

**DATE OF BIRTH:** 5 October 1972

**NATIONALITY:** Australian

**EDUCATIONAL QUALIFICATIONS:** BSc (Geology, Environmental Science) Macquarie University 1995

**APPOINTMENTS:**

**From 1998** Geologist, C. M. Jewell & Associates Pty Ltd

**CONTINUING EDUCATION:**

**August 1998** Occupational Health and Safety – Confined Spaces Training (Training Enterprises Pty Limited).

**November 1998** Soil Technology – Contaminated Land, Training Course (Australian Society of Soil Science Inc., NSW Branch).

**September 1998** Occupational Health and Safety – Hazardous Waste Operations Training (Woodward-Clyde Pty Limited).

**April 2004** Operational Radiation Protection - use of field portable XRF Spectrum Analysers (Applied Radiation Consultants)

**August 2004** Occupational Health and Safety Induction - Construction Work

## **SUMMARY OF EXPERIENCE**

### **Significant Projects - Hydrogeological Assessments**

***Installation of Groundwater Monitoring System – Kelian Gold Mine, Indonesia.*** Completed the design and installation of an extensive groundwater-monitoring network comprising 32 monitoring wells with dedicated sampling pumps at the Kelian Gold Mine in East Kalimantan, Indonesia. The objectives of the works were to detect the migration of AMD impacted waters from several identified areas of concern, and to train local staff in groundwater sampling methodologies and the use of a low-flow groundwater purging system.

The project involved the installation of a series of groundwater-monitoring bores, collection of baseline groundwater samples, the assessment of hydrogeological and hydrogeochemical conditions at the site, and the development of a continual groundwater-monitoring program. Subsequent training of client staff in groundwater data collection techniques was also carried out, whilst an annual audit of groundwater sampling protocols and analytical results has been carried out since July 2003.

***Tanilba Northern Dune, Proposed White Silica Sand Extraction Area Hydrogeological Assessment – Port Stephens.*** Supervised the installation of a long-term groundwater-monitoring network designed to meet local Council and State Government licensing requirements. The project involved the installation of a series of groundwater-monitoring bores, collection of baseline groundwater samples, the assessment of hydrogeological and hydrogeochemical conditions at the site, and the development of a continual groundwater-monitoring program. Subsequent training of client staff in groundwater data collection techniques was also carried out.

***Cangoora Property Hydrogeological Resource Assessment.*** Assessment of hydrogeological characteristics in the vicinity of a large-scale grazing property, and the selection of a number of potential locations for a high-yield irrigation bore. Assessment included a review of local information, published maps, borehole records and geophysical information.

***Bowdens Silver, Lead and Zinc Mine Hydrogeological Assessment – Lue.*** Assessment of the impacts of a proposed conventional open pit mine on local and regional hydrogeological conditions in the eastern reaches of the Lachlan Fold Belt. The assessment included an appraisal of the likely response of groundwater levels in the area throughout the duration of the mine and after, potential impacts of declining water tables on groundwater dependant ecosystems and neighbouring groundwater users, assessment of the likely impacts of mining techniques and tailings storage on groundwater quality, and an overview of long-term groundwater resources in the area for mining purposes.

***Installation of Groundwater Monitoring System – Cotton Irrigation Development, Bourke.*** Supervised installation of long-term groundwater-monitoring network for a surface water storage facility supporting a cotton irrigation development. The program involved the installation and development of 32 piezometers, collection of groundwater samples, assessment and reporting of hydrogeological and hydrogeochemical conditions at the site, including an assessment of the hydraulic conductivity of the aquifer, groundwater flow direction, hydraulic gradient, and physiochemical conditions. CMJA subsequently hosted a series of staff training events in groundwater data and sample collection techniques.

***Exeter Hard Rock Quarry Hydrogeological Assessment.*** Preparation of a hydrogeological study for a proposed hard-rock quarry extension. Assessment involved the installation of twelve groundwater monitoring piezometers, packer testing, development and sampling of each piezometer, hydraulic conductivity testing, mapping of springs, quantification of spring and stream discharge, and reporting of hydrogeological and geochemical properties of the fractured rock basalt aquifer.

Assessment further dealt with potential impacts of the proposed development on existing groundwater users, and potential mitigation measures to alleviate any potential impacts of the development.

