APPLICATIONS OF GEOPHYSICS: RESISTIVITY AND SEISMIC METHODS

WATER EXPLORATION & WELL LOCATING

- Locate Optimum Sites for Drilling of Domestic or Irrigation Well
- Locating Groundwater Wells for Fracking Operations
- Identifying Hidden Groundwater Springs
- Evaluate Efficacy of Hydrofracturing Operations upon Water Wells
- Groundwater Exploration
- Vertical Electrical Sounding for Geothermal Well
- Identifying Fractures to Accurately Locate Water Wells
- Mapping a Water Table
- Locating Water Sources in Granite or Hard-rock Terranes
- Estimating Well Yield or Hydraulic Conductivity from Combination of Resistivity, Induced Polarization and Seismoelectric Results
- Resistivity Surveying to Optimize Well Yield
- Mapping Sand & Gravel Lenses in Clay Environment
- Evaluating Vadose and Phreatic Water Zones

GEOTECHNICAL INVESTIGATIONS

- Geotechnical Site Evaluation
- Geotechnical Site Characterization for Dam Construction
- Basalt Site Characterization
- Leak Monitoring at Nuclear Disposal Site
- Seepage Detection in Dam
- Facilitating the “Blast or Rip” Decision from Seismic Refraction Results

CIVIL ENGINEERING & CONSTRUCTION

- 3D Imaging for Seawater Intake for Desalination Plants
- Mapping Beneath Planned Pipeline Route
- Mapping of Route for Canal Construction
- Identifying Karst Formation Under a Nuclear Cooling Plant
- Detecting Leaks in a Retention Pond
- Detecting Fractures in Limestone
- Assessing Highway and Bridge Footings

- Locate caves, open cavities, and collapsed mine openings
- Locating Faults Prior to Building Construction
- Identifying Leaks within a Dam
- Construction Assessment for Civil Engineering
- Sub-bottom Lake Mapping from Towed Electrodes
- Identify Saline-Fresh Water Interaction

ARCHEOLOGY

- Searching for Unmarked Graves
- Identifying Archeological Remnants

HAZARD INVESTIGATIONS

- Cave and Mine Detection
- Landslide Investigation
- Evaluate Hazards of Unseen Collapsed Mine Tunnels
- Mapping Location and Migration of Underground Contaminants
- Hazard Assessment of Glacial Lake & Moraine
- Predicting Failure at Earthen Dams
- Assessment of Abandoned Mines
- Mapping Limits of Municipal Landfill
- Identifying Volcanic Hazards
- Locating Underground Storage Tanks and Other Dumped Hazards
- SP Mapping of Landfill Leachate

AGRICULTURE

- Mapping High Salinity Soils
- Exploring Soil Resistivity
- Electrical Survey to Detect Salt Content and Soil Depth
- Wide-area Soil Moisture Surveying for Precision Farming
- Evaluating Stone Content of Orchard Soils
- Correlating Electrical Properties to Soil Properties
- Rapid Profiling to Assist Agricultural Operators
- Assessing Moisture Profile for Irrigation
- Evaluating Electrical Conductivity with Fruit Yield

- Soil Resistivity to Monitor Soil Water in Vineyards
- Continuously Monitor Soil Water to Show Changes Due to Season or Irrigation

MINE PLANNING & MINERAL EXPLORING

- Optimizing Mine Plan at Garnet Mine
- Mapping Sand Unit Thickness for Construction Aggregate
- Heap Leach Pad Monitoring
- Estimating Sand and Gravel Volumes
- 3D Irrigation Monitoring at a Heap Leach
- Monitoring Streaming Potential at Aggregate Mine
- Locating Gold Deposits in Yukon
- Mineral Exploration for Volcanic Ash
- Mapping Bedrock Beneath Surface Gravels
- 3D Placer Gold Exploration
- Mapping Magnesium Deposit
- Mapping of Acid Rock Drainage Pathways in Reclaimed Mine
- Induced Polarization Mapping of Sulfide Minerals
- Cross-borehole Electrical Tomography

SEISMIC SURVEYS – Refraction and Reflection Methods

- Shear and Compressional Wave Propagation
- Poisson's Ratio and Young's Modulus from Seismic Refraction
- Bedrock Detection
- Refraction Studies Aid in Bridge Foundation Planning
- "Blast or Rip" Decision Using Seismic Refraction - Quick and Saves Dollars
- Detecting Invisible or Buried Low Velocity Zones from Shear Wave (MASW) Surveys
- Shear Wave Data Aid to Building and Pier Design
- Seismic Refraction Method Replaces Drilling in Aggregate Operation
- Refraction Seismic Gradually Replacing Cone Penetrometer for Foundation Studies
- Continuous Refraction Profiling
- Detecting Subsurface Escarpment
- Excavation Planning with Seismic Refraction
- Integrating Refraction and Resistivity to Improve Subsurface Prediction

- Groundwater Investigations

SEISMIC SURVEYS – Seismoelectric Method

- Ideal Tool to Explore for Oil or Water to 1,200 Feet Depth
- Use to Prospect for Water Sources
- Find Optimum Location for Domestic or Irrigation Wells
- Locate Water-bearing Fractures in Igneous or Metamorphic Strata or Rock
- Conduct Profiling of Water-bearing Strata
- Low-cost and Amenable to Locating Water for Rural, Farm and Vacation Homes
- Hydraulic Conductivity Permits Choosing Highest Yields from Multiple Aquifers
- Locate Optimum Site for New Wells
- Avoid Dry Wells and Missed Water Zones