Ministry of Natural Resources

Ontario

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Forest Information Manual 2009

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Executive Summary

The *Forest Information Manual* (FIM) prescribes the mandatory requirements, standards, roles and responsibilities, timelines, and conditions for providing information in respect of Crown forests. The requirements for information prescribed in this FIM complement the planning and operational requirements of the *Forest Management Planning Manual 2009*. A series of supplemental FIM technical specifications outline the detailed, technical conditions as a requirement of information prescribed by the FIM.

The requirements for information prescribed in the FIM primarily affect Sustainable Forest Licence (SFL) holders who are responsible for preparing forest management plans for Crown forests under licence and conducting forest operations in accordance with an approved plan. The Ministry of Natural Resources, who is responsible for providing information to SFL holders to support the preparation and implementation of forest management plans in accordance with the *Crown Forest Sustainability Act* (CFSA), is also subject to the requirements of the FIM.

The FIM describes the requirements for the provision of forest resources inventories, maps, geospatial data layers, annual reports, forest operations inspections, forest values, base data, and other information required for the purpose of forest management planning and ensuring compliance with the CFSA and its regulations.

Résumé

Le Manuel énonce les exigences, normes, rôles et responsabilités, délais et conditions pour transmettre de l'information relative aux forêts de la Couronne. Les exigences en matière d'information énoncées dans ce manuel complètent les exigences en matière de planification et d'exploitation du Manuel de planification de la gestion forestière (version de 2009). Une série de spécifications techniques additionnelles relatives au Manuel sont en cours de préparation; elles résumeront les critères techniques détaillés exigés en matière d'information dans le Manuel.

Les exigences du Manuel en matière de transmission d'information touchent principalement les titulaires d'un permis d'aménagement forestier durable (PAFD) responsables de préparer les plans de gestion forestière des forêts de la Couronne et d'exploiter les forêts conformément à un plan approuvé. Le ministère des Richesses naturelles (MRN), qui est responsable de transmettre l'information aux titulaires d'un PAFD pour faciliter la préparation et la mise en oeuvre des plans de gestion forestière en conformité avec la LDFC, est également assujetti aux exigences du Manuel.

Le Manuel décrit les exigences relatives à la transmission d'information : inventaires des ressources forestières, cartes, couches de données géospatiales, rapports annuels, inspections d'activités forestières, valeur des ressources forestières, données de bases et autres données exigées en vue de planifier la gestion forestière et d'assurer la conformité à la LDFC et à ses règlements.

Preface

FOREST INFORMATION MANUAL

The *Forest Information Manual* outlines legal obligations concerning the collection and provision of forest information for both the Ministry of Natural Resources and the forest industry. The *Forest Information Manual* is aligned to and consistent with the *Forest Management Planning Manual* (revised 2009) and to make improvements based upon the experiences of using and implementing both the *Forest Information Manual* and the *Forest Management Planning Manual.*

The *Forest Information Manual* is the framework by which forest resource licence holders and the Ministry of Natural Resources undertake their roles and meet their responsibilities of providing and exchanging information for the purpose of forest management planning or to ensure compliance with the *Crown Forest Sustainability Act* and its regulations. The *Forest Information Manual* describes the requirements, standards, roles and responsibilities, timelines, conditions, and technical specifications for providing information. The *Forest Information Manual* components are aligned with the planning and operational requirements described in the *Forest Management Planning Manual*.

The requirements for information consistency, as prescribed by the *Forest Information Manual*, provide a solid foundation and framework for exchanging data about Crown forests. It assists in making the information available to resource stakeholders and the public in an open and transparent manner.

Implementation of the *Forest Information Manual* is directed towards improving access to information about Crown forests and increasing the knowledge base of the Ministry of Natural Resources. Consistent and timely data and information are an increasingly important resource for assessing the sustainability of Ontario's forests.

THE POLICY FRAMEWORK FOR SUSTAINABLE FORESTS

The context for forest management in Ontario is the *Policy Framework for Sustainable Forests* that was approved by Cabinet in 1994. The framework sets direction for forest policy and makes forest sustainability the primary objective of forest management.

Overview of the *Crown Forest Sustainability Act*

The *Crown Forest Sustainability Act* replaced the *Crown Timber Act*, and came into effect on April 1, 1995. The Act is enabling legislation that provides for the regulation of forest planning, information, operations, licensing, trust funds, processing facilities, remedies and enforcement, and transitional provisions. The *Crown Forest Sustainability Act* is designed to allow for the management of all forest-based values, while providing for the sustainability of Crown forests. The *Crown Forest Sustainability Act* defines sustainability as long-term Crown forest health.

A Manual Approach to Implementation of the *Crown Forest Sustainability Act*

The *Crown Forest Sustainability Act* requires the provision of four manuals to guide various aspects of forest management planning in Ontario. These manuals are prepared in accordance with Section (68) of the Act and are regulated in accordance with Section 69(1) 29. The four manuals are:

- *Forest Management Planning Manual*;
- *Forest Information Manual;*
- *Forest Operations and Silviculture Manual; and*
- *Scaling Manual.*

The *Forest Management Planning Manual* is the pivotal document that provides direction for all aspects of forest management planning for Crown lands in Ontario within:

(a) the area of the undertaking for MNR's Forest EA Approval, as defined on page 35 in the Environmental Assessment Board's Reasons for Decision and Decision: Class Environmental Assessment by the Ministry of Natural Resources for Timber Management on Crown Lands in Ontario (EA-87-02); and

(b) the Whitefeather Forest, as defined in Figure 1 of Declaration Order regarding Forest Management on Crown Lands in the Whitefeather Forest (MNR-74).

The Forest Management Planning Manual incorporates:

(a) Conditions 1 to 26 of Declaration Order MNR-71 (2003), and amending order MNR-71/2 (2007), regarding *MNR's Class Environmental Assessment Approval for Forest Management on Crown Lands in Ontario*; and

(b) Conditions 5 to 33 of Declaration Order MNR-74 (2009), regarding *Forest Management on Crown Lands in the Whitefeather Forest.*

In accordance with the *Crown Forest Sustainability Act*, the sustainability of the forest is determined in accordance with the approach described in the *Forest Management Planning Manual*. The approach requires the identification of measurable indicators to assess the effectiveness of activities in achieving management objectives and to assess the sustainability of the forest. In a forest management plan, the determination of sustainability will be a conclusion that the forest management plan provides for long-term Crown forest health on the management unit and has regard for plant life, animal life, water, soil, air, and social and economic values, including recreational values and heritage values. Management unit annual reports require the monitoring and evaluation of forest conditions to compare with planned outcomes, which provides a means for continual refinement, redevelopment and improvement of forest management activities.

The *Forest Information Manual* describes the information requirements that support forest management and directs the sharing and exchange of forest-related information between the Ministry of Natural Resources and Ontario's forest industry.

The *Forest Operations and Silviculture Manual* is a compendium of guidance and direction for the conduct of operations authorized by approved forest management plans. It provides for the qualification of persons engaged in forest operations, as well as measures for assessing the performance of forest operations.

The *Scaling Manual* provides direction for the measurement of all timber harvested from Crown land in Ontario. It provides the means through which Ontario collects revenue from the disposition of Crown timber.

Revisions to the Manuals

The four manuals are revised, improved, and updated based on experiences in using the manuals, and as new information becomes available. Revisions to the four manuals are made through consultation with the forest industry, non-government organizations, provincial forest policy and technical committees, and the general public.

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INTRODUCTION

The *Crown Forest Sustainability Act* (CFSA) enables forest management activities to occur on Crown lands in Ontario according to an approved forest management plan that is prepared in accordance with the *Forest Management Planning Manual* (FMPM). These activities are authorized by the Ministry of Natural Resources (MNR), providing they contribute to the purposes of the CFSA, which are:

> *... to provide for the sustainability of Crown forests and, in accordance with that objective, to manage Crown forests to meet social, economic and environmental needs of present and future generations.*

The *Forest Information Manual* (FIM) is one of four manuals mandated by the CFSA. The FIM prescribes the information required by the Minister and forest resource licence holders with respect to managing and sustaining Crown forests in Ontario in accordance with the CFSA and its regulations. Section 68(6) of the CFSA defines the scope of the FIM as follows:

> *The Forest Information Manual may contain provisions respecting information systems, inventories, surveys, tests and studies that may be required by the Minister in respect of Crown forests and respecting information to be provided to the Minister in respect of Crown forests.*

The information prescribed by the FIM is limited to Crown forests. The FIM prescribes the requirements for creating or collecting information about Crown forests by identifying the types of information systems, inventories, surveys, tests, or studies to be applied or conducted. The FIM also prescribes the requirements for the provision of information about Crown forests to the Minister of Natural Resources.

The basic requirements for much of the information prescribed in the FIM are identified in the FMPM. The FIM is a technical document that further describes the details of what this information will consist of and the manner in which they are to be exchanged between MNR and forest resource licence holders.

The roles and responsibilities of the MNR and forest resource licence holders continue to evolve. Forest resource licence holders share responsibility for forest management planning and conducting forest operations. Forest resource licence holders generate and possess considerable information required to support forest management planning. The MNR has a major responsibility of collecting, maintaining and providing forest resources inventory and values information. The MNR continues to protect the public interest and ensures that sustainability of the Crown forests are protected through the land use and forest management planning processes.

A condition of forest resource licences requires that information must be provided to the MNR in accordance with the FIM. Authority for the Minister to require information is provided by sections 20 and 21 of the CFSA. The FIM also prescribes the requirements for information to be provided to forest resource licence holders by the MNR.

The mandatory requirements for information do not restrict or limit the Minister from requesting additional information from forest resource licence holders which may be needed to fulfil the obligations of the MNR under the CFSA.

The FIM describes ownership, copyright and intellectual property rights of information about Crown forests consistent with the *Freedom of Information and Protection of Privacy Act* (FIPPA*)*, the *Copyright Act*, subsection 21(2) of the CFSA, and current government policies on information.

The FIM prescribes FIM technical specifications that describe information standards and how information will be provided. FIM technical specifications describe technical information details which may be modified to take advantage of changes in technology, information management processes, and information systems. These changes will not alter the basic information requirements described in the FIM. A formal revision process for the FIM technical specifications is described later in this Introduction section of the FIM.

The FIM may not prescribe all of the information required for forest management planning or ensuring compliance with the CFSA and its regulations. Additional information requirements may be specified in other regulations, manuals or policies.

Organization of the Forest Information Manual

The FIM is organized into four major divisions, Parts A, B, C and D, plus five associated FIM technical specifications. In the simplest of terms, the FIM provides a description of the information requirement, references the source of the requirement, describes the rationale for the requirement and, on a general level, discusses the format of the information and the party responsible for providing the information. The technical specifications describe the standards (e.g., data attributes, format) for the information requirement, the conditions of provision (e.g., naming conventions, exchange parameters, validation standards), and the implementation and first effective date implications.

