

## DEPARTMENT OF NATURAL RESOURCES

### POSITION DESCRIPTION

**TITLE:** Remediation Engineer

**CLASSIFICATION:** Mechanical Engineer

**POSITION SUMMARY:** This advanced technical position requires application of specific knowledge of mechanical engineering and project management principles to provide services relating to the design, construction, operation, and maintenance of vapor intrusion systems, and management of other environmental systems associated with methane, air deposition, utility gas migration, and remedial excavations throughout Wisconsin. The Remediation Engineer will be responsible for providing site-specific, engineering evaluations and project reviews for state-owned or state-managed remediation sites, as well as similar assistance to regional staff, local government units, lenders, owners, and potential purchasers of brownfield properties for regulatory compliance with the applicable federal and state laws. The work will include troubleshooting and evaluation services, as well as optimizing support for vapor mitigation systems, HVAC systems, ventilation of underground parking structures, sewer gas migration, methane migration, new construction requirements, and the evaluation of air deposition of contaminants. Among other duties, the Remediation Engineer will provide engineering expertise to the RR Program in the areas of building mechanical systems design, construction, remodeling, and maintenance during the review of historic fill exemptions, geotechnical borings, remedial excavations, and optimization of remedial systems.

**GEOGRAPHIC SCOPE AND TRAVEL REQUIREMENTS:** The position will have responsibility for sites with environmental contamination across the state. The position will also participate in regional and statewide RR Program meetings and activities and may serve on regional or statewide standing or ad hoc teams. Regular travel to sites across the state and occasional night meetings will be expected, as well as infrequent statewide overnight travel.

**SCOPE OF AUTHORITY:** This position reports to and is under general supervision by the RR Southeast Region Team Supervisor and has responsibility for providing oversight and technical expertise to consultants and responsible parties for assigned sites and statewide. The position will work closely with Central Office and regional staff throughout the state.

#### GOALS AND WORK ACTIVITIES:

40% A. Engineering Review and Evaluation of Vapor Mitigation and/or HVAC Systems at Remediation Sites

- A1. Serve as a statewide technical expert for vapor mitigation systems and/or HVAC systems installed to address the vapor contaminant pathway at contaminated properties. Review and approve designs and analysis work done by consultants and agency staff. Provide specialized technical support for system design requirements.
- A2. Provide expertise to other staff, consultants, property owners, developers, and communities regarding the design, construction, operation, and maintenance of vapor mitigation and HVAC systems. Identify methods for integrating existing programs into a new maintenance management system and develop specific recommendations for implementation. Provide technical assistance to engineering/ architectural firms.
- A3. Review and evaluate current programs and procedures related to the operation of vapor mitigation and/or HVAC systems at remediation sites.
- A4. Disseminate technical and procedural information to DNR staff and interested external parties on review and evaluation of vapor mitigation and/or HVAC systems at remediation sites.
- A5. Coordinate with RR and other program experts and staff, including DHS staff, to provide engineering expertise and ensure consistency within multiple programs and cross-program issues to address vapor mitigation at remediation sites.
- A6. Develop and maintain technical references, case studies and information related to the design, construction, operation, and maintenance of vapor mitigation and HVAC systems in a variety of situations and methods to assess protective conditions.
- A7. Coordinate with regions and Central Office in developing and maintaining long-term stewardship procedures

and guidance and lead the state's work in conducting audits and monitoring compliance with continuing obligations imposed by the state on sites using vapor mitigation and/or HVAC systems to control the risk associated with contaminant vapors.

