Job Description

Ministry

Environment and Protected Areas

Describe: Basic Job Details

Position

Position ID

Position Name (30 characters)

OSM Atmospheric Scientist

Current Class

Scientific 2

Requested Class

Scientific 4

Job Focus

Operations/Program

Supervisory Level

00 - No Supervision

Agency (ministry) code

Cost Centre

Program Code: (enter if required)

Employee

Employee Name (or Vacant)

Vacant

Organizational Structure

Division, Branch/Unit

Resource Stewardship/Oil Sands Monitoring Branch

Supervisor's Position ID

Supervisor's Position Name (30 characters)

Dir, Env. Science & Field Ops

Supervisor's Current Class

Senior Manager (Zone 2)

Design: Identify Job Duties and Value

Changes Since Last Reviewed

Date yyyy-mm-dd

Responsibilities Added:

The OSM Atmospheric Scientist (Scientific 4) is responsible for four (4) core results related to air quality and deposition monitoring, evaluation and reporting delivered by the Oil Sands Monitoring (OSM) Branch: **Design**, **Planning**, **Delivery**, **Evaluation and Reporting**. These responsibilities include:

1. Design: lead the review, development and continuous improvement of long-term air quality and deposition monitoring program as well as research that address major issues of concern to the OSM Program and the Government of Alberta. The end result is an internationally recognized air quality and deposition monitoring program that supports the government's business mandate. Major activities include:

- Leading the design, planning, delivery, evaluation and reporting of the OSM air quality and deposition program in collaboration with relevant program partners.
- Prioritizing air quality and deposition program aligned with OSM needs, and emerging priorities in collaboration with OSM governance structure, Branch leadership, OSM scientists and the larger scientific community.
- Providing leadership and scientific expertise in designing and planning air quality and atmospheric deposition monitoring programs to address air quality concerns related to oil sands development in alignment with the

OSM Program structure and processes.

- Ensuring integration between air quality and deposition monitoring program and other relevant environmental monitoring under the OSM Program.
- Participating as a member of the Air and Deposition Technical Advisory Committee.
- Addressing recommendations of the OSM Technical Advisory Committee (TAC), the Science and Indigenous Knowledge Integration Committee (SIKIC) and the Oversight Committee (OC). The position may be required to present scientific plans and findings to diverse audiences.
- Working with scientists and the Air TAC to ensure innovative, scientifically credible research and monitoring protocols are conceived and deployed in OSM air quality and deposition program.
- Working with OSM staff to support braiding between western science and indigenous wisdom in the design and implementation of air quality and deposition program.
- Developing and publishing conceptual models based on the latest science that address the air quality impacts of environmental variation and anthropogenic stressors.
- As required by the OSM Program, implement the adaptive approach in air quality and atmospheric deposition monitoring programs. This will require strong scientific understanding of the OSM Program adaptive monitoring approach and effective collaboration with science experts and stakeholders.

2. Planning: completes multi-year research and monitoring plans that are driven by scientific questions to assess the condition of Alberta's long-term air quality and deposition monitoring systems. Plans also include scientific evaluations of the impacts of human activities and ecological drivers. Activities include:

- Planning air quality and atmospheric deposition monitoring programs that address air quality concerns and questions related to oil sands development activities, in a manner that is consistent with the OSM Program governance structure.
- Completing annual project plans and budgets for OSM air quality and deposition monitoring program, that articulate outcomes, activities, schedules and resource requirements.
- Represent the OSM Program at technical meetings, integration workshops, conferences, and governance committee meetings to ensure effective communication of ambient monitoring and relevant regulatory priorities at the appropriate level within the OSM governance structure. This may include acting as Co-Lead for the Air and Deposition Technical Advisory Committee if required.
- Ensuring proposed short-term focused studies and research projects contribute to large-scale understanding of air quality and deposition in Alberta's oil sands region.
- Identifying innovative methods to observe and measure air quality and deposition conditions by staying up to date with the latest science and frequent interaction with international scientists.