PART A deals with information policy. It has linkages to and references components of the *FIM Base and Values Technical Specifications*. Part A covers subjects such as:

- ownership;
- copyright;
- intellectual property rights;

- information issues resolution;
- data access, sharing and exchange; and
- the Forest Information Portal.

PART B deals with information required during strategic and operational planning, specifically the information requirements associated with preparation and approval of a forest management plan. Part B has linkages with and references to the *FIM Forest Management Planning Technical Specifications*, the *FIM Forest Resources Inventory Technical Specifications* and the *FIM Base and Values Technical Specifications*. Part B covers subjects such as:

- values information;
- base features information;
- forest resource inventory; and
- forest management planning data layers, maps and documentation.

PART C identifies information requirements for annual forest operations. It is linked to and references the *FIM Annual Work Schedule Technical Specifications.* Part C covers subjects such as:

- annual work schedules; and
- forest operations prescriptions.

PART D links with the *FIM Annual Report Technical Specifications* and describes information needs for monitoring, reporting, and evaluation. It covers:

- management unit annual reports; and
- monitoring and evaluation.

FIM TECHNICAL SPECIFICATIONS describe the acceptable formats and methods to create and/or provide the prescribed information. They provide detailed, technical and product specific requirements and outline roles and responsibilities. Also included are implementation details and timelines. The FIM technical specifications cover subjects such as:

- detailed data attribute descriptions;
- acceptable file and media formats;
- metadata requirements;
- information exchange parameters and protocol; and
- validation standards/procedures.

A **GLOSSARY** forms the last part of the FIM.

Audience for the Forest Information Manual

The FIM and the FIM technical specifications provide direction to information managers, resource analysts, geographic information systems specialists, and information analysts involved in creating and using information about Crown forests. The FIM also provides direction to foresters, biologists, forest technicians, forest management planning teams, and others involved in forest management planning.

The FIM technical specifications may also be referenced by information users not directly involved in forest management planning, but who have a need to utilize or have access to the information about Crown forests.

Application of the Forest Information Manual

The intention of the FIM and the FIM technical specifications is to describe a process to exchange information in a timely fashion, in a standard and consistent format, and generally to improve the exchange of information. Timelines related to the exchange of information prescribed in this FIM are related to the development and implementation of forest management plans.

Information requirements prescribed by the FIM take effect when it is published and available to the public as described in subsection 68(10) of the CFSA. Key timelines and effective dates are described in the FIM for each information requirement with more specific, detailed first effective, phase-in and implementation descriptions included in the FIM technical specifications.

Revisions to the Forest Information Manual

The *Forest Management Planning Manual* is a pivotal document that identifies the basic requirements for information which are described in greater detail in the *Forest Information Manual*. References to the FIM occur in many instances within the FMPM. The main impetus for revising the FIM would be a revision to the FMPM. Alignment of the FMPM and the FIM offers the greatest opportunity for efficiencies in both planning and information requirements, and is the best approach to reducing implementation obstacles and issues of interpretation. On the basis of the close relationship between these two manuals, future revisions to the FIM would ideally be produced on a similar timeframe to compliment a FMPM revision.

Another primary consideration in revising the FIM pertains to the experience and knowledge which will be gained through implementing the FIM. The provision of information to and from the MNR, and the effectiveness and ease of use of the FIM will be monitored to determine if improvements or revisions to the FIM are required.

Revisions to the FIM technical specifications will ensure that modern and efficient processes and approaches are used in the collection and sharing of information.

Any revisions or new versions of the FIM will follow the requirements for reviewing and revising regulations, as set out by the Government of Ontario.

Implementation of and Revisions to the FIM Technical Specifications

FIM technical specifications provide the direction for exchanging information between the MNR and the various stakeholders (parties) identified in Part A, Section 2.0. The FIM technical specifications describe the details of how information will be exchanged and the form it will take. The FIM has five separate FIM technical specifications, namely:

- FIM Base and Values Technical Specifications
- FIM Forest Management Planning Technical Specifications
- FIM Forest Resources Inventory Technical Specifications
- FIM Annual Work Schedule Technical Specifications
- FIM Annual Report Technical Specifications

FIM Technical Specifications Development and Application

FIM technical specifications are prepared to facilitate the provision of information prescribed by FIM. FIM technical specifications may be revised periodically to consider more effective and efficient ways of managing, transferring, and receiving information. Changes or revisions to technical specifications do not impact the requirements or direction for the provision of information as prescribed by the FIM. It is a requirement of this FIM that FIM technical specifications (as revised from time to time) be followed.

FIM technical specifications are effective upon regulation of the FIM or as they are developed. The information they reference may be required annually, periodically as associated with the timing and schedule of forest management plan development, or as scheduled with monitoring, reporting and evaluation. For this reason the use, availability and development schedule of individual specifications will vary.

A list of current FIM technical specifications and the applicable information products and planning terms to which they apply will be maintained and available on the Forest Information Portal (FI Portal). The MNR and forest industry are required to use the FIM technical specifications listed on the FI Portal.

FIM Technical Specifications Revision

Information management and information technologies are constantly evolving. The MNR and forest industry are encouraged to exercise adaptive management and develop innovative approaches to improving the efficiency of data exchange while controlling the impacts of ongoing evolution. To support continual improvement and to optimize business efficiencies, the FIM technical specifications will be reviewed annually. The FIM technical specifications will be modified by the MNR as required to optimize information transfer in an efficient and cost effective manner, to allow for flexibility and innovation, and to ensure data integrity.

The extent possible, required or suggested changes to the specifications will be completed in concert with a change or revision of the FMPM and the FIM. Changes to the specifications can have significant impact on the information systems and processes used by the MNR and the forest industry. As our reliance on technology and automation increases, so does the impact of change.

Either the MNR or forest industry may propose a change to the FIM technical specifications at any time. However, modifications to FIM technical specifications will not normally occur more than once annually.

Changes to the FIM technical specifications may be based on, but not limited to, one or more of the following:

- changes in information technology (information management systems) used by the MNR or forest industry;
- identification of alternative (i.e., more flexible, easier, more efficient, more cost effective, etc.) ways to exchange information while still meeting the requirements prescribed by the FIM;
- clarification of detailed attribute descriptions. In some cases, proposed changes to detailed attributes may require consideration of changes to, or the effect on, the applicable requirements and standards prescribed in the FIM;
- identification of improvements to standards in relation to validation, error handling, quality control, quality assurance, or verification;
- identification of better security measures and information confirmation, receipt, and notification protocols and procedures; or
- changes to file structures, metadata requirements or standards.

Revisions to FIM technical specifications may result in significant change or modification to information systems, or management processes used by either the MNR or forest industry (e.g., proposed change to the data exchange format). Or,

revisions may be simple in nature, easily instituted, and have minimal impact to either the MNR or forest industry (e.g., proposed change to feature attributes).

The FIM technical specifications may be revised if the proposed modifications do not affect the requirements and standards described within the FIM. Any proposed modifications to the FIM technical specifications that would cause a change to the requirements for information prescribed in the FIM would first be subject to modification of the FIM.

FIM Technical Specifications Revision – Request and Approval Process

Requests for revisions to FIM technical specifications are directed to the Forest Evaluations and Standards Section of the MNR. All changes and revisions to the FIM technical specifications are approved by the Director of the Forest Management Branch. The level of detail and supporting rationale for revision requests are determined by significance of the request. Minor, low impact changes are managed internally by the Evaluations and Standards Section. Major changes with significant impact will be reviewed and considered in consultation with the forest industry and other MNR branches and divisions.

Significant or major change requests should include the following information:

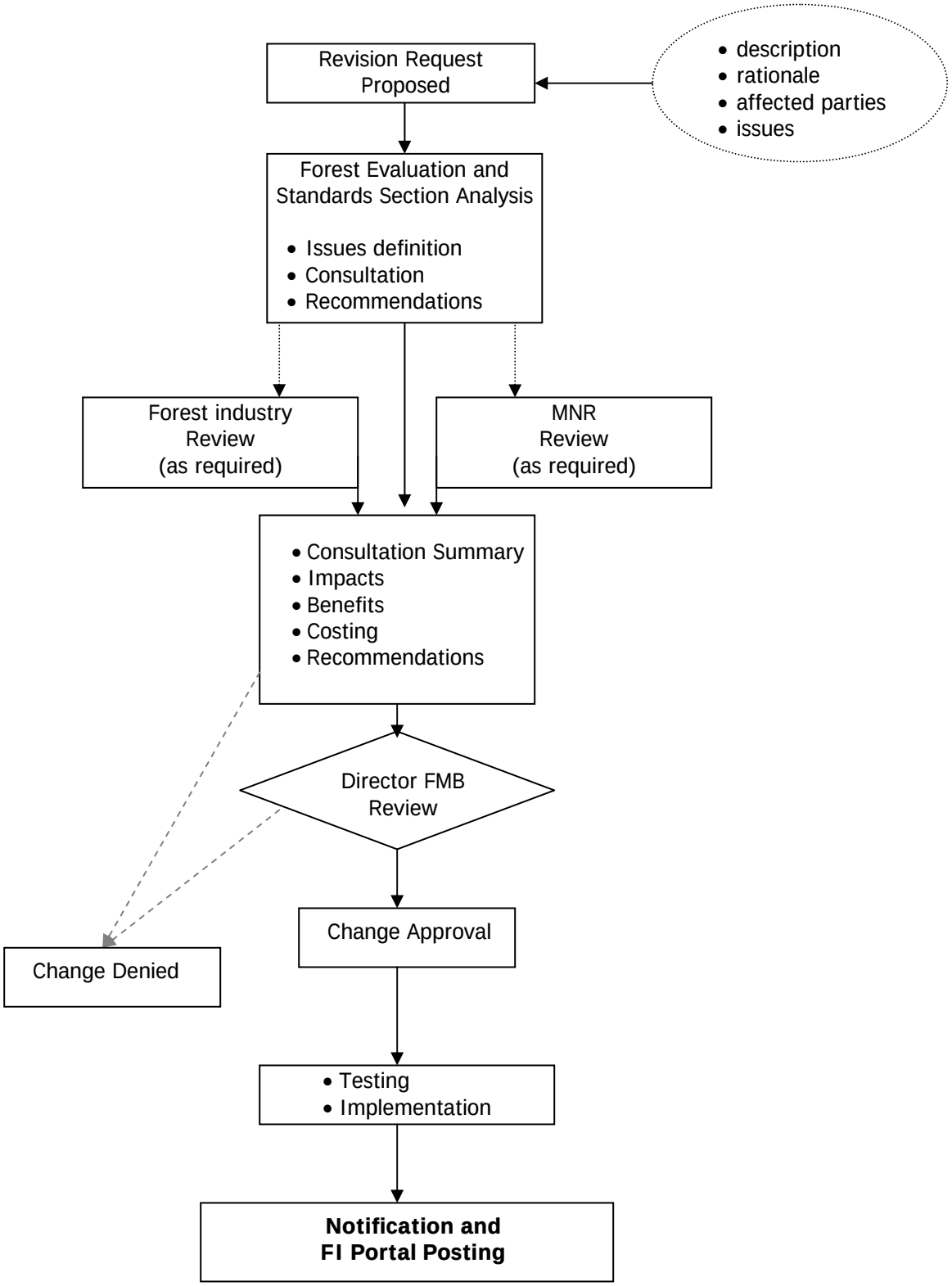
- a brief description of the proposed change;
- identification of which FIM technical specifications are affected;
- the applicable conditions identifying why the proposed change is required and any associated time constraints;
- a description of the significance of the change to the current FIM technical specifications as well as a list of the affected stakeholders (parties);
- the expected gains or efficiencies of implementing the proposed change;
- the cost to MNR and industry of the change; and
- any issues related to implementing the proposed change.

