Mapping of Lithologies in the Kern Water Bank, Kern County, California

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The Kern Water Bank (KWB) is located within the western portion of the Kern River alluvial fan. The primary purpose of the KWB is to store excess surface water during wet periods, and recover it during dry periods. Water wells drilled on the Kern River alluvial fan produce groundwater preferentially from sand layers. The purpose of this study is to determine the three-dimensional distribution of these sand layers and other lithologies to a depth of approximately 300 m below ground surface. Primary data in the project consists of 162 electric logs. These data were analyzed at the CSUB GeoTechnology Training Center using the Geographix geological interpretation software package. Three major log signature types were observed, representing the main lithologic type zones. "Type C" signatures represent clayrich intervals, possibly indicating deposition in a lacustrine and/or floodplain environment. "Type D" signatures represent sand-rich intervals that probably represent river channel deposits. "Type E" signatures depict alternating sand and clay layers of equal thickness, which may characterize a braided stream environment. Contacts between log signature types were picked within four equal depth intervals. Structure and isochore maps were generated corresponding to these picks. These maps show an apparent increase in the amount of sand up section, an observation consistent with a prograding alluvial fan and/or fan/delta environment. Three prominent, semi-continuous clay layers were identified, although none of these covered the entire area.