***‘Greengrove’ Hydrogeological Appraisal.*** Project involved the design and installation of a groundwater monitoring system based on geological, hydrogeological and geophysical information at a property earmarked for future effluent irrigation. Project involved an initial appraisal of a significant volume of information regarding the site, the carrying out of a electromagnetic geophysical survey, and the installation of twenty groundwater monitoring bores into both shallow and regional groundwater systems. An assessment of the groundwater geochemical parameters was subsequently undertaken, and the results of the investigation reported to NSW Department of Commerce.

***Hydrogeological Investigation – Narrandera Landfill.*** Assessment of hydrogeological conditions of an existing and proposed landfill sites. Assessment involved the design and construction of long-term groundwater monitoring network, installation of groundwater monitoring piezometers, packer testing and groundwater sampling, and interpretation and reporting of findings.

***Hydrogeological and Surface Water Contamination Assessment – Uimin White Sands Plant, Port Stephens.*** Assessment of potential groundwater impacts on a shallow porous aquifer by sand extraction and washing processes at Port Stephens. Assessment included potential impacts of surface water runoff and infiltration on the aquifer via the installation of nineteen groundwater monitoring bores and subsequent groundwater sampling.

***Proposed Livestock Saleyards Investigation.*** Assessment of hydrogeological characteristics of a large-scale grazing property earmarked for future livestock exchange and effluent irrigation. Assessment included a review of local information, published maps, borehole records and geophysical information, and an assessment of the likely impacts of effluent irrigation on both shallow perched aquifers and the regional aquifer.

***Hydrogeological Investigation – Portland Landfill.*** Assessment of hydrogeological conditions of an existing landfill site and development of post-closure management plans. Assessment involved the design and construction of a groundwater monitoring network, installation of groundwater monitoring piezometers, hydraulic conductivity testing and groundwater sampling,

interpretation and reporting of findings, and the design of several on-going management options for leachate control.

**Hydrogeological Assessment – Bathurst.** Conducting field operations including pump tests and groundwater sampling both prior to and following heavy construction and earthworks on a property outside of Bathurst. Assessment involved the interpretation of aquifer and bore characteristics via pump tests and groundwater sampling, and the interpretation and reporting of data.

**Hydrogeological Investigation – Lithgow Landfill.** Assessment of hydrogeological conditions and development of conceptual geological model for the site.

**Hydrogeological Investigation Former Solvent Recovery Facility – Wilberforce.** Investigation involved the installation of a groundwater monitoring system at a former solvent recovery facility on behalf of the NSW Environment Protection Authority (now the Department of Environment and Conservation). Assessment included the determination of the groundwater flow direction, hydraulic gradient, hydraulic conductivity of the aquifer, and finally an assessment of whether the site posed a significant risk of harm to either human health or the environment.

**Troy Junction Sewage Holding Pond Electro-magnetic Survey – Dubbo.** Conducted field measurements of geophysical properties (ground conductivity and resistivity) in relation to ongoing monitoring of suspected leakage from sewage effluent ponds into groundwater. Interpretation and reporting of the results of the geophysical investigation relevant to suspected pond leakage into unconfined alluvial aquifers.

**Hydrogeological Investigation Drum Washing Facility – Sydney.** Investigation involved the installation of a groundwater monitoring system at a drum washing facility in order to satisfy the requests of the NSW Environment Protection Authority. Assessment included the determination of the groundwater flow direction, hydraulic gradient, hydraulic conductivity of the aquifer, and finally an assessment of whether the site posed a significant risk of harm to either human health or the environment.

**Contaminated Groundwater Assessment – Troy Junction Sewage Holding Pond, Dubbo.** Investigation involved the estimation of the volume of contaminated groundwater suspected to be leaking from sewage effluent ponds, based upon the results of electromagnetic surveys, hydraulic conductivity testing, borehole lithological and geophysical logs and other relevant information.

## **Significant Projects - Environmental Site Assessments**

**Review of Environmental Factors – Sydney Region.** Prepared a review of environmental factors for sixty sites on behalf of Sydney Water and Thiess Environmental Services. Review included an assessment of geological, hydrogeological, flora, fauna, topographical and anthropogenic characteristics of a range of sites, and assessment of potential impacts of the works on the site and surrounding area. Works involved site visits, intensive assessment of site characteristics, liaison with numerous government departments, and development of an Environmental Management Plan and associated mitigation measures for each site.

**Contaminated Site Assessment and Remediation, Former Timber Treatment Plant – Bimbimie, NSW.** Conducted an environmental site assessment of a former timber treatment plant on the South Coast of New South Wales. Works included a visual assessment of the site and neighbouring environmentally sensitive bodies, field sampling, data interpretation and reporting, preparation of a Remedial Action Plan. Remedial works has encompasses on-site encapsulation of CCA impacted materials within a compacted clay lined cell.