The forest industry may assist in identifying and confirming all affected parties, setting timeframes for considering changes, developing and testing proposed revisions, and identifying any training and follow-up needs to ensure effective implementation of the revised FIM technical specifications. Consultation with the forest industry will occur in instances where they would be affected by the change.

Direct notification of the change or revision will be given to the MNR and forest industry. Notification will include the effective dates for the revised FIM technical specifications and an indication of the FIM prescribed information governed by the revised specifications. The revised FIM technical specifications will be posted to the FI Portal.

An overview of the revision process is presented in Figure 1.0.

Figure 1.0 FIM Technical Specifications Revision Process – Summary Overview



PART A INFORMATION USE AND MANAGEMENT

1.0 INTRODUCTION

Part A outlines procedures and protocol and gives direction and guidance on using and managing FIM required information. Part A also guides the MNR and the forest industry in managing their relationship and interactions related to data sharing and exchange. It clarifies the relationships between the CFSA, the *Copyright Act*, and the *Freedom of Information and Protection of Privacy Act* (FIPPA). Part A also outlines the Ministry of Natural Resources' rights to deal with information provided to the Minister in accordance with this FIM and in relation to the legislation.

For the purposes of the FIM, information includes both data (i.e., collection of facts) and information (i.e., processed data, a grouping or organization of data). Examples of information as regulated by the FIM include text, maps, tables, geographic information systems layers, graphs, models, photographs, and digital images. Information prescribed by the FIM is not limited by format or type and can include information in digital or hard-copy form.

The FIM prescribes the requirements for information about Crown forests for the purpose of forest management planning or ensuring compliance with the CFSA and its regulations. The information required by the Minister of Natural Resources must be prepared by forest resource licence holders or by other parties as prescribed by this FIM and must be provided to the MNR. This FIM also prescribes the requirements for the MNR to provide certain information to forest resource licence holders.

1.1 Direction from the Crown Forest Sustainability Act

Sections 20, 21 and 68 of the CFSA provide direction for the framework and content of the FIM.

Sections 20 and 21 of the CFSA give direction regarding the requirements of forest resource licence holders to collect and provide the Minister with information in accordance with the FIM. They also outline how the Minister may treat the prescribed information. Forest resource licence holders are required to conduct inventories, surveys, tests, or studies, and to provide information in accordance with the FIM. The information that forest resource licence holders must provide, in accordance with this FIM, are required for the purpose of forest management planning or ensuring compliance with the CFSA and its regulations.

Subsection 20(1) of the CFSA states:

> *The Minister may require the holder of a forest resource licence to conduct inventories, surveys, tests or studies in accordance with the Forest*

> *Information Manual for the purpose of forest management planning or ensuring compliance with this Act and the regulations.*

For the purposes of the FIM, inventories, surveys, tests, or studies may also include inspections, assessments, reports, samples, investigations, or any similar functions related to collecting data and information about Crown forests. The Minister may request that information about Crown forests that is collected from other inventories, surveys, tests, or studies be provided to the Minister as directed in Subsection 68(6) of the CFSA.

Subsection 20(2) of the CFSA states:

> *If a licensee fails to conduct the inventories, surveys, tests or studies as required, the Minister may cause them to be conducted, and the licensee is liable to the Minister for all costs associated with the conduct of the inventories, surveys, tests or studies.*

All costs of conducting the inventories, surveys, tests, or studies as prescribed by this FIM, must be borne by the licence holder responsible. If these requirements and responsibilities are not fulfilled, the Minister has the authority to cause the inventories, surveys, tests, or studies to be conducted and the forest resource licence holder is then liable to the Minister for all associated costs.

Subsection 21(1) of the CFSA states:

> *The Minister may require the holder or former holder of a forest resource licence to provide the Minister with information in accordance with the Forest Information Manual for the purpose of forest management planning or ensuring compliance with this Act and the regulations.*

The FIM prescribes the mandatory information required by the Minister. This includes information that is created or used in information systems or that is created by the requirement to conduct inventories, surveys, tests, or studies, in accordance with Subsection 68(6) or Section 20 of the CFSA. Circumstances of non-compliance in providing information prescribed by the FIM are subject to, and will be dealt with, in accordance with Part VII of the CFSA.

Subsection 21(2) of the CFSA states:

> *The Minister may deal with information obtained under this section as if the Minister had created the information.*

The information received by the Minister in accordance with the FIM will be treated as if the Minister had created the information.

Subsection 68(6) of the CFSA provides direction for the types of information that can be prescribed by the FIM, as follows:

> *The Forest Information Manual may contain provisions respecting information systems, inventories, surveys, tests and studies that may be required by the Minister in respect of Crown forests and respecting information to be provided to the Minister in respect of Crown forests.*

Forest resource licence holders, as described by the FIM as responsible parties affected by the requirements for information, are outlined in the FIM Part A, Section 2.0. The information that forest resource licence holders must provide, in accordance with this FIM, are required for the purpose of forest management planning or ensuring compliance with the CFSA and its regulations.

1.2 Crown's Right to Deal with Information

The CFSA is consistent with the framework of the *Copyright Act* and the FIPPA.

As the steward of Crown forests, the Minister must be able to deal with information about Crown forests that has been provided to the Minister in accordance with the FIM. The Minister must have easy and unfettered access to information about this resource and be able to make this information available to, and accessible by, the public. The Minister must be able to use this information and related works to meet the purpose of, and carry out the Minister's obligations under, the CFSA.

1.2.1 Information Created and Provided to the Crown

Pursuant to the CFSA, the Minister may deal with information provided in accordance with the FIM as if the Minister had created the information. Accordingly, the Minister has an unrestricted right to use, without any approval from or notice to any third party, any information obtained pursuant to the FIM for the purpose of resource management and ensuring compliance with the CFSA. The planning inventory is an example of information which must be created and provided by forest resource licence holders in accordance with the FIM. The Minister's right described above also applies to information that is supplied to the Minister by third parties on behalf of forest resource licence holders for the purpose of fulfilling their information requirements under the FIM.

The provider of the information supplied in accordance with the FIM will continue to enjoy any rights that it may have in the information, except to the extent of the rights granted to the Minister under the CFSA.

1.2.2 Information Created and Provided by the Crown

The Crown owns and asserts exclusive copyright on information that the MNR is required to create and to provide to forest resource licence holders in accordance with

this FIM. Base feature information (such as lakes, rivers, and provincial/municipal transportation routes) is an example of information that the Crown creates and maintains. The MNR must provide this base feature information to forest resource licence holders in accordance with this FIM, but retains sole ownership and copyright of this information. Forest resource licence holders use this information for the purpose of fulfilling their licence obligations in accordance with the CFSA and its regulations, or as determined by the Queen's Printer for Ontario.

MNR policy permits the provision of a base data user's licence for the use and further distribution of base data royalty-free. Forest resource licence holders receiving base data as prescribed by the FIM, and that have requested, in writing, a base data user's licence, may use some base data for purposes beyond forest management planning and compliance with the CFSA. The detail of this privilege and permitted data use is outlined in the *FIM Base and Values Technical Specifications*.

The Queen's Printer for Ontario holds and administers copyright and intellectual property rights for information owned by the Crown and information obtained by the Minister in accordance with this FIM. The Crown also asserts exclusive copyright of information and related works that are created by the Crown using information obtained by the Minister in accordance with the FIM.

1.2.3 Source Information

The MNR has the responsibilities of auditing, identifying, confirming, monitoring, reporting, evaluating, and approving information prescribed by this FIM. In meeting this obligation, the MNR may require access to the source data, records and information used to create and provide information in accordance with this FIM for the purpose of identifying or confirming the quality and accuracy of the information provided. Given reasonable notice, forest resource licence holders must grant access to source data, records, and information upon request by the MNR.

The Crown shall not claim ownership, copyright or intellectual property rights to source data, records and information that are created or acquired by forest resource licence holders and are accessed by the MNR. Copyright and ownership of this information remains with the forest resource licence holder.

Source data, records and information may include, but are not limited to:

- Large scale photography or supplemental aerial photography
- Satellite imagery
- Maps
- Surveys
- Tests
- Studies

- Inspections
- Past and current records
- Pre- or post-operational field cruises
- Permanent or temporary sample plots
- Any data or information which has been collected and used to create, or support the creation of, information prescribed by this FIM

Ownership and copyright of source information may be held by a third party external to the forest resource licence holder. This ownership relationship between the forest resource licence holder and the third party must not limit MNR access to the information. The Minister will take into consideration the costs of production, and copyright obligations affecting the licence holders or other parties, in making decisions regarding requests for access to, or use of source information.

If mutually agreed, the forest resource licence holder could provide source data if this is the most economical and practical means of providing access. In these cases, ownership and copyright of source data remains with the licence holder.

1.3 Intellectual Property Rights, Freedom of Information and Classified Data

Intellectual property is the expression and/or organization of ideas, data, and information, and the rights that protect it. Intellectual property rights are protected by mechanisms that include copyright, patents, trademarks, and other forms of intellectual property protection. Examples of some mechanisms which government uses to protect intellectual property rights are: trademarks, such as the stylized trillium symbol; and copyright statements, such as '© Queen's Printer for Ontario' that appear on government publications, maps, databases, research findings, and photographs.

Access to information prescribed by the FIM and the protection of privacy of individuals associated with information prescribed by the FIM is governed by the FIPPA.

The FIPPA has two primary purposes:

1. To provide a right of access to information under the control of institutions in accordance with the principles that:

    - information should be available to the public;
    - necessary exemptions from the right of access be limited and specific; and

- decisions on the disclosure of government information should be reviewed independently of government.

2. To protect the privacy of individuals with respect to personal information about themselves held by institutions, and to provide individuals with a right of access to that information.

Access to information prescribed by the FIM may be limited in some instances by MNR's *Draft Policy for the Management of Classified Data in the Ontario Land Information Warehouse* as outlined in Part A, Section 1.3.1.

The Minister shall determine whether information obtained in accordance with the CFSA can be made available to the public. In making these determinations, the Minister shall comply with the FIPPA, under which, decisions that are made by the Minister may be appealed by the requestor or the affected party (e.g., forest resource licence holder or other party) to the Information and Privacy Commission.

