

Acid Rock Drainage Characterization



- **Locate Subsurface Fluid Flow Pathways**
- **Delineate Vertical and Horizontal Extent of ARD**
- **Optimize Locations for Remediation Efforts**

We Image the Subsurface.

Your Environment Benefits.

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Subsidiary of Columbia Energy and Environmental Services

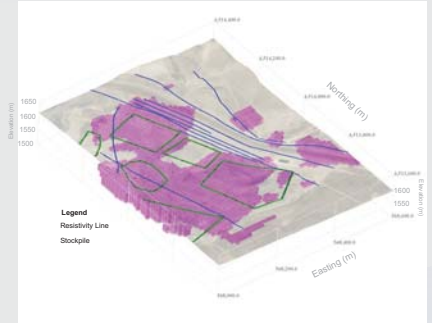
Acid Rock Drainage Mapping



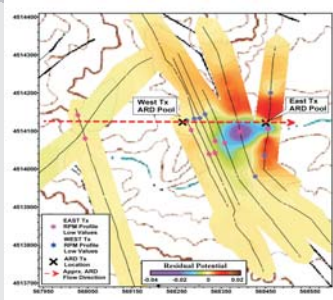
The mining industry presents many unique opportunities for geophysical applications that cannot be solved by ordinary characterization or monitoring methods. Acid Rock Drainage (ARD) is a critical and time sensitive issue for the mining industry and geophysical techniques and survey programs are available to aid in the process of solving this challenge to characterize the subsurface in and around areas that are thought to contain source zones and transport pathways for Acid Rock Drainage. Two primary methods are typically used in ARD investigation: High Resolution Resistivity HRR™ and Residual Potential Mapping RPM™. Both techniques have been tested and proven for over 20 years through successful surveys throughout the mining industry. ARD targets are typically well suited for HRR™ and RPM™ techniques because ARD is considerably more electrically conductive than the host material through which it is flowing. Results are commonly used to direct a targeted drilling program for remedial action.



transmitting electrodes, resistance measurements are then made. The placement of the current source with respect to the conductive body will have a large influence on the interpretation. The receivers are placed along the surface to map the potential field. The final products are 2D and 3D maps that delineate the vertical and horizontal extent of the ARD plume similar to those shown on this page.



hydroGEOPHYSICS, Inc. is a dynamic, innovative geophysical consulting and services company specializing in the multi-dimensional characterization and monitoring of fluid flow through geologic materials and formations. Head quartered in Tucson, AZ with a branch office in Richland, WA, HGI offers a wide range of geophysical services for environmental and engineering projects, as well as groundwater, mineral, and energy exploration and production



RPM™ consists of performing one, two, or three-dimensional potential measurements relative to one or more source electrodes. The source electrode may be a buried point-source electrode, a metallic well-casing, a surface electrode, or any well-grounded infrastructural component that

has a relatively simple geometry in the vicinity of known ARD seeps. Seeps are then used as a transmitting source based on their relative locations. For each of the

*HRR™ and RPM™ is a trademark of hydroGEOPHYSICS, Inc. of Tucson, AZ

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