

COMPETENCY PROFILE:

ENVIRONMENTAL SCIENTIST

ROLE OVERVIEW

Environmental scientists study pollution and other environmental problems and generate solutions to improve the environment. They conduct scientific studies on the health of ecosystems, prepare reports, and develop management plans to help preserve the environment. Environmental science is a broad field, and some may choose to specialize in diverse areas such as conservation, water quality, environmental compliance, site assessment and investigation, risk assessment, or remediation.

Environmental scientists may gather hydrogeological, biological (flora and fauna) and environmental data to properly assess different sites and perform investigations on various media, including but not limited to soil, water, vapour, groundwater, and sediment. Environmental scientists work for many organizations, including community environmental offices, manufacturing companies, band and hamlet councils, consulting companies, and all levels of government.

Environmental scientists conduct fieldwork and site assessments to develop conceptual site models and advise on land use and remediation action plans. Through research, analysis, and policy development, they promote environmental sustainability, protect natural resources, and ensure human health and safety. This profile is focused on the core of electric vehicle-type work.

An environmental scientist must have expertise in one or more scientific disciplines, be able to analyze complex data, and present summaries and reports. They must also be familiar with (and comfortable with) fieldwork.

ALSO KNOWN AS:

- Ecosystem Restoration Project Manager
- Environmental Chemist
- Environmental Field Scientist
- Environmental Impact Expert
- Environmental Researcher
- Field Scientist
- Regulatory Compliance Environmental Professional

NATIONAL OCCUPATIONAL CLASSIFICATION:

- 21110 – Biologists and related scientists

EDUCATION AND EXPERIENCE

- In most cases, the minimum educational requirement to work as an environmental scientist is a university undergraduate degree in a related engineering or sciences discipline.
- A graduate degree, such as a master's or Ph.D., may be required for senior-level positions.
- Minimum of two years of experience in field activities.
- Capable of handling multiple projects concurrently.
- Experience collecting chemical, biological, and physical field data is an asset, as is experience conducting environmental impact assessments.
- Able to travel and work in remote areas.
- Experience working with projects related to sustainability or emissions reductions would be an asset, especially in the electric vehicle sector.
- Depending on the position, additional certifications, such as Phase I and II Environmental Site Assessment (ESA) certifications, risk assessment training, or computer modelling training, may be beneficial.

TECHNICAL



Scientific Research

Applies scientific methods and techniques using empirical and/or measurable observations in their research to improve, correct, or increase knowledge in a field of study to solve specific problems.

- Collects environmental data on specific areas to gain a more holistic interpretation of an area's environment to support program delivery.
- Conducts research and provides consultation on the processes and determinants of environmental occurrences to manipulate and predict their changes.
- Plans and executes scientific studies to gain information on a specific matter.
- Conducts research with the social science, engineering, and economic communities to create suitable strategies for mitigating environmental risks.

Budget and Cost Management

Develops comprehensive plans to create, monitor, and evaluate operational budgets and costs to account for all project activities and spending so that operations are financially sustainable.

- Monitors the operating cost and budget metrics of site processes, procedures, and performance to ensure operations remain viable.
- Provides senior leadership with input in developing a cost management plan to manage project costs, possibilities, and limitations.

- Documents all resource and financial costs to ensure accurate accounting of project stages.
 - Documents and reports on the site operations costs and budget metrics to communicate potential profits and losses to external stakeholders and internal decision-makers.
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Field Surveys

Conducts field surveys to collect information on the area's ecosystem, landscape, or organisms to determine the viability of projects and the impacts of human activity on the ecosystems.

- Specifies a survey's aim, range, and goals to gather essential data while reducing the study's effects on the local environment.
 - Applies appropriate techniques to conduct field surveys to ensure data is accurate, reproducible, and relevant to the survey plan.
 - Uses survey equipment and instrumentation to collect and analyze samples and data to identify the site's natural characteristics.
 - Analyzes data gathered and formulates site-specific conclusions to improve the environment.
 - Identifies any potential contamination or pollution and develops plans to eliminate contamination and restore the site to its natural state.
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Database Administration

Organizes and maintains databases to ensure that information is available and accessible to the organization to facilitate analysis, research, and decision-making.

