



IDENTIFICATION

Department	Position Title	
Environment and Climate Change	Fire Management Geomatics Analyst	
Position Number	Community	Division/Region
23-4842	Fort Smith	Forest Management

PURPOSE OF THE POSITION

The Fire Management Geomatics Analyst (Analyst) manages and conducts advanced spatial data analysis to compliment the Territorial wildland fire and forest management program goals. This includes the creation of reliable vector and raster data and products that support the development of standards, guidelines, and science-based policy. Providing expert advice and logistical support to the fire management program geomatics functions in the five (5) Regions is a key requirement.

SCOPE

Located In Fort Smith and reporting to the Manager of Fire Operations (Manager), the Fire Management Geomatics Analyst conducts advanced spatial data analysis on a variety of land and resource planning and decision-making projects relevant to the territorial wildland fire and forest management programs. Projects include infrastructure and land use planning, environmental reporting and monitoring, and economic analyses.

The Forest Management Division (FMD) provides the policy, planning, and regulatory framework for the stewardship, protection, and sustainable management of forest resources on 80 million hectares of land in the Northwest Territories (NWT). The fire management program is a key area of responsibility. The Fire Operations Section of the Division provides scientific fire management expertise and supports the fire management program. The Section conducts applied research for enhanced fire science knowledge, leads the wildland fire prevention and mitigation programs and manages an information management framework for fire management. The use of geomatics plays a significant role in the ability of the Section to provide effective support.

The Analyst is the senior technical specialist in the area of geomatics for the Forest Management



Division. This position is a subject matter expert with highly specialized knowledge and skill in spatial information including remote sensing, geographic information systems, modelling, and development of specialized spatial information products. Specific focus includes spatial data, providing advice and guidance respecting data standards, integrity, currency, data storage, security, and analytical processes. The position's ability to successfully respond to time-critical requests for information and services is of great Importance.

As an expert in the discipline of information and analysis, this position gathers digital data from a range of subject areas. The Analyst is responsible for the collection, compilation, integration, interpretation, and integrity of spatial data for the fire management program. The position manipulates and integrates vector, raster, and statistical data using GIS (Geographic Information System) applications, ROMS (Relational Database Management Systems) and content management systems to achieve results. The analyst designs and applies analytical processes and develops products resulting from this analysis to meet the needs of the programs.

The Analyst, using a combination of technical and theoretical knowledge, is responsible for the acquisition, storage, maintenance, and security of information in compliance with divisional, departmental, and Inter-agency specifications and standards. The Information is territorial in extent and provides the foundation for divisional automated decision support systems and is made available through access via divisional spatial data repositories and planning tools.

The Analyst provides expertise on the reliability/risk of data when completing projects or responding to requests for information. If the data is not reliable the safety of personnel, values-at-risk, communities and cost effectiveness of the program may be compromised. This is a specialized technical support position, with no supervisory responsibilities. However, this position is expected to function in a team environment and as a result is required to work collaboratively with peers and subordinates to deliver according to developed work plans. A mentoring role is provided to peers and subordinates on the appropriate use of fire management data, spatial data management methodologies, and related use of GIS technology to meet divisional business requirements.

The Analyst assists staff with policy interpretation and implementation, and specific challenges such as development of customized analytical processes. This position, working closely with the GIS Specialist in Hay River, assumes a lead role in the development and direction of Divisional goals being implemented by geomatics staff in the Forest Management Regions.

The Analyst assists regions with specific analysis projects required to meet client resource information needs. As required, the Analyst may be temporarily assigned regional roles to assist with critical operations during the wildland fire season. Key contact requirements include Divisional staff, Regions, and other ECC Divisions to provide information, tools, operational support, and technical expertise; and to collaborate on priority setting and joint initiatives. Other contacts are counterparts in other departments and agencies to consult, exchange



information, and discuss data, data sets, metadata, standards, services, joint initiatives, and issues. Contact with contractors is required for goods and services needed to obtain and process data, develop products, and maintain or enhance systems.

RESPONSIBILITIES

1. Plans and manages fire management GIS special data needs, including vector and raster data.

- Evaluates, plans, and coordinates the acquisition, processing, and analysis of all types of resource data to support the needs of fire management.
- Ensures that the Integrity of spatial data sets is maintained and protected.
- Develops and adheres to file maintenance and security procedures.
- Applies corporate data model standards and creates custom data models for local data sets.
- Develops manual and automated routines for streamlining data loading, automated fire mapping, and integrity checking.
- Performs advanced spatial and statistical analysis requiring a high degree of attention to detail with significant consequences.
- Develops vector and raster databases and data sets used in spatial analysis processes.
- Develops new data sets based on queries and models using Industry standard tools.

2. Leads technical projects to support research and planning activities by conceptualizing, designing, developing, and executing advanced spatial analysis and presentation that integrates data from a diverse range of sources.

