

Getting to Know Groundwater & Surfacewater

AUSTRALIA – NEW ZEALAND

Practical training in hydrogeology for non-specialists who work with **groundwater and surfacewater**

When	Where
19 th Getting to Know Groundwater & Surfacewater Wed 1 – Fri 3 April 2009	Mantra Legends Hotel, Cnr Surfers Paradise Blvd & Laycock St, SURFERS PARADISE QLD
20 th Getting to Know Groundwater & Surfacewater Wed 27 - Fri 29 May 2009	Kings Perth Hotel, 517 Hay St, PERTH WA FULL
21 st Getting to Know Groundwater & Surfacewater Wed 29—Fri 31 July 2009	Crowne Plaza, 32 Mitchell St, DARWIN NT FULL
4 th NZ Getting to Know Groundwater & Surfacewater Wed 21 – Fri 23 Oct 2009	Novotel Rotorua Lakeside, Lake End Tutanekai St, ROTORUA NZ

This course is supported by:



NCGRT

Who should attend

This course is designed to build on the knowledge gained in CGS' *ABCs of Groundwater* book (to order see: www.groundwater.com.au). This course also provides a practical foundation for the upper level course, the *Australian Groundwater School*.

Getting to Know Groundwater & Surfacewater is designed for:

- Technicians and environmental extension officers who require hands-on, field-oriented skills for investigation and management of groundwater, surfacewater and associated environments.
- Managers, planners and policy staff involved in groundwater and surfacewater assessments, reviewing consultants' reports, and policy or planning work.
- Non-specialists who require a basic understanding of groundwater/surfacewater processes, behaviour and management.
- People from a diversity of natural resource backgrounds including environmental consulting, mining, agriculture, planning, landcare, environmental science, community environment groups, farming and education.

Course Outline

- **How important is groundwater and surfacewater?** Global and local water balances; types of aquifers and surfacewater flow; how surfacewater and groundwater interacts; runoff and recharge.
- **How is groundwater stored and how does it move?** Hydrogeology; aquifer hydraulics; interpreting monitoring data (observation wells and piezometers); aquifer testing.
- **Surfacewater hydraulics and management:** Rainfall; runoff; flow routing; yield analysis; Average Recurrence Interval (ARI).
- **Ecosystems and their dependence on water:** Groundwater, surfacewater and environmental flows. Water quality issues and thresholds: salinity; acidity; eutrophication; sedimentation; lake depths; stream flow (weirs, depth gauges, loggers).
- **Catchment data collection, monitoring and interpretation:** Spatial information and remote sensing for hydrology studies; soil/landscape data; geophysics; water quality; decision support tools for water and ecosystem modelling.
- **How can we investigate groundwater responsibly and safely?** Guidelines for monitoring including standards; databases; health and safety during field work.
- **Contamination/pollution of groundwater, contaminant behaviours:** What is it; where it goes; how it impacts?
- **Remediation of contaminated groundwater:** General discussion on groundwater remediation and limitations
- **Introduction to risk assessment:** Assessment of risk on groundwater; methods of risk assessment; evaluation risk; minimisation/mitigation; controlling risks on groundwater.
- **Water management and policy:** Drainage issues; protection of drinking water supplies.
- **Exercises:** Estimating runoff and recharge; analysing pumping tests; groundwater flow nets; groundwater contamination.
- **Case Studies** may include: Integrating groundwater and surfacewater to meet management goals and to develop clear environmental objectives and targets; classifying wetlands, environmental flow requirements and management; changes in riverine flows driven by groundwater discharge.
- **Field demonstrations:** Measuring water levels and water quality including EC, pH, using loggers and rain gauges.
- **Study Tour** of significant groundwater sites on second day of the course; eg. mining, recharge, landfill sites etc.
- **NB: Attendees will need to prepare for weather conditions eg sunscreen, hat, wet-weather gear, strong shoes and water bottle.**

All programs will include essential groundwater and surfacewater topics but other topics will vary according to location and availability of presenters.

Course leaders

19th Getting to Know Groundwater & Surfacewater - QLD: Colin Hazel MatrixPlus; Rob Ellis DNRW; Greg Hausler EHA.

20th Getting to know Groundwater & Surfacewater - WA: Tony Laws, Phil Commander, Peter Muirden WA Dept of Water; Steve Appleyard WA Dept of Env & Conservation.

21st Getting to Know Groundwater & Surfacewater - NT: Tony Laws WA Dept of Water; Peter Jolly Consultant; Greg Davis CSIRO WA; Anthony Lane Lane Piper.; Gary Martin NT Primary Ind, Fisheries & Res, Steven Tickell NT NRETAS.

4th NZ Getting to Know Groundwater & Surfacewater - NZ: Chris Daughney, Paul White GNS-NZ; Howard Williams, Tim Davie Environment Canterbury; Colin Hazel Matrix Consulting; Neil Power DWLBC-Sth Aust; Graham Fenwick NIWA.

Course Fees

19th 20th 21st. AU\$970 (inc GST); 4th NZ: AU\$880 (GST exempt) includes: notes, tuition, morning and afternoon refreshments, lunches and field trip.

Accommodation - Attendees are to arrange own accommodation.

*If you mention that you are part of the CGS Course, you may be eligible for an accommodation discount at the course venue.

19th Getting to Know Groundwater & Surfacewater - QLD

*Mantra Legends Hotel (course venue): Cnr Surfers Paradise Blvd & Laycock St, Surfers Paradise, QLD.

