

## HYDROGEOLOGICAL MODELING OF THE MUNICIPALITIES OF TIQUIPAYA AND COLCAPIRHUA IN THE CENTRAL VALLEY OF COCHABAMBA-BOLIVIA

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### ABSTRACT

In the metropolitan region of Cochabamba, urban growth towards areas of aquifer recharge has increased water stress in groundwater, which supplies approximately 65% of total water consumption. Therefore, a hydrogeological study was carried out in an alluvial fan zone in the Central Valley of Cochabamba. A water table monitoring network was established in drinking water supply and irrigation wells in the municipalities of Tiquipaya and Colcapirhua, taking 26 measurements between April and September 2021. A simplified hydrogeological model was developed with Visual MODFLOW Flex, calibrated with a high correlation (0.94) and a 17 m RMS. In the validation, the correlation was 0.63, with a normalized RMS of 78%. The main direction of subsurface flow was identified from north to south. During monitoring, a significant decrease in the water table was observed, especially in wells OG-5 and OG-7, while in OG-28 and OG-10 an increase of 3 to 5 meters was recorded since 2019, indicating recharge associated with alluvial fans, mainly the Chijlawiri River. It is recommended to use the model in subsequent studies, improve aquifer management and carry out continuous monitoring with monthly data for better water planning.

**Keywords:** Groundwater, Cochabamba, Central Valley, Hydrogeological Model.

DOI: 10.23881/idupbo.024.1-9i