

# Groundwater scientist

Craig Vincent is a groundwater scientist at Environment Canterbury. Craig monitors groundwater levels and chemistry data, identifies trends, and communicates the information with fellow scientists and interested community groups.



## Craig's route



- ◆ Bachelor of Science in Geology, including courses in maths, biology and computer science.
- ◆ Postgraduate Diploma in Geology with taught courses.
- ◆ MSc thesis in Engineering Geology specialising in groundwater.

## Craig's tips



- ◆ Apply for regional council summer work while studying. This is a good way to make contacts and get some initial experience. Masters scholarships are also offered at several regional councils so check with your university scholarships office or on the web.
- ◆ Be prepared to take a different job initially, for example in customer services, and get to know the regional council and its staff.

## Who do you work for?

I work for ECan, Environment Canterbury. The regional council is responsible for the management and protection of water quantity and quality, air quality, coasts, lake and rivers, public transport system and energy use within the Canterbury region.

## So what do you actually do?

I do a lot of different things – all with a groundwater focus. I've got routine monitoring and several projects on the go at any one time. I also provide technical advice to consents staff as required.

The routine monitoring involves measuring and then interpreting trends in groundwater levels, chemistry and isotope data. I have a monthly well run in the Rangitata-Orari area where I measure groundwater levels in about 40 wells and collect water quality samples. I then compare this new data with previous months and years to gain a better understanding of the current state of the water resource and a brief statement is produced for media release. I also look at well borelogs in order to identify different aquifers.

I've got a couple of projects on the go at the moment, one large and several smaller ones. The large project is in the Orari catchment near Geraldine and Temuka. I work as part of a larger team, involving surface water scientists and technicians, to identify the relationships between groundwater levels and river flows and how these are affected by groundwater abstractions. One of the smaller projects involves looking at the effect of changing irrigation practices on groundwater recharge.

I'm largely office based and get out in the field for 2 to 3 days per fortnight. I also do intensive fieldwork as required by projects.

## What hours do you work?

We work a 37.5 hour week. If I'm doing field work I might work longer days and then take time-in-lieu at a later date.

## What equipment and software do you use?

For the groundwater monitoring I use water level probes, pH and Dissolved Oxygen meters. At some sites we monitor the groundwater levels continuously using multi-parameter sensors and loggers such as Level TROLLS and Divers.

I use a range of visualisation, graphics and modelling software. We use Tideda for storing our groundwater data and the groundwater modelling software AQTESOLV for the design and analysis of aquifer tests. I also use GIS software and other analysis software such as Grapher and Surfer.

## What skills do you need?

A good understanding of basic groundwater processes and theory is important. I collect, analyse, interpret and report on groundwater information, so good analytical and statistical skills, combined with database familiarity and report writing are necessary.



I typically have several things on the go at once, so time management skills are essential. Some jobs can pop up on any day, for example advising consents staff on technical issues, so I also need to be flexible.

Good communication skills are also important. I give presentations to farmers, community groups and fellow colleagues. There has recently been an increasing dependency on scientists to provide technical evidence at Environment Court hearings.

### Do you work alone or as part of a team?

Both really. I have projects I work on largely by myself, but I also work together as part of a larger team of groundwater scientists, as well as water quality and surface water scientists, consents staff and consultants.

### What is good about your job?

I enjoy putting the pieces together and finding out new information on groundwater in areas where not much was known. My work is largely project based, so it's rewarding finishing the study and presenting the findings to others. Working with a diverse range of people, including farmers, community groups and consultants, can also be rewarding.

### Is there any on-the-job training?

Learning on the job is important, but there's always training available if you want it. We have courses on being an expert witness at the Environment Court, time management, media skills, computing programmes, first aid and driving. We can also attend specialist training courses in New Zealand or overseas whilst some staff also enrol in part-time courses at university. ECan pays their fees and also gives them time to attend lectures.

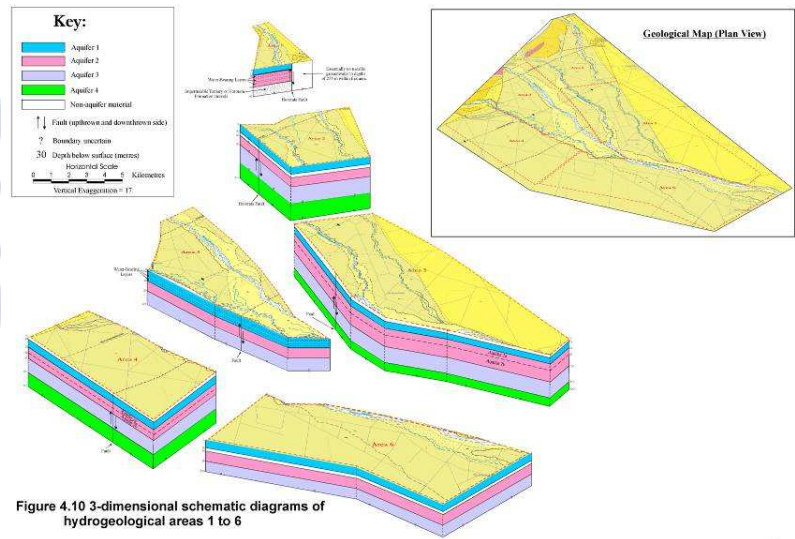


Figure 4.10 3-dimensional schematic diagrams of hydrogeological areas 1 to 6

## Salary information

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- You could expect a salary for a position like mine in the range \$36,000 to \$70,000 depending on your qualifications and experience. Although most people generally start on the lower wage range, advancement can occur reasonably rapidly depending on job performance.

## Getting in



- Apply for a summer job and get to know the staff at your local regional council. These positions are often not widely advertised so write a letter to the appropriate manager.
- Although it's possible to work as a groundwater scientist using work experience alone, the majority of groundwater scientists have a postgraduate degree.

For more information – careers profiles, info on hydrology courses, thesis database, water information directory and other watery stuff – take a look at [www.h2know.org.nz](http://www.h2know.org.nz) and [www.hydrologynz.org.nz](http://www.hydrologynz.org.nz)

This document was produced by Lucy McKergow with funding from

