



Australian Government

MSS025021 Collect and evaluate groundwater data

Release: 1

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Modification History

Release 1. Updated unit code. Changes to elements and performance criteria. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Application

This unit describes the skills and knowledge to obtain, preserve and transport representative samples of groundwater for laboratory analysis; measure bore conditions; test chemical, physical parameters in the field; and to process data and interpret results. Personnel usually work within an existing sampling or monitoring plan, continually monitor levels of risk and use specified safe working procedures and equipment. They are also required to work closely with drillers during the construction of wells and bores to prevent contamination of samples, obtain logs and manage waste.

This unit applies to environmental technicians in a range of industry sectors, including environmental services (sampling and monitoring of air quality, water, soil and noise); environmental compliance, auditing and inspection; groundwater and clean water (catchments, supply and environmental flows); water treatment, storm and wastewater management; solid and hazardous waste management; management of contaminated sites; site remediation or rehabilitation; geotechnical services and civil engineering; and natural resource management.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Sampling and testing

Unit Sector

Environmental

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 **Confirm groundwater**

1.1 Confirm the scope and purpose of sampling and monitoring data requirements

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data requirements with supervisor	1.2	Read and interpret available site information, including site plan, bore locations, construction and history of sampling and monitoring
	1.3	Confirm the sampling methods, locations, numbers and types of samples, and duration and frequency of sampling from workplace or client's sampling plan
	1.4	Check that all sampling and testing procedures are in accordance with client or workplace requirements, standards and guidelines
2 Prepare for groundwater sampling and monitoring	2.1	Identify site and sampling hazards and review workplace safety procedures
	2.2	Liaise with relevant personnel to arrange site access and obtain all clearances and permits
	2.3	Read and interpret field sampling procedures and sample preparation methods required for specific laboratory analyses
	2.4	Select purging and sampling equipment and sampling conditions to achieve representative samples and preserve sample integrity during collection, storage and transit
	2.5	Obtain and prepare all reagents, solutions, standards and blanks for field use
	2.6	Select field test equipment and instruments and check operation and calibration in accordance with methods, procedures and manufacturer instructions
	2.7	Assemble and stow all sampling equipment, field test equipment, materials, containers and safety equipment
	2.8	Arrange suitable transport to, from and around site
3 Establish a well or bore for monitoring	3.1	Confirm location of well or bore and groundwater monitoring requirements using site sampling and monitoring plan

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

purposes

- 3.2 Examine the well or bore area to identify possible hazards
- 3.3 Check proposed drilling and construction method will not cause contamination and that casing, drilling fluids and any other materials used in the bore are free of contaminants
- 3.4 Check powered and non-powered tools and sampling equipment are cleaned thoroughly before drilling commences
- 3.5 Check protective casings and screens are kept in their protective coverings prior to installation
- 3.6 Monitor process to accurately log samples and prevent their contamination

4 Conduct representative sampling of groundwater

- 4.1 Locate sampling locations and services at the site and identify possible hazards
- 4.2 Conduct sufficient measurements to accurately determine water level and bore depth
- 4.3 Record bore and environmental conditions and any atypical observations made during sampling that may impact on sample representativeness or integrity
- 4.4 Conduct purging in accordance with defined procedure or method, collect the waste and decontaminate the equipment used
- 4.5 Collect required representative samples and ensure all controls, blanks and replicate samples are correctly integrated into the sampling process
- 4.6 Record all information and label samples in accordance with chain of custody and traceability requirements
- 4.7 Filter and prepare samples to preserve their integrity for subsequent analysis
- 4.8 Secure and transport all samples back to base in accordance with workplace procedures and guidelines

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

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| 5 | Conduct field testing of groundwater | 5.1 | Assemble required monitoring instruments, equipment, and reagents and conduct pre-use checks in accordance with manufacturer instructions |
| | | 5.2 | Retrieve samples for designated field tests or locate established locations for in-situ testing |
| | | 5.3 | Set up, calibrate and operate equipment and instruments in accordance with test methods, procedures and manufacturer instructions |
| | | 5.4 | Take sufficient measurements of groundwater field parameters to obtain reliable data and in accordance with specified methods and procedures |
| | | 5.5 | Record all field observations and data and transfer accurately to workplace information database |
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| 6 | Process and interpret groundwater data | 6.1 | Read and interpret test data noting atypical observations |
| | | 6.2 | Check calculated values are consistent with expectations |
| | | 6.3 | Estimate and document uncertainty of measurements in accordance with workplace procedures |
| | | 6.4 | Record and report processed results in accordance with workplace procedures |
| | | 6.5 | Interpret trends in data and results and report out-of-specification or atypical results promptly to relevant personnel |
| | | 6.6 | Determine if obvious procedure or equipment problems have led to atypical data or results |
| | | 6.7 | Compare results with established groundwater quality standards, statutory environmental quality concentration limits |
| | | 6.8 | Finalise reporting of results in accordance with workplace requirements |

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

7	Maintain a safe work environment	7.1	Use defined safe work practices and personal protective equipment (PPE) to ensure personal safety and that of others
		7.2	Rehabilitate sampling site to render it safe and to minimise environmental impact
		7.3	Clean and decontaminate all equipment, containers, work area and vehicles according to workplace procedures
		7.4	Check serviceability of all equipment before storage
		7.5	Minimise the generation of wastes and environment impacts
		7.6	Liaise with relevant personnel for the safe collection of all hazardous wastes for appropriate disposal

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS025006 Collect and evaluate groundwater data.

Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998>

Assessment Requirements for MSS025021 Collect and evaluate groundwater data

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Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- collected representative samples of groundwater in accordance with a site sampling plan for at least 2 sites
- measured bore conditions and conducted reliable field tests of groundwater parameters on at least 2 sites
- processed and interpreted groundwater data for at least 2 sites.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- terminology used to describe aquifers, drilling and construction of wells and bores, and groundwater sampling and testing procedures
- principles of representative sampling and field testing of common groundwater parameters
- preservation of the integrity of samples
- maintaining identification of samples relative to their source, workplace and legal traceability requirements
- typical values of groundwater parameters, common pollutants and contaminants
- links between quality control, quality assurance, quality management systems and sampling procedures
- workplace procedures dealing with legislative requirements for the handling, labelling and transport of hazardous goods
- site hazards, links between safe work procedures and personal and environmental safety, particularly at high risk sites.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of facilities, equipment and resources, including:
 - vehicle transport, sampling equipment, field test equipment, digital camera, containers, reagents, consumables

- safe work procedures and safety equipment
- workplace procedures, work program, maps, site plans, site sampling plans and test methods, and equipment manuals

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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