- Supports Territorial geomatics initiatives, by participating in development and Implementation of new policy and procedures, new technology, system enhancements, and tools.
- Leads and supports testing and evaluation of geomatics hardware/software, applications and tools, effectiveness evaluations, and delivery of territorial I regional training, as required.
- Uses spatial hardware and software to develop, test, and evaluate customized mapping components to meet Division needs.
- Provides input to the Fire Operations Manager and Director of Informatics on fire management needs with respect to spatial data, infrastructure, programs, and applications.
- Provides advice and consultation to clients in the initiation, design and specifications of projects, types of source data that is required and available, database structure, limitations, and specialized applications in relation to project goals.
- Performs integrated spatial analysis from multiple combinations of spatial and attribute data.



- Develops spatial analysis procedures and techniques for customized applications, queries, and models.
- Leads and/or participates in inter-agency and departmental working groups and committees considering wildland fire management data, metadata, warehousing, applications, and systems.

3. Supports fire management planning activities.

- Collects, analyses, and prepares current and historical data such as fire history, Values At Risk data, weather, and Canadian Forest Fire Danger Rating System outputs.
- Provides technical expertise on spatial data analysis, spatial information tools, mapping, fire behavior and growth simulation models, burn prescriptions, fuel management options to assist in planning fuel reduction, and fire suppression activities.
- Assesses new and existing fire management and mapping tools and technology, and incorporates into existing systems, as required.
- Prepares materials such as statistics and maps and provides analytical data and descriptive statistics required for decision-making, presentations, and briefings to staff, contractors, industry, and the public.
- Provides feedback to the program area for optimal integration of GIS to support the fire management functions.
- Compiles statistics, interprets results, estimates cost effectiveness, and provides input into annual reports.
- Uses GIS modeling functions and database queries to assist in the analysis of different resource management options.
- Provides analytical data and descriptive statistics for decision making and reports.
- Develops thematic maps and maps displays to illustrate various options to fire operations personnel.

4. Provides expert technical advice and support at the regional level related to the fire program on geomatics, issues and technical challenges related to geomatics.

- Functions as the territorial expert in the fire program on geomatics, issues and technical challenges related to geomatics hardware, software data acquisition, integrity, storage, security, spatial data analysis, processes, and products.
- Supports regional geomatics staff with specific challenges such as converting data into formats consistent with Government of the Northwest Territories
- (GNWT) standards, resolving complex hardware/software problems, and clarifying requirements and specifications for data and products such as specific resource reports and mapping/spatial information.
- Provides user documentation, information, and training for staff on the application, interpretation, and use of mapping components of customized applications.
- Consults with regional staff to identify emerging issues related to data, data models, systems applications/models, and hardware.



- Supports regional staff in coordinating workload priorities and challenges, troubleshooting issues, and responding to specific information requests or requirements. Assists with activities, such as analysis projects, development of customized applications and products, and resolving data integrity issues.
- 5. Working with Informatics and the GNWT Centre for Geomatics plays a key role in the identification of emerging issues and the development of solutions related to geomatics.**
- Keeps up to date on current and emerging technologies, techniques, trends, and Issues in the field of geomatics and fire management through participating in training, workshops, industry conferences, and review of technical literature. Communicates pertinent information to other staff.
 - Consults with data providers from cooperating agencies regarding issues related to reliability and compatibility of data and consistency of standards and practices.
 - Evaluates and advises staff on specific concerns regarding reliability/risk of data. Researches and recommends options to meet current and evolving business needs/standards, such as revisions to procedures, alternate data sources, systems enhancements, and customized analytical processes.
 - Provides GIS expertise to resolve data and technical difficulties or conflicts.
 - Analyzes and resolves issues related to capture, integration, and storage of vector and raster data.
- 6. Provides support for work planning related to GIS projects.**
- Develops detailed GIS project plans including terms of reference, resource, equipment, information/data requirements, timelines, project methodology, and deliverables.
 - Manage a diverse and variable workload, taking into consideration changing priorities, volume of work. deadlines, and tasks.
 - Receives and evaluates requests in a timely manner and schedules workload for multiple projects.
 - Facilitates Internal coordination and cooperation on GIS application projects and implements program amendments in response to requests for additional GIS capabilities.

WORKING CONDITIONS

Physical Demands

Required to sit at a computer terminal for long periods of time, some light lifting is required.

Environmental Conditions



Working under adverse conditions such as smoke, extreme heat mountainous terrain, in remote and isolated locations. Spending extensive periods of time in aircraft in often adverse flying conditions.

Sensory Demands

The incumbent will spend long periods documenting, recording, and preparing correspondence, meeting minutes, and documentation where intense concentration and attention to detail is required.

Mental Demands

Travel and work away from home during the fire season (long hours and away from family). The incumbent must be able and willing to work extended hours, travel extensively and be on standby for extended periods of time in accordance with operational plans during fire season.

