

## SERVICE SURVEILLANCE INSTRUMENTS

### BACKGROUND

Instrumentation is a vital indicator of a dam's condition. Information from instrumentation is used to identify dam deterioration, developing incidents and give ongoing assurance of dam performance. Long term maintenance, refurbishment and replacement is part of managing these valuable dam safety assets.

### INSTRUMENT DESIGN, ASSEMBLY AND INSTALLATION

Damwatch provides a diverse range of services, with capabilities including:

#### Design assembly and installation of

- Stainless steel / polyurethane packers to control artesian flow and allow pressure monitoring
- Earthquake Fault displacement identification / detection / measurement
- Groundwater temperature monitoring to monitor leakage paths from an earth dam on gravel foundations
- Fifty five vibrating wire piezometers were installed to provide logged pressures and telemetered data for the Supreme Award winning Arapuni Foundation Remediation project. Other instrumentation included:
  - Eighteen vibrating wire water level sensors to remotely monitor weir flows
  - Seven water level sensors in confined galleries
  - Five pH and five turbidity sensors

### INSTRUMENT MAINTENANCE

Damwatch provides services for the repair of surveillance monitoring equipment. This includes routine maintenance and instrument refurbishment of hydraulic piezometers for Mighty River Power, WaterCare Services, Nelson City Council, Trustpower, Genesis Power Ltd, Meridian Energy Ltd and Australian Gas Light Company.

### INSTRUMENT PERFORMANCE EVALUATION

Damwatch evaluated hydraulic piezometer performance at Wairoa, Mangatangi, Lower Huia and Cosseys Dams for WaterCare Services. Also evaluated pneumatic piezometers at Waitakere and Upper Huia Dams.

### THE SERVICE

This service extends through design, installation, maintenance and refurbishment of instruments. Ongoing surveillance of the instruments is delivered through the Damwatch Monitoring System.

### TYPES OF INSTRUMENTS

- Piezometers
- Inclinometers
- Weirs
- Pendulums
- Extensometers
- Pitot tubes
- High resolution temperature devices
- pH and turbidity servers

### INSTRUMENT SERVICES

Damwatch offers a wide range of services relating to:

- Instrument design
- Instrument assembly
- Instrument installation
- Instrument maintenance
- Instrument performance evaluation
- Preparation of instrument specifications
- Review of instrumentation proposals.