In addition, the Minister may restrict access to certain information that, if made available, could cause harm or threaten the existence, integrity or health of a natural resource feature or value (e.g., archaeological sites, wood turtle habitat).

1.3.1 MNR Classified Data

The MNR supports open, easy and equitable access to its information and intellectual property. However, protecting classified data and information is a necessary and valid component of MNR's mandate.

The *Management Board Secretariat 2003 Information Security Classification Policy* and *Information Security Classification Operating Procedures* are used by the MNR to assign a sensitivity classification to its data**.** This policy and operating procedures cover the management of all data and information created by the Government of Ontario.

There are four possible sensitivity classifications – high sensitivity, medium sensitivity, low sensitivity and non-sensitive (or unclassified).

This classification ensures that information is created, acquired, updated, handled, used, transmitted, transported, filed, stored, and destroyed in a manner appropriate to its sensitivity. These security measures ensure the integrity of all records; protect sensitive information from unauthorized access, disclosure or use; and protect valuable information from damage or loss.

The MNR acknowledges that while classified data will have restrictions on access, these data must also be made available for specific purposes on a 'need to know' basis to public and non-public organizations in order to meet the MNR's mission of sustainability of resources. Classified data features will be encountered by MNR and forest resources licence holders in managing, accessing, harvesting and renewing

forest resources. Preparing forest management plans and conducting forest operations meets the 'need to know' principle.

The MNR and forest resource license holders must ensure that classified data features are protected in forest management planning and in conducting forest operations. Detailed direction on classifying, accessing and using sensitive data is given in the MNR's *Draft Policy for the Management of Classified Data in the Ontario Land Information Warehouse.* Additional guidance on the use and display of classified values in forest management planning is given in the *FIM Base and Values Technical Specifications,* the *FIM Forest Management Planning Technical Specifications* and the *FIM Annual Work Schedule Technical Specifications.*

Medium sensitive data is only accessible to MNR and forest resource license holders through the issue of access privileges from the data custodian (i.e., section or branch within the MNR that has stewardship and management responsibility for data). This privilege is usually obtained through participation in data sensitivity training offered by the MNR. Data sensitivity training may be specific to particular data sets or groupings of data.

1.3.2 Organization of Information

The FIM sets a minimum standard for the organization and quality of data that is to be exchanged between the MNR and industry. The organization and quality of information, or the infrastructure and the resources needed to update and maintain information, may differ significantly between forest resource licence holders. The FIM does not prescribe how a forest resource licence holder must organize its data or information for their own purposes. They may organize and maintain data or information in whatever form they need, as long as they provide the mandatory information as prescribed by this FIM. The Minister will respect the intellectual property rights of forest resource licence holders or other parties with regard to their organization of data or information.

1.4 Procedure to Resolve Information Issues

The procedure described in this section may be applied to resolve issues between MNR and forest resource licence holders or other parties regarding requests for information or requirements for information deemed in accordance with this FIM. This procedure must not be confused with, or used as an alternative mechanism to the issue resolution procedure described in the FMPM, Part A, Section 3.4.

This procedure may be applied, but is not limited in application, to the following situations:

- requests for different or additional information created by a forest resource licence holder, which are intended to meet the mandatory information requirements prescribed by the FIM;
- requests for information from the MNR made by forest resource licence holders or other parties that are deemed in accordance with information prescribed by this FIM;
- requests for access to source data, records and information;
- requests for supporting records and information not described by information in the FIM, but that contain information about Crown forests or that are required for the purpose of forest management planning or ensuring compliance with the CFSA and its regulations; or
- any issue or dispute regarding the information requirements prescribed by this FIM.

The issue should initially be dealt with and, where possible, resolved between the initial parties involved. Most information requests will be related to carrying out the business of forest management planning at the local level. The concerned party may be a representative of a forest resource licence holder, another party, or the MNR. The concerned party must comply with the following procedure to ensure that the issue has been dealt with fairly, fully, and promptly.

1. The concerned party must identify the issue, in writing, to the forest resource licence holder or an MNR contact (e.g., Registered Professional Forester, Area Supervisor or other), and offer a proposed solution. The forest resource licence holder, the MNR contact and the concerned party (i.e., when not one of these two parties), will meet to discuss the issue and attempt to resolve it. The forest resource licence holder and the MNR contact may each choose to involve an information management specialist or information systems person employed by their respective organizations to assist with any technical discussions related to the information request or issue. If these discussions do not produce a resolution, either the forest resource licence holder, the MNR contact, or the concerned party may communicate the issue, in writing, to the appropriate MNR District Manager.

2. The MNR District Manager will arrange and attend a meeting of the forest resource licence holder, the MNR contact and the concerned party. The District Manager may choose to involve an information management specialist or information systems person from each respective organization to assist with technical discussions.

3. If the meeting does not produce a resolution to the issue, the MNR District Manager will ask each of the forest resource licence holder, the MNR contact and the concerned party to propose and recommend a solution(s), in writing, within seven days. The MNR District Manager will provide a resolution to

the issue normally within 21 days of receipt of those submissions and will provide a copy of a written resolution, with reasons, to the party concerned, the forest resource licence holder and the MNR Regional Director. Written submissions from all parties will be maintained on record by the parties involved.

4. If any party is dissatisfied with the resolution provided by the MNR District Manager, they may request a review by the MNR Regional Director. The request must be made, in writing, within 21 days of receipt of the MNR District Manager's resolution.

5. Any party may also make a request to the MNR Regional Director to appoint an independent panel, and may recommend a person or persons to sit on the panel, for the purpose of providing recommendations or advice to the MNR Regional Director.

6. The MNR Regional Director may choose to appoint an independent panel of an informed person or persons (i.e., not affiliated with the planning team or the plan approval team) for the purpose of providing recommendations or advice. The MNR Regional Director will consider any requests by the concerned party regarding the appointment of an independent panel and a person or persons to sit on such a panel.

7. In conducting the review, the MNR Regional Director may also review similar requests and records which provide the results for other issues that have been addressed by this procedure. The MNR Regional Director may solicit and consider the views of the concerned party, the forest resource licence holder, MNR's regional information management specialists, other MNR district, regional or main office staff, and the MNR District Manager.

8. The MNR Regional Director will provide a copy of a written decision normally within 42 days of receipt of the request for a review, with reasons (including cost implications), to the concerned party, the forest resource licence holder and the MNR District Manager. If an independent panel is selected, the MNR Regional Director will also provide, with the written decision, the recommendations or advice made by the independent panel.

9. All documentation resulting from the MNR Regional Director's review will be maintained on record, and will be used for future reference and consideration when resolving other information issues through this procedure.

Appropriate rationale must be developed to support a resolution or decision at each stage in the issue resolution procedure by considering the following factors:

- the relevance of the information request to the purpose of forest management planning or ensuring compliance with the CFSA and its regulations. If the

information request does not satisfy this test, then the request for information is not valid;

- the sensitivity of the information requested (i.e., if released would it pose a threat to the existence, integrity, and health of natural resource features or values, including land uses);
- the implications and provisions of FIPPA, in terms of protecting the interests of the party providing the information and the institution (government) in control of the information;
- the copyright implications (or infringements) on the creator or owner by releasing the requested information. For example, copyright may restrict the ability of a forest resource licence holder to provide information when they have purchased a copy of, or access rights to, satellite imagery. This factor may also apply to the MNR. Crown copyright is administered by the Queen's Printer for Ontario, who must be involved in making decisions that affect copyright of information owned by the Crown or information that is obtained by the Minister in accordance with this FIM;
- the potential uses of the information requested. Where possible, discussions regarding the use(s) of the information with the party requesting it should be encouraged in an open and consultative fashion;
- the costs of collecting and producing the information and making the information available to the party requesting it and any fees that may be applicable to creating or making the information available. The Ontario government's policies on managing, pricing, and distributing government intellectual property may provide guidance;
- the degree of access needed to meet the information request (i.e., should the information be provided in its original form, in digital or paper form, provided in a lesser or more convenient form, or simply made available for viewing);
- available records from previous cases where similar issue resolution procedures have been applied to ensure consistency with decisions made in other MNR administrative districts and regions; and
- any other factors or unique circumstances that may influence decisions respecting information requests or information issues.

1.5 Access to Information Prescribed by the Forest Information Manual

MNR's *Class Environmental Assessment Approval for Forest Management on Crown Lands in Ontario* (2003) and the CFSA support an open and consultative planning process which is transparent to the public. The public will normally be provided access to all information prescribed by the FIM, unless otherwise determined by the Minister in consideration of sensitive information about resource features and values, copyright restrictions, proprietary restrictions, or the FIPPA.

Public (third party) requests for access to information about Crown forests will be handled by the MNR in accordance with its policies relating to data access and sharing and the direction set out in the FIM. Information, which has been obtained by the Minister in accordance with the FIM, may include both paper and digital information products (e.g. maps, audits, reports, documents, tables, computer files or records, digital spatial information, and databases).

Access to information or provision of information to satisfy public requests may be through open houses, appointments, internet publication and viewing or other such arrangements which allow quick and efficient public access to information.

The Minister may determine the conditions by which access to information is provided, and may prescribe fees for providing information.

The Minister may also determine how information prescribed by this FIM may be used by third parties. The Minister may enter into agreements or arrangements with third parties and specify the conditions by which third parties may use the information provided to them.

1.6 Protocol for Information Prescribed by the Forest Information Manual

The MNR recognizes the efforts and costs required of forest resource licence holders or other parties to create and maintain certain information as prescribed by this FIM. In acknowledgement of these efforts, this section discusses:

- recognition of forest resource licence holders in creating information prescribed by this FIM;
- notification to forest resource licence holders regarding third party use and users of information;
- the original source of information prescribed by this FIM; and
- the establishment of fees for making information available to the public.

1.6.1 Recognition for Creating Information

Forest resource licence holders may provide a logo, which gives credit and recognition of their company, on any information submitted to the Minister. The logo may include a symbol and a name that is relevant to the forest resource licence holder who provided the information. The MNR may also apply its logo, as well as the government copyright label, to the information or information product.

The logo provided by a forest resource licence holder will not, in any way, affect how the Minister may use the information obtained in accordance with this FIM.

1.6.2 Disclosure of Information Use

The Minister of Natural Resources will determine how information obtained in accordance with the FIM may be used. The FIM does not restrict the Minister's use of information obtained in accordance with the CFSA and its regulations. Similarly, forest resource licence holders or other parties are not restricted as to how they use information that they create and provide to the Minister in accordance with this FIM, except as described in FIM, Part A, Section 1.2.

The Minister is not required to disclose the use of information obtained in accordance with the FIM. Forest resource licence holders are not required to disclose their use of information which they create and provide to the Minister in accordance with the FIM.

The MNR must comply with FIPPA regarding the disclosure of information obtained by the Minister in accordance with the FIM, and the disclosure of related information pertaining to the use or users of that information.