- A8. Provide support to other RR Program Project Managers with scoping, budgeting, coordination, and oversight of state lead sites, including engineered systems at state-owned/state-managed sites.
- A9. Provide oversight and technical direction to DNR contractors to ensure field work is properly conducted, that all reports are written and submitted on time, and that the data collected is properly evaluated within submitted reports.
- A10. Process and approve or deny all billings and change order requests and, at end of project work, complete contractor evaluations.
- A11. Provide formal responses to submittals and ensure contractual work is performed as specified and in accordance with code and guidance. Adhere to all procurement requirements.
- A12. Provide engineering evaluation and mechanical design requirements for vapor mitigation and/or HVAC systems following review of technical reports and submittals describing the extent of environmental contamination and potential remedial options. Provide approval of a remedial approach and subsequent oversight and assistance during the construction, installation, operation, and maintenance of vapor mitigation and/or HVAC systems. Review and develop engineering calculations for energy conservation measures. Assist and promote new/innovative and scientifically sound approaches for the remediation of contaminated sites.
- A13. Monitor approved construction of vapor mitigation and/or HVAC systems to ensure the quality of work and compliance with state codes, and departmental and federal regulations. Eliminate system deficiencies, failures, and code violations related to the required mechanical system requirements. As needed, provide on-site monitoring to review the installation and perform troubleshooting where necessary.
- A14. Analyze and evaluate systems performance and needs assessment of vapor mitigation and/or HVAC systems, which include both mechanical and electrical system components. Evaluate processes and software packages currently used and coordinate with staff on the implementation of approved plans and programs.

15% B. Engineering Review and Evaluation of Methane and Utility Gas Migration

- B1. Serve as a statewide technical expert for methane and utility gas migration. Provide expertise to other staff, consultants, property owners, developers, and communities regarding the design, construction, operation, and maintenance of mechanical and/or electrical systems to address the migration of methane and utility gases at contaminated properties. Review and approve designs and analysis work done by consultants and agency staff. Provide specialized technical support for system design requirements.
- B2. Analyze and evaluate site utilities as preferential pathways for utility gas migration.
- B3. Provide technical review and opinions of special requests, such as waste characterization and approval of requests for historic fill exemptions. Analyze and evaluate if methane is a potential risk that requires control by a mechanical and/or electrical system.
- B4. Review, evaluate, and design complex mechanical systems and related site utilities to manage the environmental hazards and mitigate the risk to human health posed by methane gas and the migration of contaminant vapor within utility lines.
- B5. Provide expertise to other staff, consultants, property owners, developers, and communities regarding the design, construction, operation, and maintenance of mechanical and/or electrical systems to address the migration of methane and utility gases. Develop and implement guidance on mechanical design best management practices for new construction as well as remodeling/renovation projects. Identify methods for integrating existing sites into a new maintenance management system and develop specific recommendations for implementation. Provide technical assistance to engineering/ architectural firms.
- B6. Review and evaluate current programs and procedures related to the operation of mechanical and/or electrical systems to address the migration of methane and utility gases
- B7. Disseminate technical and procedural information to DNR staff and interested external parties on evaluation of methane and utility gas migration.
- B8. Coordinate with RR and other program experts and staff, including DHS staff, to provide engineering expertise and ensure consistency within multiple programs and cross-program issues related to methane and utility gas

migration.

- B9. Develop and maintain technical references, case studies and information related to the design, construction, operation, and maintenance of methane and/or utility gas control systems in a variety of situations and methods to assess protective conditions.
- B10. Coordinate with regions and Central Office in developing and maintaining long-term stewardship procedures and guidance and lead the state's work in conducting audits and monitoring compliance with continuing obligations imposed on sites using methane and/or utility gas control systems to address the risk associated with contaminant vapors.
- B11. Provide engineering evaluation and mechanical design requirements for methane and/or utility gas control systems following review of technical reports and submittals describing the extent of environmental contamination and potential remedial options. Provide approval of a remedial approach and subsequent oversight and assistance during the construction, installation, operation, and maintenance of methane and/or utility gas control systems. Assist and promote new/innovative and scientifically sound approaches for the remediation of contaminated sites.
- B12. Monitor approved construction of methane and/or utility gas control systems to ensure the quality of work and compliance with state codes, and departmental and federal regulations. Eliminate system deficiencies, failures, and code violations related to the required mechanical system requirements. As needed, provide on-site monitoring to review the installation and perform troubleshooting where necessary.
- B13. Analyze and evaluate systems performance and needs assessment of methane and/or utility gas control systems, which include both mechanical and electrical system components. Evaluate processes and software packages currently used and coordinate with staff on the implementation of approved plans and programs.

