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HYDROGEOLOGICAL AND GEOMORPHOLOGIC ASPECTS IN SOMUZU MARE SUPERIOR BASIN

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***Key words**: hydrogeology, capturing, subsequent, wet phreatic regime*

INTRODUCTION

Somuzu Mare river is a Siret affluent and its origin is in Liteni depression. It crosses the whole north-west depression area, and through first class affluents (Lămăşanca, Graniţa, Stupca, Drăgoiasca and others), it develops a lot of ridges, due exclusevely to the subsequent nature of the stream system.

Glacis microrelief, alluvial fans, special river flats represent a trully phreatic waters „store", also related with lithologic constitution, on support clayey.

Hydrogeological aspects in Somuzu Mare superior basin have been considered part of natural resources from Suceava' s tableland western area, near the contact with carpethians miocene unit.

The attachment of phreatic waters map, with hydrocontourlines and hydroisobathes drawing, completes the information regarding hydrogeologic resources, their way of using and, related to this, the monitoring of other natural resources, like the soils and vegetation.

MATERIAL AND METHOD

The research study consisted of geomorphologic and pedologic mapping; as a result, it were also identified the accumulate perimeters, the places where stream system were collected, the way how coast springs appeared and, in the same time, the inundation of major river beds.

An important research aspect referes to the capturing issues about Moldova' s rivers terrace and Bradet brook, second class affluent of Somuzu Mare. Wells, drillings, pedological drill holes have represented the control points of hydrostatic levels, but also of the sediments which are crossed ascent by these. In this way, through drillings and drill holes it was shown the way phreatic water influences the pedogenesis process and the acceleration of landslides producing.

RESULTS AND DISCUSSIONS

Somuzu Mare brook superior basin geomorphologic superposes upon Liteni depression, an unit characterized by active erosion and accumulation processes. The researches have identified four aquiferous categories, as follows:

1. Alluvial water sheet of river flats (Somuz, Humaria, Frumoasa etc). Here, phreatic circulation at hydrocontourline level (0,5-1 m), produces stagnations and frequent swamps of soils. Landslides, colmatage and surface waters deviation take place, in the area where phreatic layer meets the stream system (Buzi hill from Bradatel basin landslide or Frasinel hill from Lamasanca basin).
2. Alluvial fans waters and lateral glacises are the waters which are not affected by debit fluctuation and represent the best waters from quality point of view. Aquiferous sheets from these surfaces surround the slopes in the section with river flats sectors. 1-3 m depth is also known as "wet phreatic regime" and assures an active circulation on the whole front.
3. Phreatic sheets from sandy-clayey complex of interfluvial areas. Underfluvial waters have a reduced alimentation area, being influenced by the slope and relief energy. There also are some areas like Dumbrava terrace (Moldova river basin), Stupca-Fumaria perimeter or Stroesti outside area, where the capturing levels are of 1-3 meters (suspended phreatic), and influencing area drainage.
4. The last phreatic category which was identified in Somuz superior basin, was the deluvium slope sheet. It represents the most dynamic category which imposes the geomorphologic shape rhythm. The circulation produces under deluvial material, depending on the type and the angle of the slope. This sort of waters has an instable debit and underground distribution. The slope deluvial sheets encourage the ridge landslides. An issue regarding phreatic contribution is represented by "selfdrains": furrows and ravines. In Ciprian Porumbescu area it can be seen how these are working like truly channels for phreatic surplus, representing lines for conducting the underground waters. Drainage direction is also imposed by stream system, the phreatic current going to surface system, where it infiltrates through sediments. A special situation is in Bradatel-Dumbrava area. Here, hydrocounterlines show a drainage going to Bradatel brook; this is due to the extension over its spring watershed. Bradatel

brook springs have their origin in Moldova phreatic river, the drillings proving this situation.

CONCLUSIONS

The Somuzu Mare superior basin geomorphologic and hydrogeological research has represented a constant preoccupation of the authors, as a part of some representative work papers, among them a phD thesis.

Located at the origin of some different lithologic areas (Moldova tableland with subcarpathians unit), the phreatic regime is a part of zone landscape and respects the diversity of Suceava area conditions.