1.6.3 Records Management

Information regulated and provided under the FIM, irrespective of media (paper, digital files) must be managed and maintained to protect the legal, fiscal, and other interests of the Ontario Government and the public as directed by the *Archives and Recordkeeping Act*. Access to recorded information is to be ensured in accordance with the requirements of the FIPPA.

The MNR has the responsibility to develop recorded information schedules (i.e., document retention schedules) to govern the retention and disposal of information prescribed by the FIM. The Forest Management Branch (FMB) of the MNR develops and maintains document retention schedules for much of the information described in the FIM, including draft and final forest management plans and associated supplementary documentation, plan amendments, annual work schedules, and annual reports. The general range of retention for forest management planning documents is 15 to 50 years from the date of implementation. It is the plan date (fiscal year in which the plan took effect) rather than the submission date that is the start date of the retention period.

Other FIM information not covered by the FMB document retention schedules would follow document retention schedules developed by other branches or divisions of the MNR.

The forest industry does not have a responsibility for record retention or archiving of information as directed by the *Archives and Recordkeeping Act* for information prescribed by the FIM and submitted to the MNR.

Specific business activities may require records management or information retention requirements outside of the auspices of the *Archives and Recordkeeping Act*. These requirements will be outlined in specific guides, protocols or directives.

Information to support Independent Forest Audits is an example of a specific business activity that may have information retention or records management requirements outside of the *Archives and Recordkeeping Act*. The MNR and forest resource licence holders have a duty to retain and provide the information requirements listed in the *Independent Forest Audit Process and Protocol*, including its Appendices.

The forest industry may be required to retain source information or other documents in cases where the information is not prescribed by the FIM or provided to the MNR.

1.6.4 Reproduction of Digital Information

Reproductions by third parties of any information prescribed by FIM are subject to all applicable copyright laws.

1.6.5 Original Source of Information

Information prescribed by the FIM is submitted to the MNR via the FI Portal (see Part A, Section 2.2). The information submitted and residing in the FI Portal is considered to be the original source of FIM required information.

1.6.6 Fees for Information

The FIM does not set out fees for making available or providing information prescribed by the FIM to third parties or the general public. The Minister will determine the applicability of any fees and establish the appropriate fees consistent with the Ontario government's policies on managing, valuing, and pricing government intellectual property.

The MNR is not obligated to inform forest resource licence holders or other parties of fees which may be applied to information which the Ministry may create from the information prescribed by this FIM.

1.6.7 Data Sharing and Data Exchange Agreements

Existing data sharing or exchange agreements or memoranda of understanding or any parts of agreements which address an exchange or provision of the information prescribed by the FIM will not supersede the requirements and standards for information prescribed by the FIM.

The FIM has no effect on information sharing and exchange arrangements or agreements that deal with information that is not in respect of Crown forests or that is outside the purpose of forest management planning or ensuring compliance with the CFSA and its regulations.

1.6.8 Information Prescribed in Other Regulated Manuals

The information required by the other manuals mandated by the CFSA (i.e., the *Forest Management Planning Manual*, the *Forest Operations and Silviculture Manual*, and the *Scaling Manual*) are considered to be information prescribed by the FIM. As such, the requirements to provide the information identified in the other CFSA manuals will be administered in accordance with the FIM. Instances of non-compliance in providing information prescribed by the FIM, or information required by the other CFSA manuals, are subject to, and will be dealt with according to, Part VII of the CFSA.

1.6.9 Information Partnering and Innovation

Information management is a costly and necessary investment. One of the principles applied in the development and implementation of this FIM is to allow, promote, and foster innovation with respect to the information needed to meet the purpose of the CFSA and its regulations. Forest resource licence holders, the MNR, or other parties, as identified in the FIM, are responsible for preparing and providing the information prescribed by the FIM. These responsibilities do not restrict forest resource licence holders, the MNR, or other parties from establishing cooperative arrangements and partnerships to enhance the collection, creation, quality, use, or provision of information required for forest management planning or ensuring compliance with the CFSA and its regulations.

The MNR will consider this principle when determining whether information that is different from, or that contain information in addition to, the information prescribed by the FIM may be used.

2.0 MEETING INFORMATION REQUIREMENTS

2.1 Responsible Parties

Information requirements in the FIM support the preparation, approval, implementation, monitoring, and reporting of forest management plans and forest operations. The FIM prescribed information could be provided by a variety of parties:

- Sustainable forest licence (SFL) holders
- MNR
- Plan holders
- Other forest resource licence holders

The definitions given in this section provide the scope and range for all parties involved in providing FIM requirements. The differences among the responsible parties are, in some cases, very subtle. To simplify the FIM, responsible parties are categorised into two distinct types: the **MNR** and the **licensee**. Sustainable Forest Licence holders, Plan holders, or other forest resource licence holders with forest management responsibilities will be generalized as the licensee.

2.1.1 Sustainable Forest Licence Holders

Sustainable forest licence holders are responsible for preparing forest management plans on areas of Crown forest falling within their respective Sustainable Forest Licence. They also schedule and conduct forest management operations in accordance with an approved plan, and report on those operations. As such, SFL holders are required to provide the information prescribed by this FIM. Where the requirements for information identify SFL holders as the responsible party, those requirements apply to the holder of a licence issued under Section 26 of the CFSA.

Sustainable forest licence holders are also responsible for securing information prescribed by the FIM from overlapping licence holders who are issued forest resource licences in accordance with Section 38 of the CFSA. Sustainable forest licence holders are expected to enter into an agreement with overlapping licence holders regarding the provision of information prescribed by this FIM in accordance with Section 8 of CFSA Regulation 167/95.

2.1.2 Ministry of Natural Resources

The MNR must provide information, such as base feature information, values information or forest resources inventory information, to SFL holders or other plan holders. Where the requirements for information identify the MNR as the responsible party, those requirements may apply to the MNR in general or may apply specifically to an MNR district, region, or main office.

2.1.3 Plan Holders

On forest management units where no SFL has been issued, the Crown or another designated party (e.g., Algonquin Forestry Authority) is responsible for preparing and implementing forest management plans and is referred to as the plan holder. Where the requirements for information identify SFL holders, those requirements also apply to the plan holder – the MNR or the party responsible for forest management planning and for implementing approved forest management plans on a forest management unit. Here the MNR may have responsibilities of both the MNR and the licensee.

Plan holders must generally meet the same information requirements as SFL holders in terms of the responsibilities to prepare forest management plans, schedule and conduct operations in accordance with an approved plan, and report on those operations. Therefore, where the requirements for information identify SFL holders as the responsible party, those requirements must be met by the plan holder.

2.1.4 Other Forest Resource Licence Holders

The FIM describes the requirements for the holder of other forest resource licences to provide certain information on Crown forest management units. Where the requirements for information identify other forest resource licence holders as the responsible party, those requirements apply to the holders of other forest resource licences issued under Section 27 of the CFSA.

The requirements for information that affect other forest resource licence holders do not include responsibilities associated with preparing forest management plans, but they do include the responsibilities for information associated with conducting forest operations and, in some cases, reporting on those operations. The requirements for other forest resource licence holders are normally related to the provision of information, such as values information, or are related to requests by the MNR for specific information associated with forest operations or the conditions described in those forest resource licences.

2.2 Data Transfer Mechanism - The Forest Information Portal

The Forest Information Portal is prescribed by the FIM as the data transfer mechanism for the purposes of providing and exchanging information regulated by the FIM. Use of the Forest Information Portal (FI Portal), unless otherwise prescribed, is mandatory for the MNR, Sustainable Forest Licensees, and plan holders for FIM prescribed information.

The FI Portal submission is the official copy of the forest management plan (FMP), annual work schedule (AWS) and annual report (AR) for the management unit. It is also the official copy of any related amendments, revisions, changes or appended documents. These official versions of the documents are made available to the public

on the MNR website. These official versions are the retained copies as per the *Archives and Recordkeeping Act*.

In developing forest management plans or work schedules, and in making amendments or revisions, it is necessary for licensees and the MNR to exchange information, review proposals and share data. The FI Portal can be used for this type of exchange in advance of the submission of the final agreed-to plan, schedule, amendment or revision. Without exception, the approved final plan, schedule, amendment or revision must be submitted to the FI Portal. MNR staff will complete the approval of the submission and publication to the MNR website using their approval authority privilege on the FI Portal.

Use of the FI Portal will assist in meeting obligations of complying with records management requirements of the *Archives and Recordkeeping Act* for information prescribed by the FIM. Also, the MNR and licensees may use the FI Portal for the exchange and sharing of ad hoc information requirements associated with forest management planning or other MNR-forest industry business. The FI Portal supports and hosts ad hoc, informal data exchanges among parties. It is a repository for current versions of the FIM, FIM technical specifications, FIM- and FI Portal-related training materials, and other forest planning and information management direction.

The FI Portal uses a distributed user account model designed to allow local administrators (i.e., Account Managers), at both SFL and MNR offices, to create user accounts and manage user privileges. The FI Portal and an associated data transfer component are offered at no cost to all users. The FI Portal is managed and maintained by the MNR and support is offered through the MNR main office in Sault Ste. Marie. The FI Portal is generally available 24 hours a day, seven days a week. Users include MNR staff, forest industry personnel, Independent Forest Auditors, and forest consultants.

The FI Portal has functionality to ensure the integral and efficient transfer of information. Data transfers can be scheduled to run after normal business hours, interrupted transfers are tracked and restarted where necessary, and upload transfers are not limited by file size. Security is maintained by password protection and by the management of users via their account privileges and roles.

Only in exceptional cases or circumstances where internet line speeds, reliability of power supply, or other limitations could affect efficient and economical transfer of data, parties may mutually agree to provide the information on alternate media (e.g., compact disc, DVD) via surface mail. In these instances it is still mandatory for responsible parties to enter a submission record into the FI Portal indicating that provision of the information is by alternate media for FIM prescribed information. The MNR will subsequently load this data to the FI Portal.

2.3 Roles and Responsibilities

Information prescribed by the FIM is the responsibility of either the MNR or licensee. Both parties may have separate and distinct roles and responsibilities in meeting information product requirements (e.g., MNR prepares values maps; licensees prepare the planning inventory), or they may share roles and responsibilities for some information requirements (e.g., annual report tables). The primary intent of the FIM is to describe the information and the standards to which they must adhere.

The distinction of roles and responsibilities between the MNR and licensees are outlined in the FIM for each information product. The roles and responsibilities for providing information may be further defined in the FIM technical specifications.

In some circumstances direction on roles and responsibilities may be from the terms of reference and/or project plan associated with the production of a forest management plan (refer to FMPM, Part A, Sections 1.1.2.1 and 1.1.2.2). At the management unit level, roles and responsibilities may be adapted to best meet the circumstances of the unit and maintain the established relationships between the MNR and licensees. Terms of reference are approved by the MNR District Manager and the MNR Regional Director. Project plans (including updates) are shared with the MNR District Manager and the MNR Regional Director.