3. Delivering: ensures long-term air quality and deposition monitoring program is delivered in a safe and effective manner. The end result is safe and timely completion of deliverables within the available budget. Activities include:

- Leveraging OSM budgets for air quality and deposition program by preparing documentation for grants and contracts with delivery partners and vendors.
- Serving as Contract/Grant Manager for contracts and grants listed in the approved Air and Deposition OSM work plans.
- Leveraging scientific and technical capacity within the OSM Branch, EPA, external delivery partners, and international scientific community to build high-functioning teams that ensure projects are credible and relevant.
- Collaborating with scientific and technical staff in the OSM Branch by visiting field sites and analytical labs, and meeting with staff to anticipate and troubleshoot scientific and technical challenges encountered during program

delivery, including providing ongoing data validation of air quality and atmospheric deposition monitoring data.

- Coordinating the involvement of indigenous community members and volunteers.
- Ensuring Occupational Health and Safety is considered and incorporated into all aspects of program delivery.

4. Evaluation and Reporting - Develops, leads and actively participates in the analyses and completion of scientifically credible environmental data evaluation and reporting that meet project plan commitments and legislated reporting requirements. The end results are OSM technical reports, synthesis reports, contributions to the State of the Environment reports and peer-reviewed papers in international journals. Activities include:

- Developing the conceptual design, analytical approaches and implementation of robust analyses of air quality and atmospheric deposition monitoring data to support standard and non-standard reporting products, including integration with other disciplines including, not limited to groundwater, wetlands and surface water.
- Leading and/or participating in the communication of major observations and conclusions of long-term monitoring programs and focused research activities on the condition, status and trends of Alberta's air quality and atmospheric deposition including but not limited to primary and collaboratively authored peer-reviewed scientific papers, technical and state of the environment reports, major scientific synthesis reports, and plain-language summary documents.
- Collaborating with internal and external scientific experts on additional evaluation of, and reporting on, air quality and atmospheric deposition datasets to ensure scientific linkages with programs and interpretations employed elsewhere in Canada, and internationally.
- Preparing and providing scientifically credible and defensible content for meetings, workshops, conferences, web pages, and briefing packages.
- Chairing scientific boards, panels and committees at the regional level.
- Participating at the provincial and national level in scientific committees and task forces requiring Alberta air quality and atmospheric deposition knowledge and expertise.
- Effectively communicating complex scientific issues/results to a wide range of expert and non-expert audiences, thereby ensuring government, industry, and public stakeholders can best employ or apply the information resulting from the OSM Program's air quality and atmospheric deposition monitoring, evaluation and reporting programs.

Job Purpose and Organizational Context

Why the job exists:

The OSM Atmospheric Scientist provides oversight, scientific and technical expertise, and leadership for the air quality and atmospheric deposition monitoring, evaluation and reporting programs in the oil sands region of Alberta on behalf of the OSM Program. Having expertise in atmospheric chemistry and physics, or air monitoring science and technology, the OSM Atmospheric Scientist will work in partnership with OSM program scientists, provincial and federal scientists, representative of Indigenous communities, as well as internal and external stakeholders, to inform environmental management through policy development and regulatory assurance. The position requires strong relationships with national and international scientists, academia, and experts from multiple environmental media.

The OSM Atmospheric Scientist is responsible for:

(1) providing leadership for the air and atmospheric deposition component of the Oil Sands Monitoring Program;

(2) ensuring the adequacy of the scientific design of air quality and atmospheric deposition monitoring programs for the oils sands region of Alberta;

(3) providing leadership for integrating air quality and deposition monitoring programs with other environmental monitoring programs towards the creation of an integrated environment knowledge system with consideration of Indigenous communities and knowledge systems;

(4) leading the exploration, evaluation, and improvement of advanced monitoring technologies to be integrated into Alberta's air quality and deposition monitoring network thereby ensuring the system achieves a level of excellence that meets or surpasses international benchmarks; and,

(5) leading the development and expansion of a comprehensive, sensor-based air quality monitoring program in Alberta by leveraging new air monitoring technologies to improve coverage and elevate public awareness about the health risks associated with the local air quality.

