

# Handheld XRF for Soil Surveys

## Geochemistry of Rock Outcrops, Soils, and Sediments

### Introduction

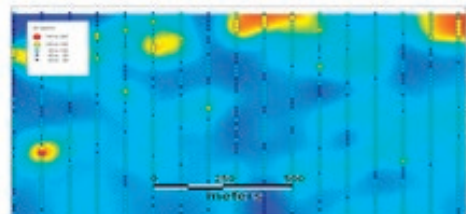
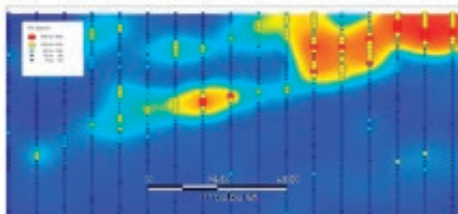
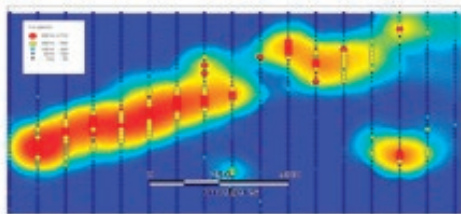
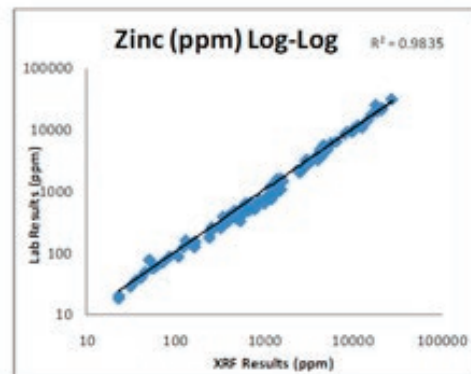
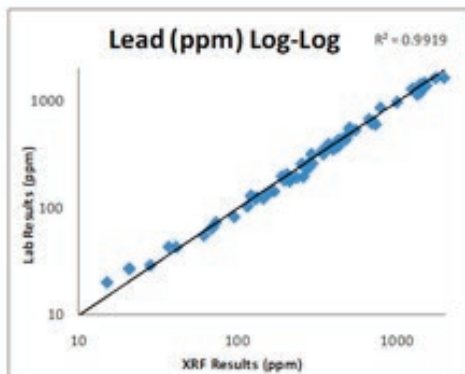
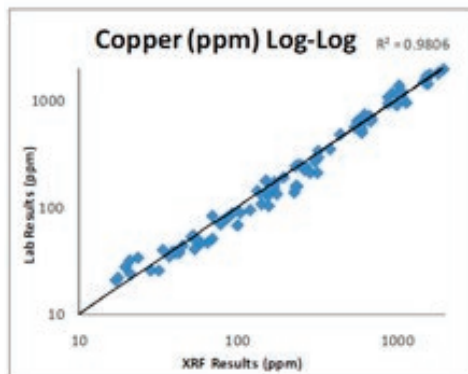
Olympus handheld X-ray fluorescence (XRF) analyzers provide high performance, real-time geochemical data for rapid multi-element characterization of soils, rocks, and ores.

Recent, major advances in XRF technology have vastly improved the limits of detection, number of elements measured, and significantly reduced analysis test times.

Vanta™ handheld X-ray fluorescence (XRF) analyzers provide convenient, rapid measurements of soils, stream sediments, and rock outcrops either in situ or at exploration camps to obtain instantaneous field geochemistry results.

### Benefits of Handheld XRF:

- Cover large areas quickly, increasing sampling density and advancing decision making timeframes.
- Focus on anomalies immediately. Infill/extension sampling maximizes productive time in the field.
- Pre-screening using XRF enables priority sample selection for laboratory analysis, maximizing analytical budgets.
- Optimization of drilling budgets through informed on-site decision making.
- Integrated GPS for rapid spatial visualization using GIS.



## Return on Investment

Handheld XRF is now a routine tool as part of regional mapping and soil surveys, especially for base metal and gold projects. It is now well established that million dollar savings are genuinely possible given the right conditions. One ASX listed explorer estimated saving \$2.75 million over a three year period. This is a direct result of using of three handheld XRF analyzers as the primary tool for the testing of 100,000 samples during this time period compared with the corresponding costs of assaying all these samples at a laboratory. The graphics to the right demonstrate the difference in sample density achievable by this company through traditional sample collection, preparation, and despatch to a laboratory compared with that achievable through direct in situ measurements using XRF. These images demonstrate the ability to integrate XRF data with GIS and GPS, identify drill targets rapidly, and initiate a follow up drill program immediately to rapidly advance project timeframes.