2.4 Timelines

Many of the timelines for information provision are explicitly provided in the FMPM (e.g., management unit annual reports are due November 15 each year). In cases where only an implicit timeline is provided in the FMPM (e.g., licensee must inform the MNR of the discovery of a new value), the FIM or the associated FIM technical specifications will prescribe the timeline associated with the information product.

As with roles and responsibilities, timeline references in the FIM for the meeting of information requirements are, in some cases, provided for general reference and direction, and to facilitate understanding of the information.

In some circumstances, timelines may be from the terms of reference and/or project plan associated with the production of a forest management plan (refer to FMPM, Part A, Sections 1.1.2.1 and 1.1.2.2).

PART B INFORMATION FOR STRATEGIC AND OPERATIONAL PLANNING

1.0 INTRODUCTION

Part B of the *Forest Information Manual* prescribes information required for preparing forest management plans in Ontario. This information supports the development of the long-term management direction for managing Crown forests and the planning of forest operations for the terms of a forest management plan as per the *Forest Management Planning Manual*, Parts A, B and C.

The information requirements include:

- Base features information
- Values information
- Forest Resources Inventory (FRI) information
- Planning information
- Electronic forest management planning documents
- Forest management planning maps
- Information related to information systems used in forest management planning

Section 2.0 details the requirements for the provision of base features information, which are used to support the development of forest management plans, forest resource inventories and other spatial information relevant to forest management planning.

Section 3.0 details the requirements to collect, confirm, verify, provide, update, and maintain values information.

Section 4.0 details the requirements for forest resources inventory, specifically the polygon forest information provided by the MNR in support of forest management plan development.

Section 5.0 details the requirements for planning and base model inventories; information products provided by licensees and used as the basis for strategic and operational planning of forest management activities. This section also describes the requirements for updating base features information and incorporating base features information into a forest resources inventory.

Section 6.0 details the requirements for operational planning information, including a series of geospatial data layers used in plan development, review and approval.

Section 7.0 details the forest management planning mapping requirements and standards.

Section 8.0 details the requirements for electronic submission of forest management plans, supplementary documentation, maps, and amendments.

The information in Part B is required periodically at specific stages throughout the forest management planning process as well as during plan implementation, monitoring and assessment. The terms of reference and/or project plan of a forest management plan must identify the duties and responsibilities of specific planning team members to produce strategic and operational planning information in accordance with the FMPM and the FIM.

2.0 BASE FEATURES INFORMATION

Base features represent the geographic locations and descriptions of topographic, cultural, and cadastral entities of Ontario's landbase. They can be natural, physical features, such as lakes, rivers, and wetlands, or they can be features of human influence such as hydro lines, gas pipelines, provincial highways, roads, and railways. They include areas which identify subdivisions of land, water, vegetation, environmental features, and other physical and administrative boundaries. Examples of this latter type of base features include forest management units, parks and protected areas, and ownership parcels, which identify areas designated for legal, political, tax base, population base, land-use zoning, or management decision purposes.

Base features information provide a consistent geographic base fabric for relating other information such as forest resources inventories, wildlife habitat, ecological land classification, values, and other biological information. Base features information are also used in various analytical modelling processes, such as viewshed analysis, water movement and flow analysis, road location and transportation network analysis, watershed analysis, landscape diversity analysis, harvest scheduling, and other spatial analyses which require relational analysis of geographic information.

Some base features, such as lakes, rivers, or parks and protected areas may also be treated as values information (as described in Part B, Section 3.0) for the purposes of forest management planning.

An overview of the requirements for base features information, the standards to which they are maintained and provided, the roles and responsibilities of the MNR and licensees, and the timelines associated with provision are outlined in the following sections. The detailed description, information standards, formats and other exchange parameters and procedures are provided in the associated *FIM Base and Values Technical Specifications*.

2.1 Requirements and Standards for Base Features Information

The provision and sharing of base features information is integral to the production of a forest management plan and the conducting of forest operations. The FMPM describes the need for base features information for the production of information products, defining areas of concern, providing databases, and preparing plans and analyses.

The MNR will ensure that licensees are provided with base features information in digital form for the purpose of forest management planning. Base feature information can be used for the creation and maintenance of forest resources inventories; planning of operations such as road location, harvest layout and renewal activities; as context and reference on maps and other information; and for area of concern planning.

Licensees may request base features information for these purposes at any time. The MNR will ensure that the requested information is provided in accordance with the timelines and conditions described in Part B, Section 2.3. Classified base features information is only provided as per Part A, Section 1.3.2.

Licensees are required to update and provide changes to base feature information as encountered in planning or conducting operations as outlined and governed in FIM prescribed information (e.g., newly constructed roads, submitted with management unit annual reports as an update to base features).

Base features information used in forest management planning and provided to licensees by the MNR are from the Ontario Land Information Warehouse (OLIW). The OLIW data is obtained from a variety of sources. Base features information stored in the OLIW that are provided by the MNR are maintained in the MNR's values information system. Base features information are also provided to the OLIW by other government agencies, non-government organizations and the private sector each of whom use a variety of geographic information systems and tools. Data in the OLIW is managed in several geographic (thematic) layers or data classes.

The information standards vary for different types of base features information and their associated spatial and descriptive information. The standards for information maintained in the OLIW are usually set by the data custodian and by the data model upon which the OLIW is built.

The MNR in consultation with forest industry determines the data classes and the attributes needed to support forest management planning and compliance with the CFSA. The MNR also consults forest industry on suitable data exchange formats for base features information. Detailed standards for base features information are described in the *FIM Base and Values Technical Specifications.*

Base features information may be provided in the form of a complete layer or theme for the management unit or only changes to the layer or theme made since the last delivery of the information. Also, it may be provided as a complete set of information (all layers or themes) or as individual, specific layers or themes. licensees may also request the data be provided as changes only from a specified date; they are not restricted to the date of last provision.

2.2 Roles and Responsibilities for Base Features Information

The MNR is responsible for ensuring that base features information required for the purpose of forest management planning are maintained and updated in MNR's values information system and the OLIW. The MNR will also ensure that the best available information is provided to licensees.

Licensee responsibility is to provide updates to base features information through the submission of FIM prescribed information.

Planning teams are required to determine and utilize the most current base features information.

2.3 Timelines and Conditions for Provision of Base Features Information

MNR is to provide icensees with base features information to support plan development and annual work schedule preparation. The MNR must ensure licensees are provided with base features information, at a minimum annually.

Licensees may also request base features information at any time. The MNR will provide the base features information within a reasonable timeframe as outlined in the *FIM Base and Values Technical Specifications*. If the information request cannot be met within the timeframe outlined in the *FIM Base and Values Technical Specifications*, the MNR will inform the licensee as to when the information can be provided.

Base features information will be provided to licensees in a digital format, and in the agreed-to exchange format as described by the *FIM Base and Values Technical Specifications*. This document will be revised and published periodically to reflect updates to the numerous digital geospatial layers which contain base features information, and to incorporate additional layers/features when necessary.

In limited cases, base features information may be provided in other forms or formats than described in the technical specifications, where the provision of such information satisfies the requirements of the licensee.

3.0 VALUES INFORMATION

Values are features, benefits, or conditions of the forest that are linked to a geographic area, that are of interest from various points of view, and that must be considered in forest management planning.

Examples of values include cross-country ski trails, spawning areas, moose calving sites, raptor nests, seed orchards, tourism outpost camps, registered trapline areas, canoe routes, archaeological sites, and evaluated wetlands.

No listing of values can be definitive. For the purposes of forest management planning, it can be any feature, entity or forest condition that could be impacted by forest operations. Base features can be considered values; lakes are an example. The list of values considered in forest management planning varies by forest management unit, landscape features, and stakeholders involved. The lists provided in the FIM technical specifications are not all inclusive; they are a guide to the types of values to be considered.

It is important to note that the consideration or identification of values does not equate to values protection or prohibition of operations. Operational prescriptions are developed for areas of concern associated with all values. These prescriptions may be reserves (i.e., prohibition of operations), modified operations (i.e., specific conditions or restrictions on operations) or regular operations (i.e., in accordance with silvicultural ground rules).

Values information can be provided by any person or party at any time. Information about values normally comes from the MNR or other government staff; licensees and their operators; non-government organizations; third parties; other resource users; and the public.

The quality of values information is related to the method by which the information was identified or collected. The number of identified and confirmed values is expected to increase, and the quality of information about those values is expected to improve, with each successive forest management plan. The public consultation process described in the FMPM, Part A, supports the collection and provision of information about values at any time during the development and implementation of a forest management plan.

Appendix IV of the FMPM lists the variety of values to appear on values maps in support of forest management planning.

The *Forest Information Manual* does not categorize or explicitly define groupings or types of values. For the purposes of the FIM, values information requirements apply to all known values.

3.1 Requirements and Standards for Values Information

Values information is an important input to forest management planning and operations. The FMPM Part A, Sections 1.1.8.6, 1.1.8.7 and 1.1.8.8 and Part B, Section 2.1.3 describes the role of fish and wildlife, and of other resource information or values in contributing to values maps and the development of management objectives.

Part A, Section 1.1.8.9 of the FMPM describes the requirement for a series of values maps in forest management planning. Values maps provide a summary of the geographic location(s) of known natural resources features, land uses and values which will be considered in forest management planning, and about which further information is available. The FMPM indicates that values maps are produced in accordance with the *Forest Information Manual*.

A value is considered to be a known value when there is sufficient information to describe its geographic location and its basic features. Known values must be considered in forest management planning. The MNR shall determine if a value can be treated as a known value based on the available information and in consideration of the standards described in the *FIM Base and Values Technical Specifications*.

Other sections of the FMPM, namely Part A, Section 1.3.5.1 (Operational Prescriptions for Areas of Concern), and Part D, Section 3.5.3 (Changes to Operational Prescriptions for Areas of Concern) also identify requirements for values information.

3.1.1 Requirements for the Ministry of Natural Resources

The MNR must ensure that information about values is collected in accordance with the standards described in the FIM and the *FIM Base and Values Technical Specifications*. Further, the MNR must ensure that priority is given to those values that are potentially affected by proposed and optional areas of forest operations for the term of a forest management plan that is under preparation. The MNR must also ensure that the responsibilities to meet these requirements are not transferred to licensees.

The MNR will also ensure that the best available values information is provided to planning teams for forest management planning purposes and made available throughout the planning process. The maps and information must include the values within the forest management unit for which the plan is being written, as well as values that are adjacent to the forest management unit that may be affected by forest operations.

Values that are displayed on maps and that are considered in forest management planning are supported by further information gathered or created from field visits, inventories, surveys, tests, or studies.

MNR must enter and update values information received from licensees and other sources into the MNR's values information database (housed in a corporate data repository or information management system such as the Natural Resources and Values Information System - NRVIS).

The MNR may enter into data collection arrangements with licensees or third parties for the purpose of obtaining values information or for confirming existing values information.

