

Analysis of an Alternative Source to Improve the Trairi Water Supply System, RN - BRAZIL

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The Bonfim Lake is located in the State of Rio Grande do Norte, Northeastern Brazil. Currently, this pond serves to attend a water pipeline system with 300km length, which assists 220.000 people. If the water level falls below the absolute height of 39m, a battery of water wells from a semi-confined aquifer should enter into operation.

Nevertheless, it is reasonable to conclude that pumping the wells in the western section of the Bonfim Lake is likely to draw water of the lake itself, supported by the following evidences:

- The potentiometric maps of the two aquifers points out that the western section of the Bonfim Lake represents the zone of groundwater recharge to the Bonfim Lake, as much as to the lower aquifer;

- An intensive monitoring program, brought to evidence the direct relationship existing between the rise of the Bonfim Lake water level, during the rainfall season, and the concomitant increase in the head of the semi-confined aquifer, with no change in the observed declining trend of the free aquifer water head;

- Finally, the mapping and hydrogeological profiles revealed that the aquitard layer presents discontinuities in the extreme western section of the Bonfim Lake, as well as under the lake, due to normal faults, karstic subsidence and probable variations of sedimentary facies.