

Geotection

Resistivity Monitoring System

- Full 180 Channels
- Rapid Acquisition
- UL Compliant
- Full Waveform
- Remote Operations



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Your Environment Benefits.**

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Tucson, AZ - Richland, WA



Geotection - Trailer Mounted Resistivity Monitoring System

hydroGEOPHYSICS, Inc introduces its newest resistivity acquisition system, Geotection. At 180 channels, the system promises a full measurement sweep in less than 20 minutes (with the pole-pole array, producing 32,220 voltage values).

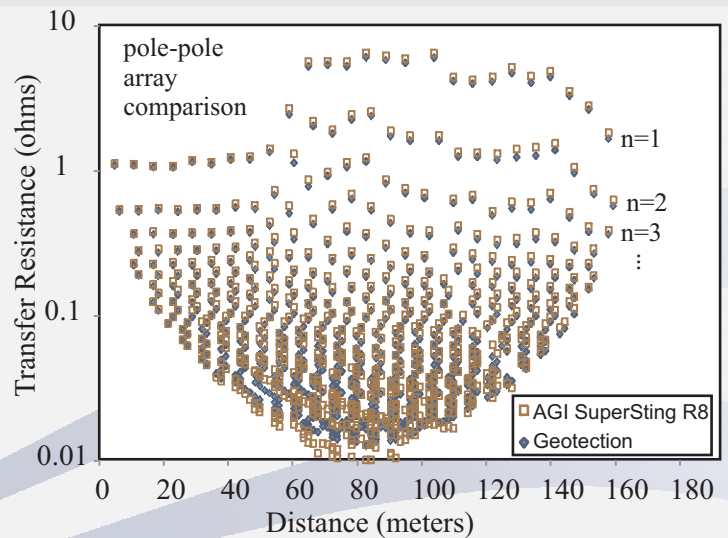
Geotection breaks the traditional resistivity paradigm by accommodating investigations needing (1) high temporal and spatial resolution; (2) near real-time information on solution migration; (3) modularity; (4) full control over acquisition parameters; (5) remote operations; (6) internal climate control; (7) Powered from generator or AC; (8) safety alarms with SMS messaging; (9) and enough leg room to work, eat, and sleep

Safety and Quality - HGI produces full UL-compliant resistivity acquisition systems capable of long-term monitoring on federal properties. Quality assurance also accompanies Geotection through full and complete drawing sets, auditable software, and NIST-traceable calibration.

Current Transmission Boards - features robust mechanical relays with proven reliability. Power output rated for 800W with full control over waveforms, stacking, duty cycle, and contact resistance thresholds.

Receiver Design - channel-specific tunable signal conditioning boards ensures the cleanest data possible. Data acquisition provided by National Instruments PCI cards. SP corrections.

Software Control by Labview - by running Labview, an industry leading software control system, customized acquisition software can be created to ensure relevant parameters are measured and recorded. Also features an intuitive sequencing of electrode combinations with multiple sequence files running in an order set by the user based on priority. Data are written to a database for easy access, real-time plotting, and extraction for inverse modeling.



Dataset comparison with industry standard

Performance - HGI strives for high data quality, exacting measurements, and repeatability in resistivity acquisition. A

demonstration is presented above, comparing data acquired with Geotection to a leading industry standard for resistivity acquisition - the AGI SuperSting R8. The two datasets are on average less than 8% different from each other. Repeatability tests of Geotection data consistently reveal a coefficient of variation (COV) of around 0.005 ohms.

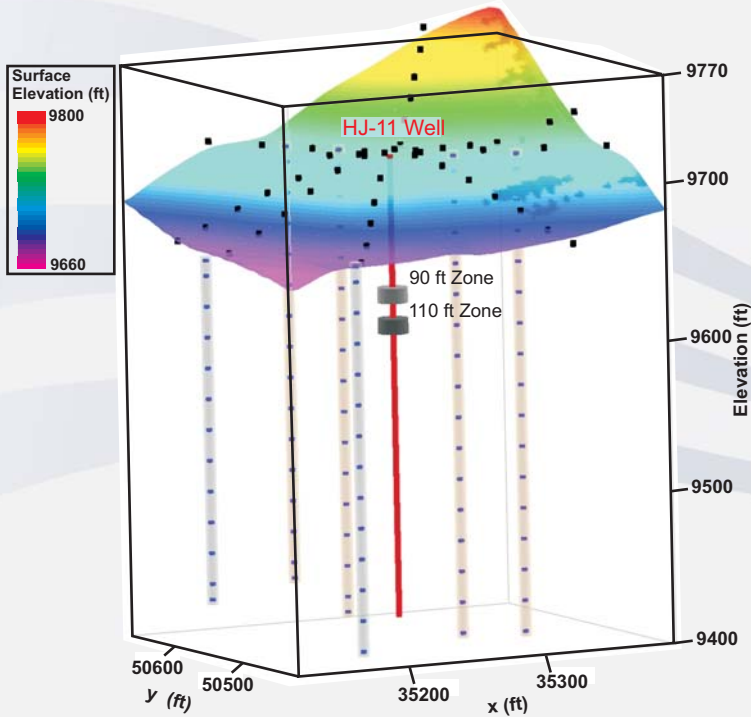


Modular design with hot-swappable components ensures minimal down time during mission critical monitoring

Uses - The Geotection was designed to act as both a long term monitoring and rapid acquisition system for tracking subsurface fluid, contaminants, and heat movement in variable saturated media. Geotection is particularly suitable for (1) leak detection from containment systems (underground storage tanks, levees and dams, landfills, pond liners, etc), (2) monitoring underground injections for enhanced oil/mineral recovery, (3) monitoring the efficacy of remediation designs, (4) assessing geohazards from flooding, drought, and landslides, (5) reservoir monitoring, and (6) hydraulic fracturing.