10% C. Engineering Review and Evaluation of Remedial Excavations, Remedial Systems, and Foundations

- C1. Provide engineering expertise to other staff, consultants, property owners, developers, and communities regarding the design, construction, and/or analysis of geotechnical borings, remedial excavations, remedial systems, and foundation systems at contaminated properties, including state-owned and state-managed sites. Review and approve designs and analysis work done by consultants and agency staff. Provide specialized technical support for system design requirements.
- C2. Analyze and evaluate proposed remedial excavations for maintaining the structural integrity of potentially affected structures. Review options to stabilize construction, including shoring.
- C3. Provide engineering evaluation and mechanical design requirements following review of technical reports and submittals describing the extent of environmental contamination and potential remedial options. Provide approval of a remedial approach and subsequent oversight and assistance during the construction, installation, operation, and maintenance of a remedial system, which may include mechanical and/or electrical system components.
- C4. Monitor approved construction to ensure quality of work and compliance with state codes, and departmental and federal regulations. Eliminate deficiencies, failures, and code violations related to the required mechanical system requirements. As needed, provide on-site monitoring to review the installation and perform troubleshooting where necessary.

10% D. Engineering Review and Evaluation of New Construction and/or Remodeling/Renovation of Current Structures

- D1. Analyze and evaluate systems performance and needs assessment of mechanical and/or electrical systems used to protect human health when changes are planned at contaminated properties, including state-owned and state-managed sites. Develop and implement mechanical design requirements and required levels of quality for new construction as well as remodeling/renovation projects.
- D2. Review and approve designs and analysis work done by consultants and agency staff for post-closure modifications. Analyze and evaluate if a planned change(s) in site and/or building conditions require modification to a mechanical and/or electrical system used to protect human health and the environment.

- D3. Provide specialized technical support for system design requirements when a continuing obligation for future vapor risk has been imposed on a contaminated property.
- D4. Monitor approved construction to ensure the quality of work and compliance with state codes, and departmental and federal regulations. Eliminate deficiencies, failures, and code violations related to the required mechanical system requirements. As needed, provide on-site monitoring to review the installation and perform troubleshooting where necessary.

10% E. Engineering Review and Evaluation of Air Contaminant Pathways and Deposition

- E1. Analyze and evaluate the air contaminant pathway and deposition associated with contaminated properties.
- E2. Review and approve designs and analysis work done by consultants and agency staff for known airborne (e.g., mercury and lead) and emerging contaminants (e.g., PFAS).
- E3. Provide specialized technical support for system design requirements to address airborne contaminants.

10% F. Training and Policy-Making

- F1. Evaluate the need for new technical or implementation guidance and/or training for staff and consultants. Assist in the development of DNR rules and policy related to the design, operation, and maintenance of mechanical and/or electrical systems to protect human health from contamination in the environment.
- F2. Develop necessary training and safety coordination programs. Participate in training for staff and externals, including regional and statewide training sessions.
- F3. Participate on statewide RR Program and/or joint RR/DHS Program policy and implementation teams as needed for challenging situations, policy-making responsibilities, and related topics.

5% G. Professional Development and Organizational Responsiveness

- G1. Maintain knowledge of DNR Core Values and adhere to them during daily business.
- G2. Review and keep abreast of changes in knowledge and practices of position-related activities in responsibilities.
- G3. Participate in job-related training and organizational meetings as directed by your supervisor.
- G4. Prepare and present training materials to DNR staff and externals as requested by supervisor. Identify and recommend training topics for staff. Coordinate with vendors and others with developing and/or complex technologies to collect and present information to DNR staff as part of continuing education for staff.
- G5. Perform other position-related duties as assigned.
- G6. Follow all general and position-related safety requirements.