The OSM Atmospheric Scientist (Scientific 4) will have a proven track-record of managing all aspects of complex and interdisciplinary research programs and projects. The incumbent will regularly present at scientific meetings and conferences, publish peer-reviewed papers and be a recognized expert in their field of research at both the national and international level. The OSM Atmospheric Scientist's in-depth knowledge of and experience with advanced air monitoring technologies, data analysis and statistical techniques, and atmospheric processes contributing to air pollution formation and deposition will play a crucial role in the continuous enhancement of air quality monitoring and environmental management in Alberta.

Responsibilities

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- Chairing scientific boards, panels and committees at the regional level.
- Participating at the provincial and national level in scientific committees and task forces requiring Alberta air quality and atmospheric deposition knowledge and expertise.
- Effectively communicating complex scientific issues/results to a wide range of expert and non-expert audiences, thereby ensuring government, industry, and public stakeholders can best employ or apply the information resulting from the OSM Program's air quality and atmospheric deposition monitoring, evaluation and reporting programs.

Problem Solving

Typical problems solved:

The OSM Atmospheric Scientist (Scientific 4) is responsible for ensuring the scientific credibility of OSM's air quality and deposition monitoring programs in the national and international scientific community. The incumbent will be required to possess expert knowledge on air quality and atmospheric deposition, and work collaboratively with partners and relevant stakeholders to ensure the OSM's air monitoring approach is scientifically sound and defensible. To this end, the OSM Atmospheric Scientist (Scientific 4) must:

- Develop research initiatives, new methods/techniques, and research proposals requiring analytical and/or interpretative thinking, creative thinking, and problem solving skills. Position has the authority to determine how research projects are done independently once the priorities and needs are determined and approved by the OSM Program's Oversight Committee.
- Apply scientific expertise and knowledge and understanding in order to interpret and provide consultation and advice on scientific research to various internal and external stakeholders.
- Address challenging problems related to Alberta's air quality resulting from scientific uncertainty over the environmental mechanisms by which anthropogenic activities and natural drivers such affect air quality.
- Participate in and lead a science-based program generating new knowledge that enables creative solutions to current and anticipated air quality problems including emissions, contaminant transport and dispersal, deposition, and other relevant activities.
- Lead research programs that incorporate multiple disciplines including: aquatic chemistry, aquatic ecology, statistics, contaminant transport and fate, wetland science, geospatial science, modelling, etc.
- Identify and design focused research delivered by teams involving academia, industry, indigenous community members, and government. The position collaborates with monitoring and scientific staff in all phases of the program, i.e., from conception to delivery and reporting.
- Participate in and lead research in an environment where guidelines or scientific standards may be inadequate and significant scientific or technological innovation is required.
- Interact with media from provincial and national news organizations to communicate scientific findings and their implications.
- Responsible for air quality and deposition monitoring program with annual budgets exceeding $10M, involving numerous internal and external staff and collaborators, and focussed on diverse questions ranging from assessing status and trends in the condition of air quality in Alberta's oil sands region to the potential impacts and mitigation of oil sands development activities.
- Collaborate with provincial counterparts to support the Alberta's premier air quality reporting product the Air Quality Health Index (AQHI), which is reported for 40 communities across Alberta to inform the public about

human health risk associated with poor air quality.

Types of guidance available for problem solving:

Guidance for solving air quality and deposition related science problems is provided by multiple complex standard operating procedures, advice from colleagues including other technologists, scientists and external experts/ collaborators, and advice and direction from senior managers. Considerable judgment is required to ensure scientific (and operational) decisions with relatively small risks are made independently, while decisions with relatively large risks are made after receiving appropriate input or direction from senior managers.

Problems related to the environmental impacts of air quality on human health or atmospheric deposition on the environmental ecosystem require a high level of scientific knowledge and expertise, however, they cannot be addressed unilaterally and will require respectful collaboration and dialogue with partners, and stakeholders to reach consensus-based solutions. In this regard, guidance for problem solving will not be readily available and this position will need to take a lead role in using their scientific expertise and previous experience working with stakeholders to work towards resolution.

The OSM Atmospheric Scientist will have access to a team of multi-disciplinary scientists across the OSM program as well as experts in partner and delivery organisations to provide support in terms of scientific data analysis and brainstorming about problems or issues.