Ph: 07 5588 7888 Fax: 07 5588 7887 Email: relax@legendshotel.com.au

20th Getting to Know Groundwater & Surfacewater - WA

*Kings Perth Hotel (course venue): 517 Hay St, Perth, WA.

Ph: 08 9323 2780 Fax: 08 9221 1539 Email: bookings@kingsshotel.com.au

21st Getting to Know Groundwater & Surfacewater - NT

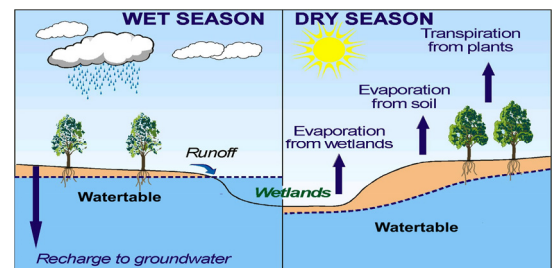
*Crowne Plaza (course venue): 32 Mitchell St, Darwin, NT.

Ph: 1800 007 697 Fax: 08 8982 4903 Email: hotel@crowneplazadarwin.com.au

4th New Zealand Getting to Know Groundwater & Surfacewater- NZ

*Novotel Rotorua Lakeside (course venue): Lake End Tutanekai St, Rotorua, NZ.

Ph:+64 7 3463888 Fax: +64 7 3471888 Email: h1874-re01@accor.com



Graphic courtesy of SA Dept Water, Land and Biodiversity Conservation

To register please see over leaf.

For more information contact the CGS Office: **Phone: 61 8 8201 5632 Fax: 61 8 8201 5635**
Email: cgs@groundwater.com.au Web: www.groundwater.com.au/short-courses/

REGISTRATION FORM / TAX INVOICE

ABN: 65 542 596 200

Please register early by faxing this form to **FAX: +61 8 8201 5635**



**Centre for
Groundwater Studies**

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TITLE: _____ **FIRST NAME:** _____ **SURNAME:** _____

EMAIL: _____ **NB:** Most communication will be via email.

JOB TITLE: _____

COMPANY/DEPARTMENT: _____

ADDRESS (Postal): _____

CITY: _____ **COUNTRY/STATE:** _____ **POSTCODE:** _____

PH: _____ **FAX:** _____

WEB: _____

Please provide any dietary requirements _____

Fees – AU\$

Please tick chosen course	Course Fee Includes GST
<input type="checkbox"/> 19 th Getting to Know Groundwater & Surfacewater April 2009, QLD \$110 Late fee for registrations after Friday 27 th February 2009	\$ 970 \$
<input type="checkbox"/> 20 th Getting to Know Groundwater & Surfacewater May 2009, WA \$110 Late fee for registrations after Friday 24 th April 2009	\$ 970 \$ FULL
<input type="checkbox"/> 21 st Getting to Know Groundwater & Surfacewater July 2009, NT \$110 Late fee for registrations after Friday 26 th June 2009	\$ 970 \$ FULL
<input type="checkbox"/> 4 th NZ Getting to Know Groundwater & Surfacewater October 2009, NZ \$100 Late fee for registrations after Friday 18 th September 2009 <i>Note: Australian GST is exempt for courses held in New Zealand</i>	\$ 880 \$
Less (choose 1 option only): <input type="checkbox"/> 5% discount on *Course Fee only for IAH, AWA, NZHS, SIA, ACLCA Members (Member No.....) <input type="checkbox"/> 10% discount on *Course Fee only for CGS Partner Staff (Partner name.....) <input type="checkbox"/> 15% discount on *Course Fee only for Full-time Students (Institution name.....)	-\$
Total	\$

ENDORSED BY:

**National
Groundwater
Working Group**

NCGRT

SUPPORTED BY:

AWA
australian water association

PAYMENT – Please select payment method below: ABN: 65 542 596 200

1. **Credit Card** Please debit my: **Visa** **Mastercard**

Card Number: _____

Cardholder's Name _____ **Signature** _____

Expiry Date: _____ / _____

2. **Cheque** Payable to: **“Centre for Groundwater Studies”** 3. **Please send me a Tax Invoice**

Addressed to: Centre for Groundwater Studies,
GPO Box 2100, ADELAIDE SA 5001, Australia

Terms, Conditions, Transfers and Cancellations for all Centre for Groundwater Studies (CGS) Short Courses:		
1. A CONFIRMATION letter will be sent to all participants prior to a course. Participants must have received their confirmation letter before attending a course. 2. A TRANSFER of your registration to a different course must be made in writing. This will incur an additional administration fee of \$220.	3. CANCELLATIONS must be made in writing. Then the following terms will apply: a. <i>Less than 3 business days</i> before a course: <i>No refund.</i> b. <i>Between 3 business days and 3 weeks</i> before a course: <i>50% refund.</i> c. <i>More than 3 weeks</i> before a course: Refund of the course fee minus an administration fee of \$220. d. However to avoid loss of the course and administration fees, a substitute attendee is welcome, by submitting a new registration form.	4. If attendees CANCEL Field Trips or Dinners, generally no refund will be paid. 5. While every attempt will be made to deliver courses as advertised, we reserve the right to cancel a course at short notice for conditions beyond our control. Notification of any such cancellation will attract a refund.

For more information contact the CGS Office: **Phone:** +61 8 8201 5632 **Fax:** +61 8 8201 5635
Email: cgsg@groundwater.com.au **Web:** www.groundwater.com.au/short-courses/