



Australian Government

AHCNRM510 Develop a water quality monitoring program

Release: 1

AHCNRM510 Develop a water quality monitoring program

Modification History

Release	Comments
Release 1	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 6.0.

Application

This unit of competency describes the skills and knowledge required to establish requirements for monitoring water quality and developing a program to monitor water quality in a given site. It includes carrying out water monitoring activities and evaluating program effectiveness.

The unit applies to individuals working in the role of manager concerned with gathering information for land or water management purposes, which may include consultation with specialists such as hydrologists and hydrographers. They also analyse information and exercise judgement to complete their duties with a deep knowledge in water management. They have accountability for the work of others and analyse, design and communicate solutions to a range of complex problems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Unit Sector

Natural Resource Management (NRM)

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Determine water quality monitoring program requirements	1.1 Consult with client to identify scope, objectives and constraints in a program brief 1.2 Research and evaluate background information relevant to survey type and site

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	1.3 Determine water quality indicators to be measured, frequency and volume of sampling required to meet program brief 1.4 Establish procedures for data collection, processing and reporting according to program brief and legislative requirements 1.5 Seek estimates of costs and source of funds for the program 1.6 Identify and assess workplace health and safety hazards for conducting the sampling program 1.7 Provide a survey strategy to stakeholders for discussion and approvals according to program brief
2. Undertake a site analysis	2.1 Identify and record biophysical elements of the site 2.2 Identify and record resource management factors contributing to water quality 2.3 Survey site biota according to program brief 2.4 Identify and evaluate sampling points for safety, accessibility and opportunities for repeatable data collection
3. Plan monitoring program	3.1 Select suitable sites for repeatable monitoring to obtain representative samples 3.2 Source laboratory and field equipment for monitoring program, and determine costs 3.3 Confirm suitability and availability of laboratory and field equipment 3.4 Confirm surveyor access to site for duration of the monitoring program 3.5 Document workplace health and safety controls and emergency procedures for the program according to workplace policies 3.6 Document environmental sustainability policies and procedures and biosecurity measures 3.7 Document sampling techniques to be used 3.8 Document methods of data collection, monitoring and field techniques for field operators 3.9 Present survey schedules and procedures to stakeholders and client for approval
4. Monitor water quality	4.1 Carry out water quality monitoring tasks according to plan 4.2 Transport, store and treat samples to preserve the reliability and

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	fidelity of sample results 4.3 Monitor surveying process for accuracy, and compliance with the survey plans and procedures 4.4 Implement contingency plans when problems arise, whilst continuously assessing and evaluating the plan for errors and inconsistencies
5. Evaluate program	5.1 Record and save data according to plan requirements 5.2 Analyse data collected according to industry policies and guidelines and scientific standards 5.3 Draw outcomes, conclusions or trends from the monitoring program using industry standards for interpretation of water quality data and appropriate evidence and reasoned arguments 5.4 Seek advice from client as to satisfaction with monitoring program in terms of the process and outcomes 5.5 Provide report on outcomes to client with recommendations for changes and improvements for any further monitoring activities

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
Writing	Record outcomes of sampling and incorporate into monitoring program reports and documentation, expressing ideas and exploring complex issues, and ensuring accurate, succinct and logically constructed text
Numeracy	Capture, record and analyse monitoring data and use statistical analysis calculations to help formulate conclusions

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AHCNRM510 Develop a water quality monitoring program	AHCNRM502 Develop a water quality monitoring program	Minor changes to Application and Performance Criteria for clarity Updated Performance Evidence, Knowledge Evidence and Assessment Conditions	Not equivalent

Links

Companion Volumes, including Implementation Guides, are available at VETNet: -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72>

Assessment Requirements for AHCNRM510 Develop a water quality monitoring program

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Performance Evidence

An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit.

There must be evidence that the individual has, on at least one occasion, developed and implemented a water quality monitoring program according to a specific client brief and legislative and workplace policies and procedures.

There must also be evidence that the individual has:

- consulted with client and established the scope, objectives, constraints and quality monitoring requirements in a program brief
- conducted research and site analysis to select suitable monitoring sites
- developed and implemented a monitoring plan in accordance with program brief
- evaluated the program using data analysis, consultation with client and assessment against program objectives
- collected, transported and treated samples to preserve sample integrity
- analysed data according to scientific standards and workplace policies and procedures
- applied workplace health and safety practices
- incorporated sustainability practices and biosecurity procedures into monitoring program
- developed evidence-based conclusions from analysis and reasoned arguments
- produced written reports to workplace standards.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- water quality principles and factors, including:
 - hydrological cycle
 - aquatic ecology
 - water quality indicators
 - chemical principles

- catchment and coastal management issues contributing to surface and groundwater quality
- standard techniques to assess ecological health of aquatic sites
- mathematical sampling techniques
- sampling methods for maintaining accuracy and veracity of test results, including:
 - sampling techniques and range
 - storage methods and treatments to preserve sample integrity
 - statistical modelling for sampling
 - location and frequency of sampling
 - sampling methods for different analysis
- analytical techniques appropriate to water quality monitoring, including:
 - statistical analysis
 - comparative analysis
 - chemical
 - physical
 - biological
- data storage and management systems
- accepted scientific processes and standards for data collection and analysis
- health and safety legislative requirements and codes of practice, including hazard identification, assessment and control measures.

Assessment Conditions

Assessment of the skills in this unit of competency must take place under the following conditions:

- physical conditions:
 - skills must be demonstrated in the field where water sampling requires regular monitoring, or in an environment that accurately represents workplace conditions
- resources, equipment and materials:
 - sampling equipment relative to the type of study being undertaken
 - computer and software for report writing and statistical analysis
- specifications:
 - workplace policies and procedures for conducting collecting and analysing water samples and for recording results
 - client brief and specifications for water quality monitoring
- relationships:
 - client
 - stakeholders.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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