BOREHOLE GEOPHYSICAL LOGGING

Similar to how surface geophysics makes it possible to detect what is beneath the ground surface, borehole geophysical logging allows you to see beyond the walls of a boring or well. To perform borehole logging, sensors or sondes, which measure different physical properties of the formation around the boring, are lowered down the hole to record continuous data or logs. A multi-conductor cable on a motorized winch controls the sondes and transmits data back up the hole to a computer and graphic display. Often, multiple logs (aka a suite) are recorded for a single boring, with each measuring a different property of the formation to allow more complete knowledge of subsurface conditions.

RETTEW's traditional logging capabilities include services listed to the right as well as less traditional electromagnetic induction, magnetic susceptibility, borehole deviation, cavity sonar/mine voids, flowmeter, and attenuation for both P- and S-wave to allow calculation of soil and rock elastic moduli. In addition, RETTEW performs state-of-the-art acoustic and optical borehole televiewer logging and imaging. Housed in our specially outfitted borehole logging trucks, these tools allow for quantitative and statistical measurement of the presence, depth, thickness, and orientation of features such as water-bearing fractures and joints, which can serve as fluid migration pathways, as well as voids below the top of rock.

SERVICES

- Fluid Conductivity/ Temperature
- Natural Gamma
- Three-Arm/Acoustic Caliper
- Acoustic/Optical Televiewer
- Single-Point Resistance
- Spontaneous Potential
- Short/Long Normal Resistivity
- Heat Pulse Flowmeter

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SYSTEM FEATURES

- Truck-mounted winch and data logging system with cable to reach depths over 1,000 feet
- Stackable tool options allow for multiple data sets to be collected concurrently and increases efficiency
- Data processed and displayed using newest version of WellCAD
- Raw data available in various formats for client integration with groundwater modeling software

TOOLS

- QL-40-CAL Mechanical 3-Arm Caliper
- QL-40-ABI Acoustic Televiewer
- QL-40-OBI Optical Televiewer
- QL-40-ELOG capable of collecting spontaneous potential, single-point resistance, and 8-16-32-64-inch normal resistivity
- QL-40-GR Natural Gamma
- QL-40-FTC Fluid Temperature and Conductivity
- Heat Pulse Flowmeter

USES

- Historic well construction-composition, deviation, and diameter
- Fracture orientation mapping for structural application projects like rock slope stability analysis, tunnel design, road cuts, and dam repair
- In situ imaging of boreholes to correlate with traditional rock coring data
- Characterizing hydraulic conditions and water-bearing zones to design aquifer-testing plans and contaminant-mitigation plans