Case Study - Injection Monitoring at CC&V Gold Mine

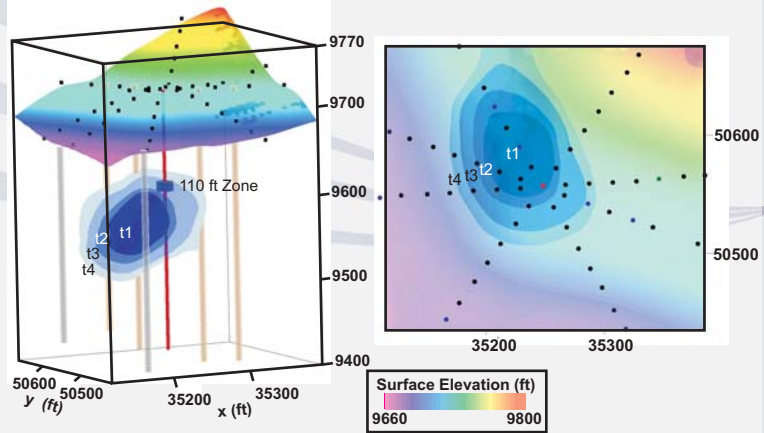
A high pressure injection experiment was conducted at the Cripple Creek and Victor Gold Mine to increase metal recovery within the heap (or engineered rock pile of low grade ore). Injections occurred within wells along several depths at rates that usually exceeded 800 gpm for several hours at a time.



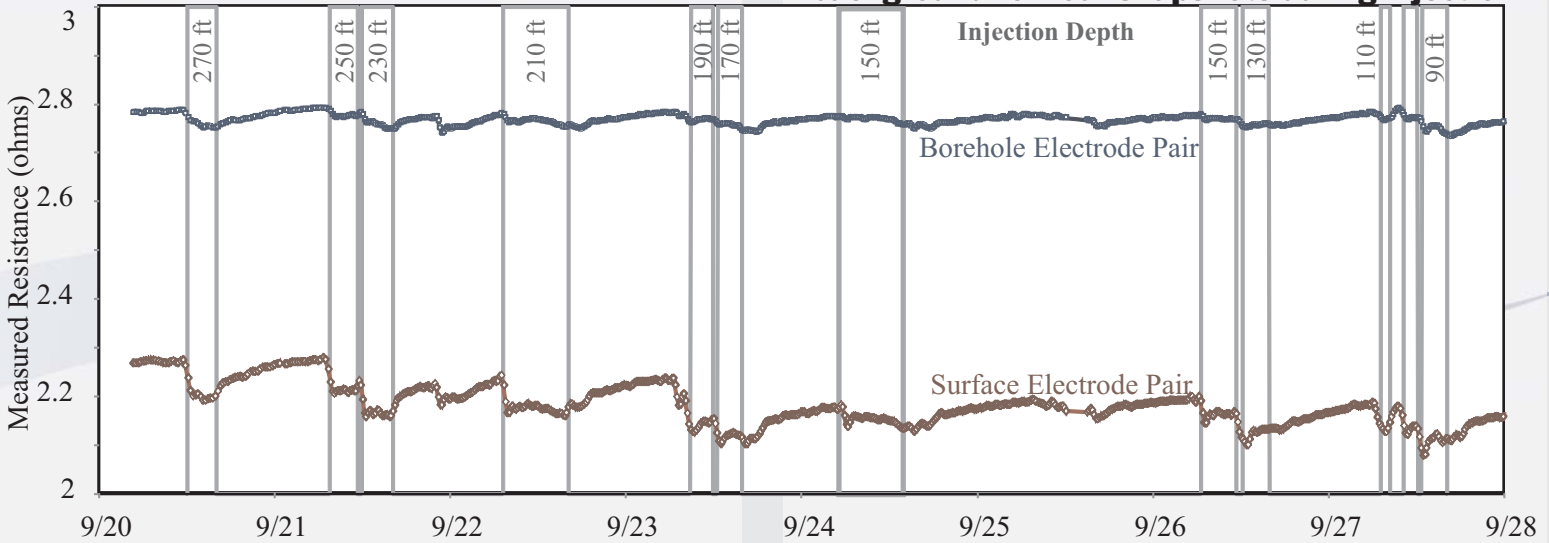
Electrode arrangement around injection well HJ-11

HGI used the Geotection resistivity monitoring system to acquire information about the injection coverage and direction. A total of 173 electrodes, including surface electrodes, nested borehole electrodes, and the series of injection wells themselves, were used to pass electrical current and measure voltage. The eight day experiment produced 780 full reciprocal datasets for evaluation.

High quality resistivity data acquired from Geotection were inverse modeled to produce volumetric images of solution coverage. Contours below show % change from background for four snapshots taken approximately 1, 2, 4, and 6 hours after the initiation of injection at the 110ft depth. Directionality of solution movement was confirmed by monitoring a decreasing contact resistance in the northern borehole electrodes.



Inversion results showing 2% change from background for four snapshots during injection



Example raw data from different electrode pairs around the injection site



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