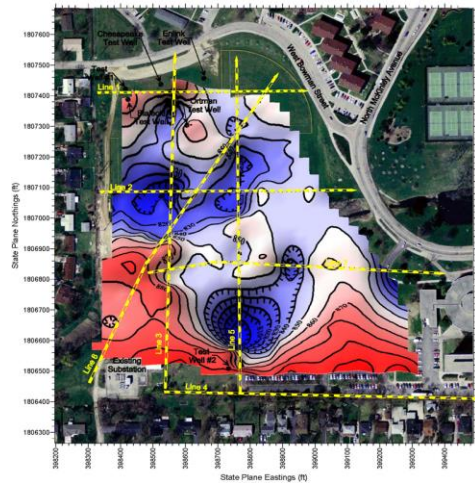


CASE HISTORY

Geothermal System Design using Geophysics

Challenge:

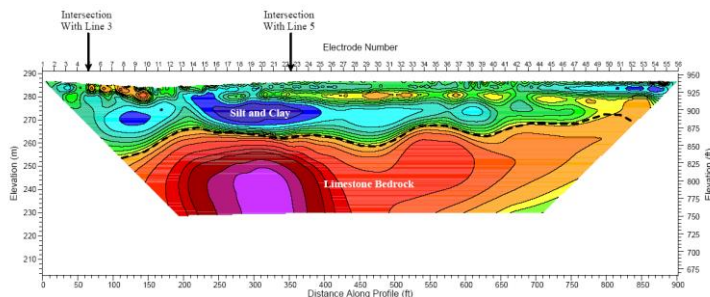
In April 2009, MUNDELL was hired by Ball State University to provide technical support for the development of its new campus-wide geothermal heating system. The university is proposing to complete the design and development of its geothermal energy project that will meet almost all of the university's future heating and cooling needs. The system is expected to consist of approximately 3,750 vertical geothermal wells, each installed in boreholes advanced to a depth of 400 ft below the ground surface, connected in a closed-loop piping system to three energy centers. The energy centers will act as heat exchangers that allow the extraction of heat from the subsurface in the winter and cold in the summer. The first phase of this project involves the installation of 1,700 wells in the vicinity of the existing baseball diamonds and parking lots on the west side of campus.



Action:

As part of the subsurface evaluation for the project, MUNDELL conducted two-dimensional resistivity geophysical testing and downhole geophysical logging of the two pilot well installation areas to measure the variation in electrical resistivity of subsurface materials to provide geologic and hydrogeologic descriptions for the site that would guide the bidding process for the well installation. In addition, MUNDELL developed appropriate drilling specifications for the geothermal well construction and provided technical information for the environmental

permitting requirements for the installation of the geothermal system. Finally, Mundell assessed and completed the design of a long-term system subsurface monitoring program to help understand the geothermal system's performance and its effect on the environment.



Results:

The results of the work activities allowed Ball State to provide the drilling contractor bidders with accurate data relative to the expected subsurface conditions, resulting in more suitable bids for the well installations.