- Maintains or modifies existing relevant databases to query and modify stored data to assess observed changes in data over time.
 - Compiles complex assessment data, conducts data gap analyses and prepares conceptual site models to communicate research findings and ensure that projects meet required criteria.
 - Provides technical support to users or clients to maintain, develop, or operate GIS databases or applications.
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Data Analysis

Uses established statistical methods to analyze and interpret data, revealing trends, patterns, and opportunities that inform strategic decisions.

- Confirm data is sufficient and valid before analysis to ensure data collection within the current requirements of legislation, survey plans, and/or specifications.
- Uses appropriate methodologies and techniques to analyze field survey data to produce accurate, reliable, and unbiased results.
- Applies mathematical and scientific models to analyze and derive solutions to specific problems.
- Seeks feedback from other technical specialists to confirm interpretations and ensure all conclusions are aligned with the project plan.

- Prepares technical and research reports on observations, findings, and/or impacts to communicate results to stakeholders, industry, government, or the public.
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Project Coordination

Coordinates components of program activities to improve the day-to-day functions within an organization's environmental programs.

- Consult and engage with expert, multidisciplinary technical team members to incorporate all relevant knowledge, data, and findings into the project.
 - Confers with other technical staff to disseminate field survey results to implement project activities.
 - Contributes to a multidisciplinary team to plan, implement, and execute survey work to facilitate further project activities.
 - Meets with clients and/or stakeholders to discuss technical specifications, customized solutions, or operational problems to coordinate solutions and activities considering the project budget.
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Project Planning and Integration

Develops a comprehensive project management plan outlining the execution, monitoring, and control of the project, incorporating all related plans needed to carry out essential actions and processes for completion.

- Defines the scope, strategy, and objectives for the technical aspects of projects and programs to establish parameters and deliverables.
 - Develops a work breakdown structure to provide the project team and relevant stakeholders with a detailed overview of the deliverables.
 - Tracks the progress of operational plans to adjust, assess the success of strategic objectives, incorporate lessons learned, and acknowledge contributions.
 - Maintains cost management of the project budget across all project planning and integration of activities throughout the project life cycle to ensure effective implementation.
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Risk Assessment and Management

Identifies and analyzes project task risks to develop risk management policies and procedures to control hazards and mitigate risks.

- Engages stakeholders to gather diverse perspectives and insights to ensure comprehensive risk identification.
- Makes well-informed decisions based on the results of risk assessments to weigh potential benefits and drawbacks of alternative courses of action.
- Seeks input from stakeholders and peers to pinpoint improvement areas and apply necessary enhancements.
- Develops risk mitigation strategies and action plans to address specific risks and their root causes.
- Evaluate identified risks based on their likelihood of occurrence, potential impact, and relevance to organizational goals to mitigate existing risks effectively



Collaboration

Engages in professional collaborative efforts with other team members, including sharing information and expertise, utilizing input from others, and recognizing others' contributions to work towards a common goal.

- Ensures tasks are completed most efficiently to optimize workplace output.
- Works in partnership with other internal and external practitioners to execute projects.
- Shares relevant and valuable knowledge, experience, or expertise to aid team members in accomplishing their objectives more efficiently or effectively.
- Seeks input from other team member experts, subject to the complexity of a problem, to better analyze and achieve a more favourable, well-rounded resolution.

Communication

Positively directs outcomes by delivering communication (both written and verbal) that results in a better understanding of goals and objectives captures interest, and gains support for immediate action.

- Interprets and presents data results to stakeholders and senior management to facilitate decision-making.
- Asks questions when assigned unfamiliar tasks to ensure understanding and accuracy.
- Prepares documentation for existing and upcoming products to describe functionality and composition and communicate technical specifications in plain language to a broad audience.
- Uses non-technical language to communicate effectively with team members of all experience levels.

