

Hydrogeochemistry

MinEx CRC fact sheet

January 2019

Overview

Hydrogeochemistry is the sampling of water to test its chemical properties.

This fact sheet is specifically about sampling groundwater.

Current focus

The current focus of sampling in NSW is in the North Cobar, South Cobar, Mundi, Forbes and Dubbo areas. These areas are part of the MinEx Cooperative Research Centre's (MinEx CRC) National Drilling initiative (NDI) – a national collaboration to further our understanding of geology and metal deposits in areas where rocks aren't exposed at the Earth's surface. The sampling will also help identify groundwater resources in these areas.

About sampling

Government agencies such as Geoscience Australia, NSW Department of Industry (Water) and the Geological Survey of NSW (GSNSW); research organisations like the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and universities; and landholders routinely take water samples.

Sampling process

The most effective collection method is direct sampling from actively pumping farm (windmill, solar) bores, as close to the pumping stem as

possible, to reduce any possible contamination or precipitation.



Typical sample collection and analysis.

The groundwater is being sampled to help interpret the rocks below the Earth's surface. As groundwater interacts with rocks below the surface, the water may reflect the underlying geology and in some cases metal dispersion related to mineralisation.

The properties of groundwater can be correlated to features identified by other techniques, such as geophysical surveys. This will help identify the extents of known aquifers, and help identify potential new aquifers and fractured rock reservoirs.

The results of the groundwater sampling can also be used to assess water quality for health purposes (people, livestock and crops). This

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includes salinity, pH and approximately 40 different elements.

Sampling team

A team of geologists from GSNSW, scientists from CSIRO and researchers from universities will be collecting the samples.

When in the field, the team will drive on existing roads and tracks to access the sample points. They will be mindful of sensitive areas – such as areas of cropping or grazing, plants and animals, and indigenous sites. All farm equipment will be left as found.

The team are highly trained and experienced in Work Health and Safety (WHS) procedures, first aid and four-wheel driving. They all carry Personal Locator Beacons and GPS trackers, and have a daily check in. They are covered by NSW Government insurance.

A permit has been granted for geological mapping and sampling in these areas and the landholder's permission is always obtained before entering private land.

Survey results

A wide range of people use the sampling results, including:

- **Agriculturalists:** to evaluate water quality for cropping or grazing.
- **Local government:** for land use planning and sourcing safe drinking water.

- **Geologists:** to map the subsurface geology.
- **Water resource scientists:** to examine groundwater in aquifers and fractured rock reservoirs.



A typical water bore in East Riverina.

These results will also be available to the general public. Some analytical results will be available immediately as the samples are analysed on site. Other samples will be analysed in a laboratory, so there will be a waiting period. Landholders can request an emailed report of the results of samples taken on their land.

You can also access the final regional report when it is complete from our website.

More information

To learn more about MinEx CRC and how we will use the results, please visit:

Email:

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Website:

www.resourcesandgeoscience.nsw.gov.au/minexcrc