**Special Requirements**

Upon appointment, the incumbent must have one of the following:

- Registration as a Professional Engineer as determined by the Department of Safety and Professional Services per s. 443.04, Wis. Stats.;
- Registration as an Architect as determined by the Department of Safety and Professional Services per s. 443.03, Wis. Stats.;
- a specific record, issued by the professional engineering section of the Department of Safety and Professional Services, showing 4 years or more of experience in engineering work of a character satisfactory to the professional engineering section and satisfactory completion of the fundamentals of engineering exam;
- have graduated from a recognized college or university with a degree in architecture or in a related engineering field such as electrical, mechanical, civil or environmental engineering; OR
- have equivalent professional training and practical experience so as to be deemed an architect or professional engineer as defined in Department of Safety and Professional Services per s. 443.01, Wis. Stats. and also deemed to be qualified to engage in professional architectural/engineering practice as determined by the Department of

Safety and Professional Services per s. 443.03, or 443.04, or 443.05, Wis. Stats.

## **Knowledge, Skills & Abilities**

Upon Appointment:

- Broad knowledge of mechanical engineering principles, environmental science and built environmental solutions vapor intrusion.
- Knowledge of building science, HVAC and ventilation systems, and indoor air quality testing.
- Knowledge of environmental monitoring, sampling techniques, and environmental quality standards.
- Knowledge of environmental remediation and redevelopment concepts.
- Basic knowledge of federal and state laws that regulate environmental programs, including remediation and redevelopment activities.
- Ability to read complex construction plans and specifications.
- Knowledge of short and long-range planning methods for time and project management.
- Knowledge or ability to learn dispersion modeling
- Ability to understand a complex situation, issue, or problem by breaking it down into smaller pieces and trace implications or consequences.
- Ability to work well independently and be self-motivated to take action to meet critical organizational/program/unit goals.
- Ability to demonstrate personal integrity and high ethical standards in all transactions.
- Ability to present a good professional image through dress, speech and actions with a demeanor that inspires confidence in the individual and the organization.
- Skill in employing analytical abilities, pragmatism and other tools to resolve complex problems in a variety of situations.
- Ability to work cooperatively, collaboratively and facilitate others toward accomplishment of a shared goal.
- Strong leadership and interpersonal skills.
- Excellent oral and written communication skills.
- Ability to adapt to change.
- Skill in the use Microsoft Office (e.g., Outlook, Word, PowerPoint, Excel, OneNote, Access).

Full Performance:

- Expertise in vapor intrusion mitigation systems as it relates to remediation and redevelopment sites in Wisconsin
- Expertise in long-term stewardship and continuing obligation requirements for contaminant gases
- Knowledge of historical fill requirements and processes under Wis. Admin. Code ch. NR 500
- Knowledge of air contaminant pathway conceptual models and contaminant air deposition associated with contaminated properties.
- Knowledge of cross-program, multi-agency and other regulatory requirements.

## **Physical Requirements and Environmental Factors:**

### Physical Requirements

This position will spend up to 80% of the time indoors doing sedentary (office) work, including sitting for long periods of time. Occasional outdoor work with extreme cold/heat may be required with kneeling, crouching, climbing, carrying, lifting, and reaching.

### Strength Requirements

Sedentary work (exerting up to 10 pounds of force or more occasionally and/or a negligible amount of force frequently) occurs 75% of the time; field sampling work with occasional lifting (up to 25 pounds) less than 25% over a year's time.

### Equipment Used

Office equipment (computer, multifunction device (printer, scanner copier), projector, and telephone), hand tools,

GPS/navigation equipment, power tools, electronic equipment/radios, monitoring, and sampling devices.