

## APPLICATION OF MISE-A-LA-MASSE METHOD IN STUDY OF SUBSURFACE STRUCTURES OF QOM'S NEYZAR PLAIN

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In this research which was carried out in the southwest of Qom, based on the results of field observations and boreholes excavated by geotechnical experts, due to the accumulation of subsurface water in some boreholes, as well as the existence of a gap and Seam in them, to check the possibility of existence Sub-surface fault in the range of boreholes and in order to identify the direction of the boreholes from sub-surface water, comprehensive studies were carried out using a mass-geophysical approach. The Mise-a-la-masse method is a special electrical resistivity method and is applicable in some cases where the anomalies on the ground surface have an outflow, such as in terms of the degree of electrical conductivity contrast with the surrounding environment. Due to the good electrical conductivity of the target, the drop in potential inside the exploded mass will be noticeable. In this research, the mass-binding measurements were performed along the sides of three foursquare respectively (L,M,S) in the range that covers the boreholes 5-14, with a borehole concentration of 11 at 440 points with a distance of 5 m and a two-electrode array.

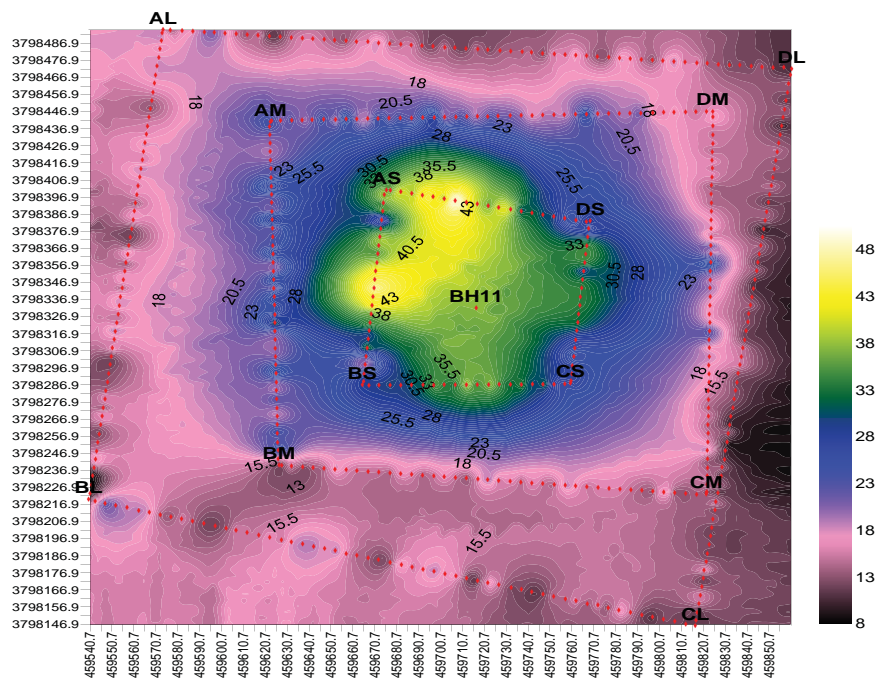


Figure 1. Potential map.

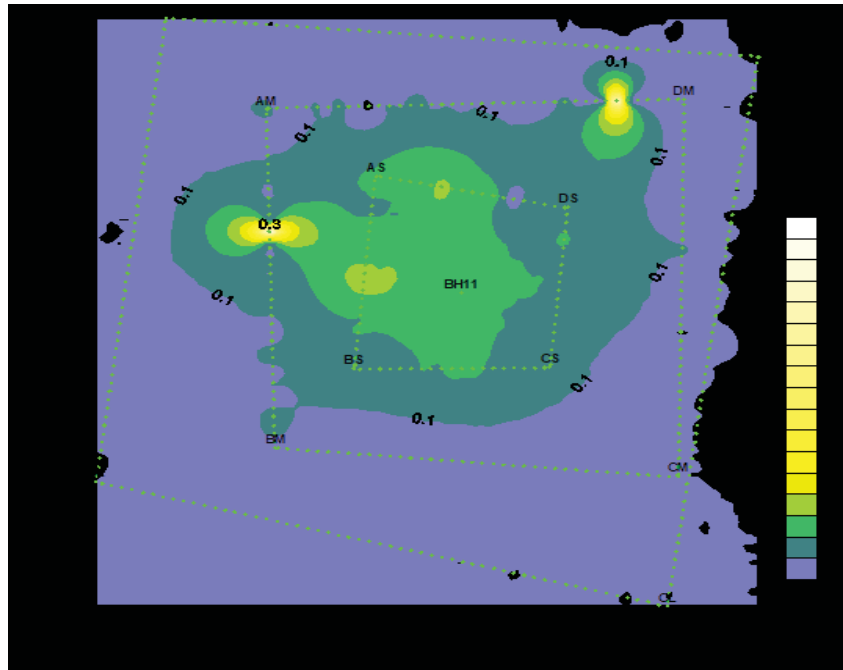


Figure 2. Resistance map (V/I).

Due to the maps drawn from the drawing and implementation of the electrical potential of the points taken on the four sides of the center point (BH-11) and having the coordinates of each point, despite the fluctuations in the potential and electrical resistance that is local and inevitable, due to conditions such as the incompatibility of alluvial deposits and the increase The electric current is the distance of the injection. In general, it is not possible to detect directional or non-uniform anomalies that can have a linear path. Therefore the Mise-ala-mass method is a low-cost, fast and efficient method that can be used in other cases where conductivity anomaly has an outgrowth on the ground, and even in other cases, better diagnosis and more accurate conclusions can be obtained through other methods. Worked out.

## REFERENCES

- Osiensky, J.L. and Donaldson, P.R. (1994). A modified Mise-A-La-Masse method for contaminant plume delineation. *Groundwater*, 32(3), 448-456.
- Jamtlid, A., Magnusson, K.A., and Olsson, O. (1982). Electrical borehole measurements for the mapping of fracture zones in crystalline rock. *Proceedings of a Workshop on Geophysical Investigations in Connection with Geological Disposal of Radioactive Waste*, Nuclear Energy Agency.
- Sano Consulting Engineers (2006). *Report of Geotechnical Studies of Construction Site of Neyzar Cement Factory*.
- Schulz, R. and Tezkan, B. (1988). Interpretation of resistivity measurements over 2D structures. *Geophysical Prospecting*, 36, 962-975.
- Telford, W.M. (1989). *Applied Geophysics*. Dr. Hassan Hajib Hosseiniyeh - Dr. Hossein Jarmdian.