

TIME-DOMAIN ELECTROMAGNETIC SURVEYS TO CHARACTERIZE GROUND WATER RESOURCES AT TWO UNITED NATIONS REFUGEE CAMPS IN NORTHWESTERN TANZANIA

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In July, 2017, Water Mission (WM) conducted Time-domain electromagnetic (TEM) surveys at two refugee camps administered by the United Nations High Commission on Refugees (UNHCR). The TEM surveys were conducted within and adjacent to the Nyragusu and Mtendeli refugee camps located on the border of Burundi in northwestern Tanzania. The surveys were conducted to characterize the local hydrostratigraphy and inform a conceptual model of groundwater availability in support of water well drilling needed to expand the camps.

TEM soundings were conducted at a total of 27 sites (n=14 at Nyragusu; n=13 at Mtendeli) using an ABEM WalkTEM instrument and either a 40x40m or 20x20m transmitter (Tx) loop. The geophysical results improved understanding of the local hydrostratigraphic framework and provided important information including the depth to, and thickness of saturated materials, locations and depth to the underlying basalt basement, and potential locations of clay or saline groundwater. Use of the 20m Tx loop proved critical due to extreme limitations on open space within the camps. Although additional work is needed to interpret the TEM results in the context of the local and regional geology, the TEM results are being used to guide water well drilling necessary to increase the number of refugees that can be housed within the camps.