3.1.2 Requirements for Licensees

Licensees are required to identify and provide information for new values, and corrections to information about known values, that are encountered during the implementation of forest management operations.

Licensees must provide this information to the MNR for values database updating and for consideration in future planning initiatives and operational activities. The timelines and conditions for providing this information are outlined in Part B, Section 3.3, and in detail in the *FIM Base and Values Technical Specifications*.

3.1.3 Requirements for Planning Teams

Planning teams are required to determine and utilize the most current values information. Planning teams must also consider any updates to values information that are provided in accordance with Part B, Section 3.2 and Section 3.3.

3.1.4 Requirements Respecting Classified Values Information

In some cases, information about certain values such as the location and description of aboriginal values, cultural heritage sites, or habitats of species at risk may be considered as classified data (refer to Part A, Section 1.3.2 for a description of classified data). In these cases, releasing or portraying this data on maps may pose a threat to the existence, integrity, or health of those values. Classified values shall not be made available or accessible to the public. Where the availability of information could be considered as potentially detrimental to the existence of a value, the MNR shall determine whether or how the value can be depicted on a values map, and the type and extent of the information that can be provided to members of the planning team and to members of the local citizens committee (LCC). Where direction on the display of specific classified values in forest management planning is not provided in a related guide (e.g., the *Forest Management Guide for Cultural Heritage Values*), general direction has been provided in the *FIM Base and Values Technical Specifications* and the *FIM Forest Management Planning Technical Specifications.*

Information protocols or agreements that describe conditions respecting the use or users of classified values information, or restrict the availability of classified values information, may be established with other agencies such as the Ministry of Culture, or with MNR's Natural Heritage Information Centre (NHIC), and Aboriginal communities. The MNR District Manager and the planning team must ensure that

sensitive information about values is protected and used in accordance with any protocols or agreements established between the MNR and other agencies.

For the purpose of preparing a forest management plan, the District Manager appoints the members on the planning team and establishes a LCC, as described in the FMPM under Part A, Sections 1.1.2 and 1.1.3, respectively. The appointed members of both the planning team and the LCC are considered to be agents of the Crown for the purpose of fulfilling their duties in relation to preparing and implementing a forest management plan. Consequently, they are bound by MNR's obligations under the FIPPA. Members of the planning team and LCC are also bound by any protocols or agreements that the MNR establishes with other agencies that describe the conditions by which the MNR agrees to use and protect sensitive information about values.

In the forest management planning process, planning for the protection of values normally requires both MNR and licensee involvement. Therefore, the planning team or specific members of the planning team require access to information, including classified values information, to ensure that roads and areas of concern planning occurs in accordance with Part B, Section 4.2.1, Section 4.5, Section 8.2.1 and Section 8.5 of the FMPM. If the MNR determines that information about a value cannot be provided to licensees or members of the planning team, the MNR may instead provide the boundary of the area to be protected and/or any restrictions to forest operations. In these cases, the planning team must protect the provided area through appropriate areas of concern prescriptions and/or roads planning.

3.1.5 Requirements Respecting Personal Information

Personal information is defined in Section 2 of FIPPA. The MNR maintains personal information that is related to values information, such as a person's name, address, phone numbers, and other personal data associated with land use permits, trapline areas, baitfish areas, and other licensed or recognized natural resource uses. Personal information is considered to be sensitive and must not be displayed on values maps.

The MNR must acquire and declare consent to use personal information for forest management planning purposes from the persons providing their personal information. The MNR shall determine whether this information relating to values can be made available to licensees, planning team members, or members of the LCC. The MNR must comply with FIPPA in terms of the treatment and use of personal information related to values information used in forest management planning. Licensees, planning team members, and members of the LCC, as agents of the Crown, must also comply with FIPPA in terms of their treatment and use of personal information for the purpose of fulfilling their obligations in forest management planning.

3.1.6 Standards for Values Information

The MNR in consultation with the forest industry determines the types of values and the attributes required to support forest management planning and compliance with

the CFSA. Only a subset of MNR's natural resources and values information are used in forest management planning. Also, only a limited number of the attributes associated with a given feature are required to support forest management planning. Many of the attributes of features maintained in MNR's information system relate to the collection, storage, and management of the natural resources and values database and are not directly required in forest management planning.

The MNR also consults forest industry on suitable data exchange formats (e.g., a compressed ESRI *.e00* file with attributes in a non-relational, flat file format) for values information. Detailed standards for values information are described in the *FIM Base and Values Technical Specifications.*

The standards identify the minimum information required to treat a value as a *known value*. This information consists of two parts: a geographic location and a basic description for each feature. Information that meets these standards is considered to be conclusive information that is required to confirm the presence and characteristics of a value. Information that meets these standards ensures that planning teams have sufficient background information to plan road locations and prepare area of concern prescriptions to protect the existence, integrity, and health of the value. Only known values shall be depicted on values maps and considered in forest management planning.

The MNR must determine whether the available information satisfies the minimum standards and is sufficient to treat a value as a known value. The MNR will consider recommendations by the planning team when making decisions about values or when applying the precautionary principle, as described in Part B, Section 3.4.

The standards for the geographic location of values are given in the *FIM Base and Values Technical Specifications*. In meeting the minimum requirements to declare a value as known, the geographic location provided by the MNR, the licensee or third party should locate the value in relation to existing base features or values (e.g., roads, stream-lake intersections, islands or points, township boundaries, portage trails). Location descriptions could be geographic coordinates, a reference to an attached photo or map, or reference to an accompanying digital spatial data product.

The descriptive features of a value must provide sufficient detail for planning teams to determine the appropriate area of concern prescriptions required to protect the existence, integrity, and health of a value. The descriptive features of a value must consist of the following information:

- method, survey type, locational accuracy, or source of information that was used to identify and describe the value;
- position title or stakeholder type of person(s) who discovered, collected, and provided information about the value;
- date the values information was collected; and

- identification of the type of value, specific enough to facilitate protection of the value should it be impacted by forest operations.

Meeting these minimum requirements in declaring a value as a known value serves to identify the presence of a value and to afford it protection if necessary. Additional field inspection or data collection may be required by the MNR to confirm the value and to make a complete entry into the values information database.

3.2 Roles and Responsibilities for Values Information

This section identifies the roles and responsibilities of the MNR and licensees associated with providing, receiving, and using values information. The terms *identify* and *confirm* represent the processes which are used to distinguish the roles and responsibilities of the MNR and licensees with respect to collecting and using values information in forest management planning.

The term *identify* is used to describe the roles and responsibilities of the provider of values information. The term *confirm* is used to describe the roles and the responsibilities of the MNR with respect to use and acceptance of the information. Identification precedes confirmation.

The provider collects values information and must identify that the information collected and provided is accurate and meets the standards described in Part B, Section 3.1. The provider could be the licensee, the MNR, or a third party.

Licensees often, during the course of operations, identify the presence of values and provide information about those values. Licensees are responsible for providing information about new values and corrections to information about known values to the MNR when these values are encountered during the implementation of forest management operations. This information must be provided in accordance with Part B, Sections 3.1 and 3.3.

The MNR must confirm that the information received is accurate, meets the standards in Part B, Section 3.1, and is sufficient to be used to plan road locations and to develop area of concern prescriptions. That is, the MNR, normally the district office, is responsible for determining whether a value can be treated as a known value based on assessing the available information against the standards described in Part B, Section 3.1.

The MNR is also responsible for identifying the presence of values, and for collecting and providing information about those values. Identification of values information can occur at various times throughout plan preparation or implementation, as described by the timelines in Part B, Section 3.3. The MNR is also responsible for entering and maintaining values information in MNR's values information database (e.g., updating through the Natural Resources and Values Information System -

NRVIS), and providing updates of this information to licensees and planning teams in accordance with Part B, Section 3.0.

3.3 Timelines and Conditions for Values Information

MNR is to provide licensees with values information to support plan development and annual work schedule preparation. The MNR must ensure licensees are provided with values information, at a minimum annually.

Licensees may also request values information at any time. The MNR will provide the values information within a reasonable timeframe as outlined in the *FIM Base and Values Technical Specifications*. If the information request cannot be met within the timeframe outlined in the *FIM Base and Values Technical Specifications*, the MNR will inform the licensee as to when the information can be provided.

The timelines associated with the provision of values information can be separated into two categories. The first is the timeline associated with forest management plan development and implementation; a continual update of values information data holdings. This timeline is outlined in Part B, Section 3.3.1. Second is the timeline associated with values encountered during active forest operations, as outlined in Part B, Section 3.3.2. The activity of value identification and confirmation is more stringent in this latter category. Also, when prioritizing effort and allocation of resources, a higher priority must go to the collection of values information associated with active operations.

The timing of forest management operations that may adversely impact values determines when information about those values must be exchanged between the MNR and licensees. The timelines provided in the following sections should be viewed in conjunction with the specific timelines and details provided in the *FIM Base and Values Technical Specifications.*

In some instances, other guides or locally set agreements or protocols also provide direction on the timing of values information sharing and exchange related to specific values or specific local situations.

3.3.1 Plan Development and Implementation – Values Provision Timeline

Values information is assembled as background information during Phase I production of a forest management plan as outlined in Part A, Section 1.1.8 of the FMPM and during Phase II of the planning of operations for the second five-year term as outlined in Part A, Section 2.1.5 of the FMPM.

New information on values often becomes available during plan implementation. Where this new information identifies that values may be impacted by active operations, the MNR will provide this information as outlined in Section 3.3.2. Otherwise, the MNR will provide this new information through annual values

information updates in order for licensees to incorporate any required changes into the next AWS or amendments.

Licensees are responsible for providing information about new values and corrections to information about known values as per the *FIM Base and Values Technical Specifications.*

3.3.2 Active Operations – Values Provision Timeline

Active operations are defined as forest management operations identified in an approved annual work schedule. As per Part D, Section 3.5.2 and Section 3.5.4 of the FMPM, updated information on the location and description of values that were previously unidentified (i.e., new values), incorrectly located, incorrectly described, or that no longer exist, must be exchanged between the MNR and licensee.

The timelines associated with values information exchange where active operations are involved is measured in days. The specific number of days is provided in the *FIM Base and Values Technical Specifications*. Given below are the responsibilities and procedures associated with values information sharing and exchange for situations that have defined timelines provided in the technical specifications.

Licensee reports a new value, corrects location or description of previously identified value, or confirms a value no longer exists

Where the licensee identifies that new information about a natural resource feature or value (new value, changed value, non-existent value) will result in the addition or change to an area of concern or prescription, the licensee will provide the MNR with the necessary documentation of the change. The MNR will ensure that the values database is updated to reflect this change and will notify the licensee when this has occurred.

MNR confirmation of the value no longer existing is required in instances of values associated with species at risk and where a third party is associated with the value and/or area of concern (e.g., cultural heritage, aboriginal or tourism value).