Direct or indirect impacts of decisions:

The OSM Atmospheric Scientist (Scientific 4) provides scientific leadership and expertise in air quality and atmospheric deposition at regional, provincial and national levels. The incumbent is also responsible for providing scientific expertise in designing and planning air monitoring programs, integrating advanced air monitoring technologies, and representing the department as an atmospheric science expert in the determining OSM annual monitoring priorities.

Further, this position is responsible for the submission of air quality and deposition monitoring plans, business cases, grant/contract amendments, and any other OSM-specific required documentation, e.g., scope of work documents, as well as addressing the OSM Oversight Committee's funding conditions. The annual workplans for air quality and deposition monitoring programs are developed collaboratively with stakeholders and other science experts from delivery and partner organisations. The soundness of the work proposed in the annual workplans are pivotal to ensuring continued funding of air quality and deposition program, which are generally funded at over $10 million annually.

Key Relationships

Major stakeholders and purpose of interactions:

Director, Environmental Science and Field Operations

- Daily to weekly interaction to discuss strategic and operational issues related to scientific priorities and work of the section; develop and monitor performance agreements; prioritize and lead operational and strategic planning.

EPA Leadership Team (Directors, Executive Directors, Chief Scientist)

- Weekly to monthly interactions to assist senior leaders in setting organizational priorities including developing strategic research plans; provide scientific input on water related issues of importance to the Department and Government as a whole.

OSM Scientists and other OSM Branch Staff

Provision of relevant scientific information to key OSM Branch contacts including daily to weekly interactions with:

- **Various OSM Science Teams:** working collaboratively with other OSM scientists including surface water, aquatic biology, wetland, and geospatial experts.
- **OSM Field Monitoring Team:** scientific oversight/advice on data collection, and relevant field work conducted by Technologists, including providing ongoing data validation.
- **Community-Based Monitoring**: supporting the braiding of Indigenous and western science and knowledge.

Scientists and other staff in EPA and other Government of Alberta Departments including permanent staff, wage staff, co-op students, and interns

- Oversee and participate in the provision of relevant scientific information to key EPA contacts.
- Key Department contacts outside EPA may include the Alberta Geological Survey, the Alberta Energy Regulator, Alberta Health, and Alberta Energy.
- Weekly or monthly interactions to provide scientific leadership, consultation, and advice on air monitoring programs

and to facilitate access to, and application of, scientific findings in the Government of Alberta and internationally.

Indigenous community members and their representatives

· Interactions to co-design air quality and deposition monitoring programs that are relevant to the information needs, questions and concerns of indigenous communities in the oil sands region of Alberta, consistent with the recommendations of the TAC, SIKIC and OC; programs may also directly involve community members in program delivery.

Provincial, national and international committees, task forces and boards

· Quarterly, annual, or occasional participation in multi-organizational and multi-jurisdictional teams to provide expertise, and to represent the Government of Alberta on relevant matters

Graduate students and post-doctoral researchers

· Monthly or more frequent interaction as co-supervisor, or as part of supervisory committee for PhD and MSc students; external examiner at defenses and candidacy exams.

External scientists, including academia, industry, partner monitoring organizations, Government of Canada (e.g., Environment and Climate Change Canada), other provincial or territorial governments, and US Agencies including Environmental Protection Agency and Geological Survey)

· Interactions to lead and collaborate, where appropriate, on air quality and deposition monitoring and research programs and projects. Reviewing scientific literature, and draft manuscripts for journal articles and other reports; co-author publications with other organizations.

Required Education, Experience and Technical Competencies

Education Level	Focus/Major	2nd Major/Minor if applicable	Designation
Doctorate	Science	Science	Other

If other, specify:

Doctorate degree in atmospheric sciences or environment/ chemistry / physics is required.

Job-specific experience, technical competencies, certification and/or training:

- This position requires a Doctoral degree from an accredited university along with five (5) years of experience in atmospheric and air monitoring sciences or equivalent.
- The position also requires a proven track record in the production of peer-reviewed scientific publications, writing scientific reports, proposals, work plans and presentations to peers at scientific meetings.
- The incumbent requires scientific expertise in atmospheric chemistry, innovative monitoring technologies, an understanding of Alberta's air quality monitoring system, building stakeholder relationships and effective communication skills.
- Experience in linking different knowledge systems (e.g., western science with Indigenous knowledge) is an asset as is experience in leading or working in multi-disciplinary scientific teams.
- In-depth understanding and expertise and field work experience with advanced and traditional ambient air monitoring technologies is an asset as is experience or familiarity in GIS technologies and relevant data systems.