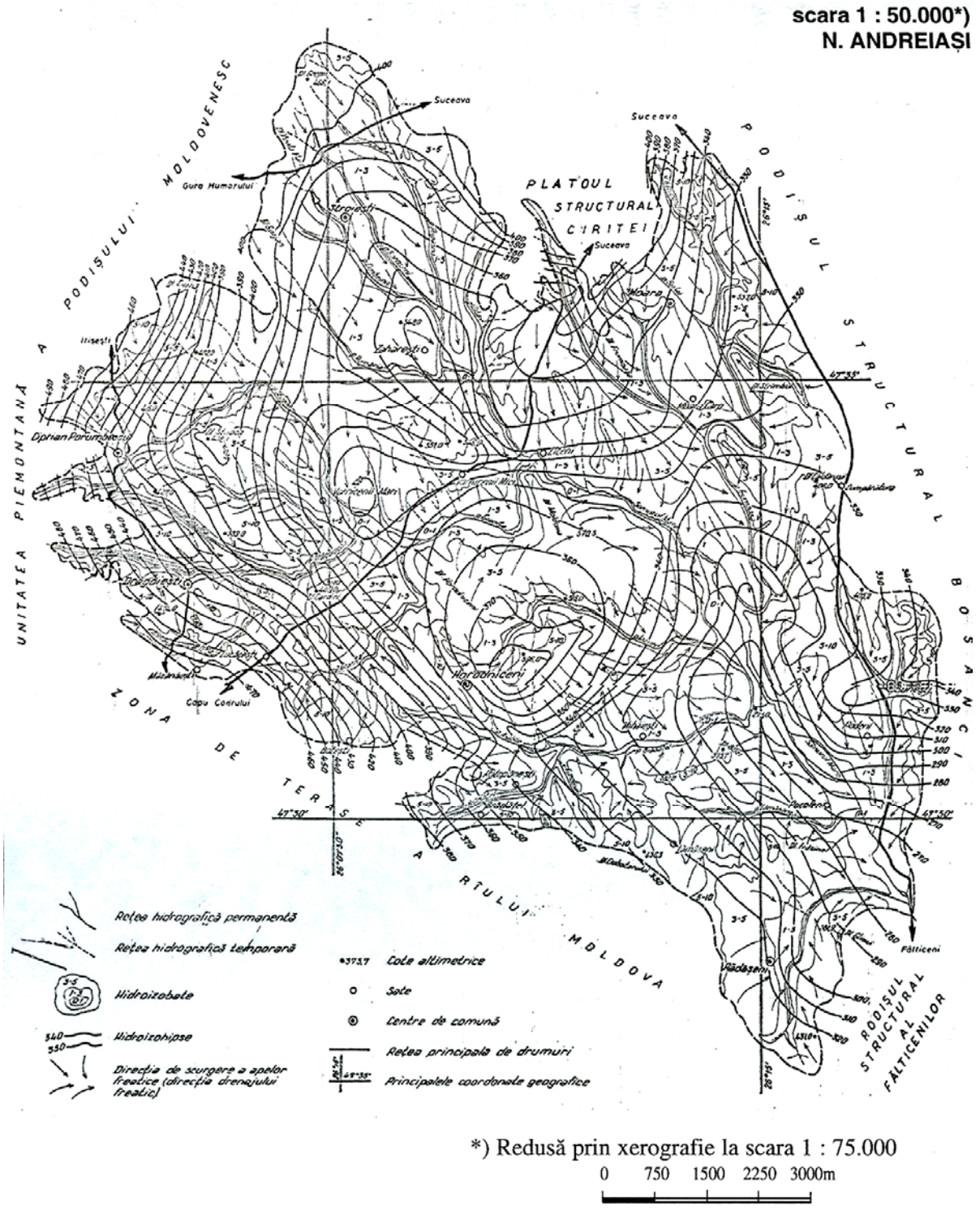

Fig. 1. Depresiunea Liteni – harta hidrogeologică

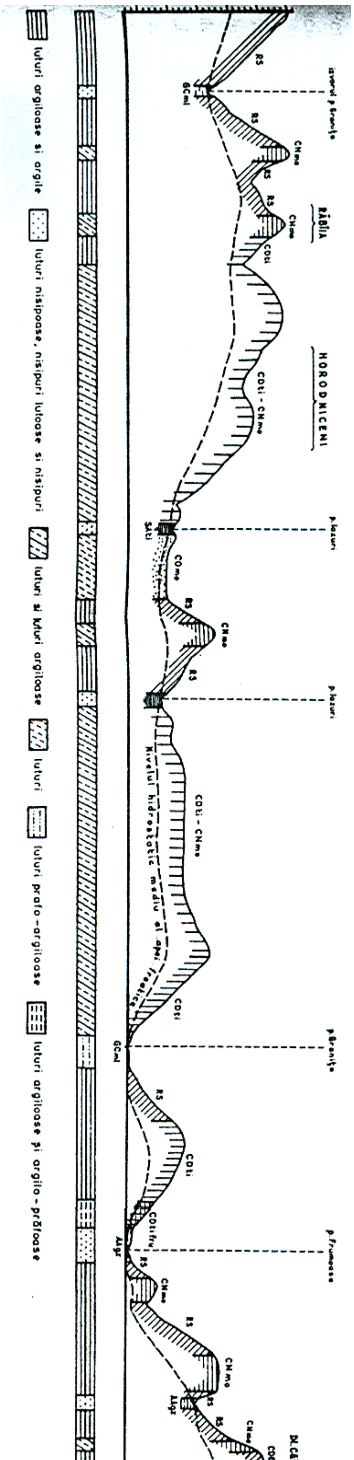

Fig. 2. Profil pedomorfologic transversal, cu elemente de litologie şi hidrogeologie, între izvoarele pârâului Graniţa şi valea pârâului Şomuzul Mic

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