Fluid geochemistry as useful tool for the recognition of the Lago Exsnia-Viscosa (Rome-Italy) as natural heritage

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Lago Exsnia-Viscosa is located in the eastern part of Rome, on the left bank of Tiber river, close to the historical centre of the city and in a highly urbanized area. The lake takes its name from the factory of artificial silk, the SNIA Viscosa, active there from 1923 to 1954. The industrial plant, located close to the Marranella ditch, used its water for the production processes, also after its channelled and covered. The Marranella ditch was named also Acqua Bullicante (in English “Bubbling water”). It is supposed that the ditch was hosted along a fault where bubbling waters and diffuse degassing from soil were recognized. These manifestations were dominated in CO₂ but due to the intensive post-war (Second World War) building expansion, no trace remain. These phenomena are typically recognizable in volcanic areas characterized by active hydrothermalis, such as the neighbour volcanic district of Alban Hills. The proximity of this volcanic district to Rome and the fact that it cannot be considered extinct have moved our motivation to study the Lake Exsnia-Viscosa to investigate on possible degassing phenomena in the city centre. The lake appeared in the ’90s, after illegal excavations (deep up to 10-13 meters) to build unlawfully a shopping center. This caused a leakage of groundwater and the emergence of a small lake (about 7,000 m² large, around 7 meters deep). Due to the citizen protests, the works were immediately blocked and the whole area was expropriated and closed. The site, has remained closed, from ’90s to today, favouring re-naturalization processes, new ecological systems and forbidding anthropogenic transformations. Currently, it represents a precious green area for the city, but is still in danger of being threatened by speculation. For this reason, the citizen is fighting for its recognition as natural heritage supported by cultural and professional associations. In this framework, our study, moved at the beginning to investigate on degassing phenomena, proved to be an important step in the process of recognition of the site as natural heritage. The lake has been used by us as an open-air laboratory collecting water along a vertical profile from the lake surface to the maximum depth, for a geochemical and microbial characterization of the groundwaters. Currently, the results are supporting the community and the local administration in order to make this green site a protected area to donate to their citizens.