Problem-Solving

Identifies problems and uses logic, judgment, and evidence to evaluate alternative scenarios and recommend solutions to achieve a desired goal.

- Considers the impact on the organization and environment when analyzing specific project objectives and goals.
- Analyze data collected from the site to devise solutions that balance environmental considerations with the organization's requirements.
- Analyzes data to evaluate operations and understand trends and potential areas of concern to take appropriate action where required.
- Analyze project metrics to understand trends and potential areas of concern to take appropriate environmental actions where required.



Organizational Environmental Policy Evaluation

Evaluates the sustainability of an organization's policy(s) to develop suitable alternatives to support sustainable business practices.

- Identifies sustainability policies that align with organizational values to support the development of sustainable practices.
- Recommends valid policy alternatives to draw clear and measurable insights to evaluate new policy.
- Identifies key metrics to evaluate the effectiveness of current policies and practices and identify areas for improvement.
- Amalgamates research into organizational best practices with stakeholder feedback to identify the effectiveness of existing policy.

Health, Safety and Environment (HSE) Compliance

Conducts inspections, oversees site remedial projects, and generates site reports to ensure that the operation complies with the regulatory requirements, internal policies, and procedures as well as client expectations.

- Implements regulatory monitoring applications to monitor regulatory changes to provide proactive compliance solutions.
- Observes and inspects workplace to ensure compliance with applicable regulations, internal policies and procedures and client expectations.
- Participates in the full process of opening and monitoring HSE files for non-compliances to ensure that the needed remedial action is taken to resolve issues.
- Supports the organization in meeting HSE regulatory reporting and permit requirements to avoid compliance related disruptions to the operation.
- Records and tracks HSE successes and failures for statistical and reporting purposes and publishes important results, including performance against organizational key performance indicators, inform decision makers for the site.

Regulatory Compliance

Adheres to specific regulations, codes, and legislation within a defined jurisdiction to ensure the health and safety of others.

- Analyzes relevant regulations, legislations, and standards to ensure programs comply with laws, regulations, and standards on sustainability and climate change.
- Demonstrates knowledge of regulatory requirements governing licensing or zoning to ensure the organization's compliance.
- Generates climate change and sustainability solutions aligned with organizational goals and government regulations to create lasting and effective fixes.
- Carries out all work according to relevant environmental and health and safety legislation and policy.



Site Assessment

Analyze an area's ecosystem to understand the impacts of human activity and development and assist in determining appropriate use cases for its development and management.

- Collaborates with other technical specialists to accurately confirm roles, responsibilities, and permissions to conduct site assessments.
- Collects samples using established protocols to provide a better understanding of the environmental condition of the area.
- Contributes to complex environmental studies to assess the effects of development activities on an environment.
- Identifies relevant site limitations or necessary permissions to conduct habitat management plans according to national standards and policies.
- Provides evidence-based and rational arguments to support recommendations and data interpretations to present stakeholders with a defensible site assessment.
- Uses geographic information systems technology to visualize an area's terrestrial characteristics to give due diligence to site assessments.
- Identifies and assesses risks to human health and the environment and ensures compliance with applicable standards.
- Makes recommendations based on site findings to contribute to a strategic plan to mitigate environmental risks for the site.

Site Remediation

Plans and carries out site remediation to mitigate risks to human health and the environment.

- Identifies and investigates contaminated sites to assess and classify the type and risk of contaminants.
- Plans targets and processes to eliminate contaminants.
- Complies with government environmental policies and standards to bring the site up to code.
- Follows and carries out a plan to remediate the site to handle, manage and treat contamination.
- Uses computer modelling to design a physical, chemical, or biological remediation action plan (RAP) to create and follow risk-based site-specific clean-up.
- Carries out ongoing monitoring and evaluation of the chosen remediation methodology to make evidence-based adjustments toward regulatory or risk-based clean-up goals.