The severity of the fire season determines the incumbents' workload, and this is a factor beyond the control of the incumbent.

The incumbent will be exposed to shifting priorities and tight deadlines with urgent situations, which significantly increase the level of stress in this position, especially during the wildland fire season.

Given the nature of the organization and responsibilities for emergency response, flexibility is required for sudden changes in responsibilities and assignments such as callouts for emergencies or supporting regional staff during times of increased fire activity.

KNOWLEDGE, SKILLS, AND ABILITIES

- Knowledge of Geomatic systems used for wildland fire management and Issues related to data acquisition, integrity, warehousing, and processing in the north.
- Knowledge and understanding of Data Base software technology and system design methodologies to support application development activities.
- Demonstrated knowledge of Global Positioning Systems, GIS, Web Mapping and RDBMS (including PostGIS, Geoserver, Mapserver, ESRI, and SQL server) standards and various standard operating procedures.
- Knowledge of the principles and general theory of cartography and hardcopy and digital mapping specifications.
- Knowledge of current on emerging issues affecting the Fire Management Program.
- Knowledge of the IT development cycle.
- Knowledge of various operating systems and virtualization (Including but not limited to Windows and Ubuntu).



- Ability to structure and manipulate spatial data prior to and including database population.
- Ability to utilize data capture and GIS software, applications, and tools in the management of large and complex spatial databases (including, but not limited to, ArcGIS, Geodatabase, SDE, PostgreSQL, PostGIS).
- Ability to function within a variety of operating systems, including virtual machines (including but not limited to, Windows, Ubuntu)
- Ability to listen to clientele needs to assess and effectively understand and respond to their needs.
- Ability to establish and maintain positive working relationships and effectively resolve conflicts.
- Ability to work cooperatively with co-workers, clients, and contractors in a multidiscipline resource environment, as well as to work independently and exercise judgment and initiative as appropriate.
- Skills to capture, create, compile, convert, edit, and maintain digital information in a GJS environment.
- Ability to interpret and follow detailed and complex written and verbal instructions.
- Ability to clearly communicate, verbally and in writing, complex technical information, and evolving issues to a variety of people.
- Ability to organize and manage concurrent GIS projects and initiatives.
- Proficiency of computer programming languages such as Python, Arc Macro Language, PHP and SQL.
- Ability to use and maintain a broad variety of mapping and design hardware, software, and other equipment to create themes, color thematic maps, terrain models, web based spatial displays and develop reports using layout and design principles that combine line and space effectively.
- Ability to use standard desktop tools proficiently for organization and communication (including but not limited to Microsoft Suite).
- Ability to work with vector data that is collected in the field on handheld GPS units.
- Ability and willingness to learn new methods and applications in a computer environment.
- Ability to commit to actively upholding and consistently practicing personal diversity, inclusion, and cultural awareness, as well as safety and sensitivity approaches in the workplace.
- Skills to manipulate and integrate geographical and statistical data using various GIS applications and ROMS.
- Ability to create a variety of digital, graphical, and descriptive products including aggregate or subset data themes, colour thematic maps, and associated descriptive statistics, producing quality digital cartographic output to defined standards, and producing web-based mapping displays.

- Ability to integrate data/information from a variety of sources to produce information displays, graphic materials, and models.
- Knowledge of GIS software, Including ArcInfo, ArcGIS, ArcSDE, PostGIS, Mapserver, Geoserver.
- Data and information management skills including metadata management, data archiving, data retrieval and data recovery.
- Knowledge of and experience in GIS project management, implementation, and results delivery involving complex GIS analysis.

Typically, the above qualifications would be attained by:

A bachelor's degree in geography or a natural resources management related field, AND one of the following:

- A certificate or a diploma from a recognized technical institute in GIS; OR
- The incumbent can demonstrate that the core GIS curriculum in the degree program is equivalent to such a certificate or diploma.
- PLUS, three (3) years of related and current experience gained within the
- Last four (4) years at the analyst level.

Equivalent combinations of education and experience will be considered.

ADDITIONAL REQUIREMENTS

Incumbent must be willing and able to:

- Obtain a valid passport.
- A Valid NWT Class 5 Drivers' license.

Position Security (check one)

- ☒ No criminal records check required.
- ☐ Position of Trust – criminal records check required.
- ☐ Highly sensitive position – requires verification of identity and a criminal records check.

French language (check one if applicable)

- ☐ French required (must identify required level below)
- Level required for this Designated Position is:
- ORAL EXPRESSION AND COMPREHENSION
- Basic (B) ☐ Intermediate (I) ☐ Advanced (A) ☐
- READING COMPREHENSION:
- Basic (B) ☐ Intermediate (I) ☐ Advanced (A) ☐
- WRITING SKILLS:
- Basic (B) ☐ Intermediate (I) ☐ Advanced (A) ☐
- ☐ French preferred



Indigenous language: Select language

- ☐ Required
- ☐ Preferred