cultivated and wild plants. Most of the people grow Cannabis (Bhang) around their dwelling places - a giant variety with immense foliage and lush green appearance. These plants grew more than three meters in height with a sizeable girth. This plant is utilised as a fibre source for making ropes, tying material and cot making. Seeds of this plant are roasted and eaten as a delicacy mixed with soyabeans.

Other economically important plant resource constitute Dendrocalamus and Arundinaria; these two bamboos found growing along perrenniel nala draining into Saryu are a major source of basket making and other wickory works. One important work of art is a beautiful mat which lasts for a very long time.

#### Bovine population

These village hamlets comprising of about 1,000 - 1,100 human population own 70-80 buffaloes, about 2,000 cows and 2,500 goats and sheep. This accounts for a heavy biotic pressure on a meagre amount of available land to sustain them.

#### Previous landslide history

During 1957, 47 persons died in a landslide near Loharkhet on the same microcatchment and the houses around Suding developed large cracks in the walls and large fissures are still seen in the soil. The slope is sinking because at the base of the catchment flows the Saryu river which further adds to its destabilisation.

The whole area is under unproductive agriculture with hardly any forest left and mining at the top of the slope is enhancing the process of degradation. One Nala flowing on the southern slope has since dried and it is ascribed to the aftermath of mining.

### Mining activity

During year 1984 the State Dept. of Geology and Mining had sanctioned on 20 year lease an area of approximately 85 ha of land for the extraction of soap stone by open cast mining to a local contractor at Kapkot. The extraction started during November, 1984 and material was transported through mules for truck loading on newly constructed Loharkhet-Kapkot motor road.

Dimensions of each open cast mining area are: 150m long, 100m wide, and 6-10m deep. From these mines 8,000 tonnes of soft stone have been excavated and transported out.

### Ecological sensitivity of the Saryu catchment

The entire Saryu and the adjoining Pindar Valley area is ecologically very sensitive area for the following scientific reasons:

#### (i) Geophysical instability

Though the entire Himalayan range is known for its geological instability for the reason of continuous orogenic movements and the consequent seismic proneness, the Saryu-Pindar river catchment area fall adjacent to the geological phenomenon of Main Central Thrust (MCT). The phenomenon of MCT offers the mechanism for the release of Seismic Strain Energy for Kumaon Himalaya. Besides, a major geological fault exists in the area, making the region prone to earthquakes. During 1958 a major earthquake of magnitude of R 7.5 affected an area between Bajang (Nepal) and Kapkot (Kumaon, Almora), resulting in massive landslides (Valdiya, 1983). Transverse faults occurring on the Indo-Napalese border act as epicentres and have resulted in the largest number of earthquakes per year of the magnitudes of R 6.0 to 7.5. Even the microseismic activity can trigger in landslides on steep slopes. As a result of seismic activity and thrust movements rocks get sheared, shattered and get locally inverted making the hill slopes in such affected areas extremely unstable, which often lead to

slope failures, landslides and rock degradation. These geological features have made the entire Saryu catchment ecologically extremely sensitive.

(ii) Degraded ecosystem

The average altitude variation from 1,500m to 3,000m, which tends to increase upstream to 4,000m and higher to the realm of perpetual ice near the Saryu river origin - Bankatia peak slopes. Except for Jhuni village (3,000m) rest of the villages are located between 1,500 to 2,500m.

Each microwatershed is inhabited by villages often located on fossil landslides, and degraded rock mass which extends from the base of hard rocks to the river bank. These have been stabilised by the vegetation cover.

The varied human activities are localised on the land features which are **unstable**, unconsolidated rock mass, therefore, susceptible to slope **failure**, creeps and landslides.

(iii) Forest cover

Except for the top portion, the lower areas in each of the microwatershed have been occupied by human habitation and agricultural fields and thus deprived of the vegetation cover. Oak is the dominant tree and shows good regeneration.

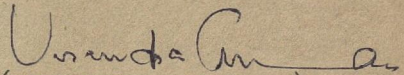
Intense agricultural practices, animal husbandary, road building (utilising explosives) have all led to the weakening of vegetation cover and general degradation. Consequently due to seepage of water during rainy season and aided by toe-cutting of the Saryu river, the landslides, subsidence and rockfalls, soil creeps are of high frequency causing extensive damage.

Conclusion

Induction of mining in such a geophysically sensitive area is full of grave consequences. The mining activity for a low value mineral like Soapstone is a poor bargain. Already deep pits have caused seepage of water from the top of microwatershed endangering the villages by landslides.

It is suggested that destructive developmental activities like mining in such ecologically sensitive areas should not be initiated as these lead to further land degradation.

In hill areas with sensitive ecosystems even for minor lease for mining should be subjected to a priori environmental clearance. The scientifically sound restoration programmes like comprehensive watershed development schemes should be implimented.

  
(VIRENDRA KUMAR) 20.6.86