## Olympus IMG and Operating Procedures

Olympus established its dedicated International Mining Group (IMG) in 2008. This team is an experienced group of geoscientists wholly focused only on geological applications of XRF and XRD technology. The IMG is committed to geological innovation, industry best practice XRF use, and assisting our customers develop “fit-for-purpose” methodologies that provide valuable and accurate geochemical and mineralogical information about your projects.

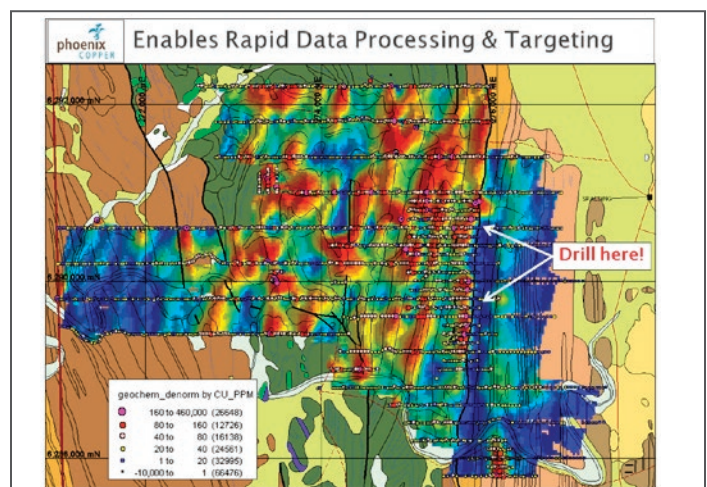
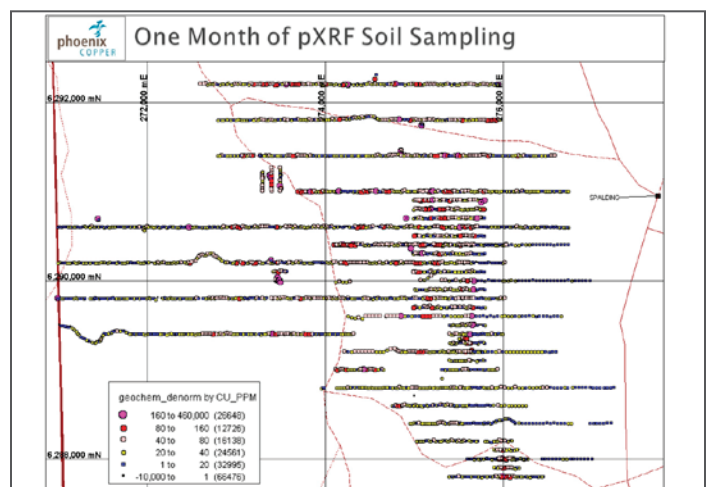
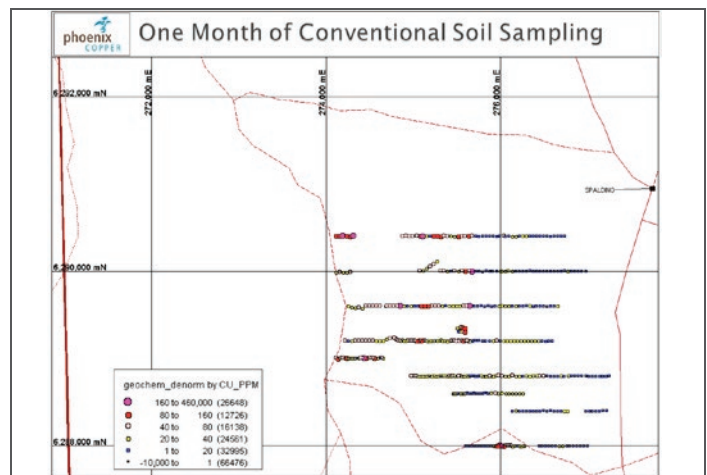
Project conditions vary based on the geological setting, regional climates, and the technical experience of the XRF user. These considerations influence the type of XRF methodology developed for individual projects. Olympus' global breadth and experience will help ensure that we provide not only the best product at competitive pricing but also outstanding support and service that helps maximize your investment in handheld XRF.

[www.olympus-ims.com](http://www.olympus-ims.com)

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An example from Phoenix Copper in Australia illustrating one month of conventional soil sampling (top) versus one month of hXRF soil sampling (middle) and the rapid data processing and targeting that can be obtained using the hXRF data (bottom)

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