



SGM Environmental

Creating enduring value

SGME VALUES

Honest



Trust



Innovation



Safety



Laboratory and field services

SGMEs laboratory services has been developed to provide a tailored service to help our clients develop the right information to create new land resources from mine remnants to bring future value to mine site operations.

Our laboratory services include:

Sample preparation area — Equipped with an analytical balance, drying oven, shaker table, rock mill, sample freezer and fridge and a variety of consumables and analytical equipment such as an agate mortar and pestle, deionised water and micropipettes

Humidity cells — A rapid (but less common) assessment technique to measure the rate and variation of acid generation, salt and metal release in leachate from waste storage facilities

Leach columns — A slower (but common) assessment technique to measure the rate and variation of acid generation, salt and metal release in leachate from waste storage facilities

Soil water characteristic curves — Used to describe the water storage in a medium, it is required for cover design modelling

Water potential — A rapid laboratory or field device to measure water potential, it can be used to estimate soil water characteristic curves

Rainfall simulator — Used to measure rill and interrill erosion which is required for erosion and landform evolution modelling

Our field services include:

Saturated permeability — A quick in-situ test that can be done by one person, it is required for cover design modelling

Density testing — A quick in-situ test that can be done by one person, it is required for cover design modelling, and usually done at the same time as saturated permeability

Drone — A single flight can capture aerial imagery, elevation, normalized difference vegetation index (NDVI) and multispectral imagery covering blue, green, red, red edge, and near infrared bands. This is an emerging technology and has applications in large scale rapid ground surveying.

Electrical conductivity and pH — The most basic of field tests, that will provide information on acidity and salinity

Handheld x-ray fluorescence (XRF) — An advanced, accurate and rapid field technique to measure metal and lighter element concentrations

Environmental monitoring — Our monitoring systems are designed to evaluate cover system performance. Evaluating performance provides us with data that we use to develop management solutions and closure designs (cover and landform)



OUR APPROACH

At SGME we want to be able to provide you with a tailored solution so you have the right information to quantify potential environmental risk. Our laboratory and field services complement our consulting services of soil science, geochemistry, mine closure and environmental management, planning and approvals allowing us to provide you with an integrated service with minimal delays.

Past projects

- 1 Carborough Downs and Broadlea Coal Mine, humidity cells, leach columns and soil water characteristic curves as part of a material characterisation study to support progressive rehabilitation and closure planning, Qld (Fitzroy Australia Resources)
- 2 Bluff Coal Mine, handheld XRF, pH and electrical conductivity as part of a geochemical assessment, Qld (Carabella Resources Limited)
- 3 Peak Gold Mine, handheld XRF, pH and electrical conductivity to develop sulfide cut-off grades and leach columns for confirmation testing and risk assessment, NSW (Aurelia Metals)
- 4 Cow Flats Project, handheld XRF for on the ground decision making for waste rock and plant tissue sampling and drone imagery for cut volume estimation and NDVI, NSW (Department of Regional NSW)
- 5 Webbs Consol Project, handheld XRF for on the ground decision making for soil sample selection and drone imagery for area / volume calculations, NSW (Department of Regional NSW)
- 6 Coppabella Coal Mine, handheld XRF, pH and electrical conductivity and leach columns as part of a material characterisation study to satisfy the progressive rehabilitation and closure planning guidelines, Qld (Peabody)
- 7 Coppabella Coal Mine, cover column trials to assess three potential covers for the rehabilitation of the co-disposal area, Qld (Peabody)
- 8 Moorvale Coal Mine, handheld XRF, pH and electrical conductivity and leach columns as part of a material characterisation study to satisfy the progressive rehabilitation and closure planning guidelines, Qld (Peabody)
- 9 Moorvale Coal Mine, cover column trials to assess three potential covers for the rehabilitation of the co-disposal area, Qld (Peabody)
- 10 Barbara Copper Mine, cover column trials to assess three potential covers for the rehabilitation of the waste rock dump and rainfall simulator studies to support Water Erosion Prediction Project (WEPP) erosion modelling, Qld (Round Oak Minerals)
- 11 Wallace Gold Mine (cover and WEP), instrumentation, monitoring and reporting of the waste rock dump cover Water Erosion Prediction Project (WEPP) erosion modelling, Qld (Round Oak Minerals)
- 12 Dugald River Mine, Water Erosion Prediction Project (WEPP) erosion modelling and reporting, Qld (MMG)
- 13 Twin Hill Operations, Water Erosion Prediction Project (WEPP) erosion modelling and reporting, Qld (Minjar Gold)
- 14 Rosebery Mine, in-situ saturated permeability and density, drone survey, handheld XRF, pH and electrical conductivity, soil water characteristic curves and humidity cells for the Bobadil TSF closure study, Tas (MMG)
- 15 Lady Annie Mine, environmental monitoring for surface water, groundwater, sediment and heap leach detection, Qld (Austral Resources)

Working with SGME

We are highly experienced and leaders in the fields of soil science, geochemistry and mine closure. At SGME we support you to achieve your objectives in ways that contribute to a sustainable outcome:

- Our director and technical leaders are 'on the tools'. We will not waiver from this commitment as it is critical to your successes
- We have a practical, solution focussed work ethic
- We are cost-effective, without the overheads of larger competitors
- A high level of responsiveness, enabling us to mobilise at short notice



Dr Timothy Rohde

Timothy is certified professional soil scientist (CPSS), a practicing engineer in Queensland (RPEQ) and a mine closure specialist (MAusIMM(CP)). He has been a consultant for 18 years and has worked extensively throughout Australia in coal and metalliferous mining and has published over 25 papers on soil science, geochemistry and mine closure. He has gained a reputation by not backing away from difficult projects (positivity), delivering on his promises (trust), looking for new ways to help (innovation) and sharing mutual responsibility for preventing harm and promoting well-being (safety).

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