Behavioral Competencies

Competency	Level A B C D E	Level Definition	Examples of how this level best represents the job

Systems Thinking	○ ○ ○ ◉ ○	Integrates broader context into planning: • Plans for how current situation is affected by broader trends • Integrates issues, political environment and risks when considering possible actions • Supports organization vision and goals through strategy • Addresses behaviours that challenge progress	Understands how air emissions integrate with and impact other areas of the environment, including the well-being of Albertans. Develop and prioritize monitoring and research programs aligned with OSM Program needs, and emerging priorities identified by the international scientific community. Ensuring integration between air monitoring system and relevant environmental monitoring programs in OSM
Creative Problem Solving	○ ○ ○ ◉ ○	Works in open teams to share ideas and process issues: • Uses wide range of techniques to break down problems • Allows others to think creatively and voice ideas • Brings the right people together to solve issues • Identifies new solutions for the organization	Apply innovative tools to address complex scientific and non-scientific issues in collaboration with a range of partners and stakeholders with varied interests and opinions. Apply scientific knowledge and expertise in identifying and selecting the most appropriate science based approaches and solutions to address diverse issues. Develop initiatives, new methods/techniques, and research proposals requiring analytical and/or interpretative thinking, creative thinking, and problem solving skills. Work with leadership, scientists and staff in OSM to ensure innovative, scientifically credible research and monitoring protocols are conceived and deployed in OSM's air quality and deposition monitoring programs.

Drive for Results	○ ○ ○ ◉ ○	Works to remove barriers to outcomes, sticking to principles: • Forecasts and proactively addresses project challenges • Removes barriers to collaboration and achievement of outcomes • Upholds principles and confronts problems directly • Considers complex factors and aligns solutions with broader organization mission	Participates in and leads air quality and deposition monitoring program generating new knowledge that enables creative solutions to current and anticipated issues. Leads primary and collaborative writing of standard and non-standard reporting products communicating major observations and conclusions of long-term monitoring and focused research activities on the condition, status and trends of Alberta's air quality including but not limited to peer-reviewed scientific papers. Knows what outcomes are important and maximizes resources to achieve the desired outcomes that are aligned with the goals of the GOA
Build Collaborative Environments	○ ○ ○ ◉ ○	Involves a wide group of stakeholders when working on outcomes: • Involves stakeholders and shares resources • Positively resolves conflict through coaching and facilitated discussion • Uses enthusiasm to motivate and guide others • Acknowledges and works with diverse perspectives for achieving outcomes	Build and contribute to strong academic networks to ensure ongoing communication and collaboration with leading experts nationally and internationally. Identifies and designs research programs delivered by teams involving academia, industry, indigenous community members, and government. Collaborate with OSM scientists, field monitoring technologists and other collaborators in all phases of monitoring and research programs, from conception to delivery and reporting Build and support provincial and regional stakeholder networks to gain or maintain scientific credibility and manage stakeholder expectations Leads and participates in

			efforts to develop products such as peer reviewed journal publications and technical reports based on monitoring, evaluation and reporting activities that are relevant to Albertans
Develop Self and Others	○ ○ ○ ◉ ○	Encourages development and integration of emerging methods: • Shapes group learning for team development • Employs emerging methods towards goals • Creates a shared learning environment • Works with individuals to develop personal development plans	Effectively communicating complex scientific issues/ results to a wide range of expert and non-expert audiences, thereby ensuring Indigenous communities, government, industry, and the public can best employ or apply the information resulting from OSM's air quality and deposition monitoring, evaluation and reporting programs. Staying abreast of the state of science and committing time to learn about emerging technology, research findings and complex data evaluation techniques. Seeking learning opportunities that contribute to continuous improvement of knowledge and expertise required in the position. Providing mentoring and support to other OSM scientists as may be required.