**Former Council Storage Depot – New South Wales South Coast.** Conducted a Stage 2 Site Investigation of a former Council vehicle maintenance and storage depot at Moruya on the New South Wales South Coast. Works included a visual assessment of the site and neighbouring environmentally sensitive bodies, decommissioning of several underground storage tanks, installation of groundwater monitoring wells, collection of surface water, groundwater and soil

samples, data interpretation and reporting (including the development of a Remedial Action Plan), and overseeing the site remedial and validation works.

**Contaminated Site Assessment – Former Commercial Nursery, Hazelbrook.** Conducting a Stage 1 Site Assessment and Stage 2 Site Investigation of a former commercial nursery and horticultural operation. Included a visual assessment of the site and neighbouring environmentally sensitive bodies, field sampling, data interpretation and reporting, and site validation works.

**Former Biosolids Trial Site – Goulburn.** Conducted an environmental site assessment of a property formerly used for the application of dewatered biosolid products. Works included an initial appraisal of site conditions, historical assessment of the site, development of a sampling and analysis strategy, sampling, and interpretation and reporting of findings.

**Former Commercial Potato Farm – Southern Highlands, New South Wales.** Conducted an environmental site assessment of a former commercial potato farm at Robertson in the Southern Highlands of New South Wales. Works included a visual assessment of the site and neighbouring environmentally sensitive bodies, field sampling, data interpretation and assessment of contaminant transport paths and fate.

**Soil Lead Investigation – Central Tilba School of Arts Halls.** Undertaking of a Stage 1 Site Assessment and a Stage 2 Site Investigation of paint-derived lead contamination of the surface soils of a community function centre and neighbouring playground. Included a visual assessment of the site, conducting of field sampling, data interpretation and reporting, and the preparation of a Remedial Action Plan and accompanying Site Management Plan for the site.

**Former Council Storage Depot – Upper Blue Mountains.** Undertook an environmental site assessment of a former Council depot used for the storage of road and pavement construction materials and vehicle maintenance. Included visual assessment of the site and neighbouring environmentally sensitive bodies, field sampling, data interpretation and reporting, and site validation works.

**‘Green Square Gardens’ Residential Development – Waterloo.** Undertaking a Stage 1 Site Assessment and Stage 2 Site Investigation of a former electrical storage warehouse and ferrous foundry located on the environmentally sensitive Botany Sands. Investigation included a visual assessment of the site, drilling supervision and logging, implementation of a soil and groundwater investigation, data collection, interpretation and analysis, presentation of data, reporting, and the development of a Remedial Action Plan, and management and supervision of remedial works. Remedial works included the excavation and off-site disposal of approximately 6,000 tonnes of impacted materials.

**Contaminated Site Assessment – Great Western Paint Factory.** Carried out an environmental site assessment of a paint manufacturing operation, involving visual assessment and characterisation, evaluation of potential impacts on neighbouring environmentally sensitive features, field sampling, data interpretation and reporting. The report also presented recommendations for additional works regarding potential redevelopment opportunities.

**Former Katoomba-Leura Gasworks Site – Blue Mountains.** Conducted field operations; drilling supervision/logging, soil and water sampling and observance QA/QC procedures, conducting extended groundwater pumping tests, and reporting of investigation at a former gasworks site in the Upper Blue Mountains.

**Former Landfill – Penrith.** Conducted an environmental site assessment of a former landfill involving the validation of the site for proposed redevelopment. Included field sampling, interpretation of analytes and validation of the site.

**Commercial Nursery – Lower Blue Mountains.** Undertaking a Stage 1 Site Assessment and a Stage 2 Site Investigation of a former commercial nursery involving the validation of the site for proposed redevelopment of the site for residential purposes. Included a visual assessment of the site including a review of environmentally sensitive areas, conducting field sampling, reporting, interpretation of analytes and validation of the site.

**Former Fuel Service Station – Southern Highlands.** Decommissioning of a former service station site located in the Southern Highlands. Works involved the remediation and validation of the site for proposed commercial development, including a preliminary physical site investigation, field sampling, data interpretation, reporting, preparation of a Remedial Action Plan and subsequent site remediation and validation works.

### **Site Audits**

Craig has provided support on numerous site audits, ranging from sites where no remedial works were required, to sites which required the excavation and off-site disposal of contaminated soil on on-site landfarming, stabilisation of contaminated soil, and has also assisted in the preparation of numerous summary site audit reports on behalf of Christopher Jewell.