MNR identifies a new value, corrects location or description of previously identified value, or confirms a value no longer exists

When the MNR identifies and confirms the location and description of values previously unidentified (i.e., unmapped) or incorrectly located, incorrectly described, or that no longer exist, they will notify the licensee. The MNR notification will provide enough detail to allow the licensee to assess when operations may be impacted. Subsequently, the licensee notifies the MNR of the results of their assessment (e.g., timing of the operations and potential impacts). MNR will collect and provide additional information and update the values database in a timeline reflective of the licensee notification.

The above procedures (and timelines as per the *FIM Base and Values Technical Specifications*) are valid where area of concern planning requirements, as per Part A, Section 1.3.5 and Section 2.1.8 and Part B, Section 4.2.1 and Section 8.2.1 of the FMPM has been met. In instances where a plan amendment or a revision to an annual work schedule is required, the above timelines will be adjusted as per the timelines associated with the amendment or revision.

The MNR must provide licensees with information about values for the purpose of forest management planning and licensees must provide the MNR with information about values, as prescribed by the *FIM Base and Values Technical Specifications*.

If the provision of information or the location of classified values could threaten the existence, integrity, or health of a value, the Minister may withhold such information. The MNR, in consultation with the planning team, will determine the kind of protection required for such a value.

3.4 Precautionary Principle in Values Identification and Protection

The geographic location and basic description of a value must be available for the value to be considered as a known value. If a value does not have a geographic location, or if the basic description information about the features of a value does not exist or is insufficient to meet the minimum requirements of Section 3.1.6.1, then the value will not be considered as a known value, and will not normally be considered in forest management planning. In some cases, although the information is incomplete, sufficient information about the general location or partial description of the features of a value may be available. In such cases the MNR may apply the precautionary principle to ensure that values are protected during forest management planning or implementation of forest management operations.

The precautionary principle is defined as follows:

> *In the absence of conclusive information to confirm the presence or features of a value, this principle requires the consideration of the value in the planning of road locations and area of concern prescriptions in order to ensure that the value is protected, based on the high probability of its presence and the potential that it may be affected by forest management operations in a significant and negative way.*

The precautionary principle recognizes that some forest management activities may be detrimental to the existence, integrity, and health of some values or may cause irreparable damage to values. The rationale for applying the precautionary principle is to reduce the risks of significantly affecting a value in a negative way, in the absence of conclusive information about a value, by considering values in forest management planning using the best available information about those values.

Members of the planning team must consider the available information and may make recommendations as to whether sufficient information exists to treat the value as a known value. Members of the planning team may also make recommendations regarding the applicability of the precautionary principle and the extent to which the precautionary principle should be applied to ensure the protection of the value.

Using planning team recommendations and assessing the available information against the standards described in Part B, Section 3.1, the MNR will determine which values will be considered in forest management planning and to what extent the precautionary principle may apply.

The MNR may exercise reasonable latitude to designate a value as a known value, based on the availability of sufficient information, in order to ensure that it can be considered in forest management planning. In designating a value as a known value based on applying the precautionary principle, the MNR must provide licensees with this decision, an explanation of the concerns related to potential impacts from forest management, the rationale to support the decision, and the available information about the value. The MNR District Manager is responsible for making these decisions and for ensuring that these decisions are carried out by the planning team.

The precautionary principle is not designed to make licensees become the de facto collector of values information. The precautionary principle is not to be applied in circumstances where it is reasonably possible to collect field information that meets the minimum standards of section 3.1.6.1 to declare that a value should be considered a known value.

3.5 Predictive Modelling in Values Identification

The MNR, with the assistance of licensees and other parties, has developed an extensive values information database. However, not all values on Crown forests have been identified. In order to assist in the identification of values on Crown lands, predictive models are being applied to identify the location of areas which have a high possibility of containing values based on the presence of specific landscape features that resemble the location and site conditions of, and have characteristics similar to, known values. Archaeological potential modelling is an example of predictive modelling used in forest management planning. The MNR must approve the application of any predictive models that are used to identify values for the purpose of forest management planning.

Predictive models may be used to provide preliminary identification of potential areas where values are likely to be present. Predictive models need to be re-calibrated to consider new information and to develop better trends or predictions from that information. The results produced from predictive modelling should not be used in isolation of further investigation. Further investigation or analysis is required to identify the existence of values within the predicted area. The MNR is responsible for

conducting this investigation or analysis, or for causing the investigation or analysis to be conducted.

The MNR will give priority to investigating or analyzing areas identified by predictive modelling that are located within, or are in close proximity to, proposed areas of forest operations. Based on the results of analysis, the candidate areas identified by predictive modelling will be reviewed and may be revised to identify potential areas.

Potential areas, which can be described by further information that meets the standards described in Part B, Section 3.1, will be treated as known values. The MNR is responsible for confirming that potential areas will be treated as known values.

Further investigation or analysis of predictive modelling results cannot always provide the exact location or basic description of the features of a value that may exist within a potential area to the standards described in Part B, Section 3.1. In this case, the MNR may apply the precautionary principle to designate potential areas as known values, based on the availability of sufficient information needed to consider the appropriate protection for that value in forest management planning.

The MNR must also determine if the information produced by predictive modelling is considered to be classified information. The MNR will treat classified information in accordance with Part A, Section 1.3.2.

The *Forest Management Guide for Cultural Heritage Values* provides additional detail, guidance and direction for the identification and protection of archaeological potential values. The provincial cultural heritage specialist can provide technical information on the archaeological predictive model. Other cases of the use of predictive models for values identification may have documentation and direction in addition to that outlined in the FIM or the *FIM Base and Values Technical Specifications.*

4.0 POLYGON FOREST

The polygon forest is an information layer that provides a description of the forest, water and other landbase features within a forest management unit. The management unit is delineated and classified based on geographic features and characteristics into homogeneous water and land types called polygons. Polygons have both a spatial component (geographic location) and a tabular component (description of characteristics).

The polygon forest is one theme of a forest resources inventory that is composed or built from a collection of individual geographic data layers (e.g., planning or modelling inventories as described in Section 5.0). Other themes or geographic layers comprising a forest resource inventory could include ownership, transportation or utilities.

Forest inventories are used to support various forest management planning and land-use planning decisions over a wide range of geographic areas. The geographic areas can vary from individual forest stands, which represent small areas (less than a hectare to hundreds of hectares) to forest level, management unit, mill woodshed, and landscape extents, which involve very large areas (thousands or millions of hectares).

The MNR must ensure that licensees are provided with polygon forest information for all areas within a forest management unit. It must contain sufficient information to serve as a base upon which planning teams will prepare forest management plans in accordance with the FMPM. It provides a description of the area within a forest management unit based on actual measurements and collections of forest cover data. The licensee must use the polygon forest in developing forest management plans and specifically in the creation of a planning inventory as described in Part B, Section 5.1.

The following sections outline the requirements, standards, roles and responsibilities, timelines, and conditions for providing spatial and tabular information components of the polygon forest. Further technical details and requirements about the polygon forest are contained in the *FIM Forest Resources Inventory Technical Specifications***.**

Development and production of a polygon forest across the entire area of the undertaking requires several years. Not all planning teams or management units will be provided with a polygon forest prior to development of the next forest management plan. Interim direction on using the best available inventory, where a polygon forest is not available, is provided in the Part B, Section 4.3.

4.1 Requirements and Standards for the Polygon Forest

In preparing the polygon forest, the MNR will use the best available base data information and, where appropriate, will work closely with licensees to incorporate or

use information that the licensee has and can be considered more accurate and current.

The polygon forest provides a description of the forest cover (forest condition) and represents a summation of the results of forest management activities and natural changes that occurred to the forest since the last inventory was produced. It also provides a baseline for preparing the next forest management plan.

The polygon forest contributes to several forest management planning purposes by providing:

- updated inventory information based on forest management activities and natural changes which have occurred since the last inventory was provided;
- a forest stand-level record of changes to forest description information based on forest management activities and natural disturbances that have occurred over several successive plan terms;
- background information (depicting the forest condition) for the initial stages of preparing a planning inventory and support for the initial development of a new forest management plan in accordance with the FMPM;
- part of the background information used in preparing annual reports, effectiveness monitoring and assessment evaluations, and other audit or review activities;
- a digital record or snapshot of the forest condition which provides a benchmark of the distribution and composition of forest cover at specific points in time. Successive productions of inventory information will provide time-sequenced records of historic forest condition. The accumulation of this information will allow for the continual assessment of landscape changes over successive forest management plans and provide direct comparisons of the past and current (actual) forest condition with future forest condition as predicted in forest management plans; and
- a direct comparison to annual report information for annual forest management activities and natural changes as they are reflected in updates to forest description information.

The MNR may also use the polygon forest for other purposes that involve various analyses of forest cover on areas which are broader than a forest management unit (e.g., district, habitat ranges, mill woodshed, watershed, eco-regional, provincial).

The updated information in the polygon forest will be based on a number of information sources such as actual measurements of data from field sampling, aerial photography, satellite imagery, silvicultural effectiveness monitoring surveys, annual report information, and other field surveys or samples. The MNR will ensure that the

polygon forest provides complete area coverage based on the boundaries of the forest management unit, and will include both Crown and non-Crown land.

4.2 Roles and Responsibilities for the Polygon Forest

The MNR will use the best available inventory information for all forested areas within a management unit when producing the polygon forest.

Licensees must verify that the polygon forest provided by the MNR is complete. Checking for completeness includes, but is not limited to, ensuring that:

- the correct spatial and tabular attributes are as described by the applicable standards;
- updates or changes to the base feature information are consistent and applied with the updates to the polygon forest; and
- updates adequately reflect the forest condition.

The licensee must notify the MNR that the information has been checked for completeness and whether the information meets the requirements prescribed by this FIM. If the information does not meet the requirements described by the FIM and the *FIM Forest Resources Inventory Technical Specifications*, the licensee must provide a description of the errors or the reasons why the information does not meet the requirements. The MNR and the licensee must determine the extent of the corrections required and a timeframe in which the required revisions can be made and a polygon forest reissued by the MNR.

4.3 Timelines and Conditions for the Polygon Forest

For the purpose of preparing a forest management plan, licensees must use the most recent inventory provided by the MNR. In some cases it will be the composite product provided through the Forest Resources Inventory program between 1986 and 2001, while in other cases it will be the newer polygon forest product as described in this FIM.

In cases of MNR providing the newer polygon forest, it must be provided no later than nine months prior to the invitation to participate (as per FMPM, Part A, Section 3.3.3). In cases of MNR not providing the polygon forest to meet this timeline, the licensee will use the most recent inventory provided. The planning team does have the option to use a polygon forest received after the nine month timeline if the planning process can proceed without adverse affects or delays.

The licensee has 3 months after receiving the polygon forest to check the information for completeness.

The polygon forest is described in the *FIM Forest Resources Inventory Technical Specifications*. In cases where planning teams are using a best available inventory in lieu of the polygon forest, technical details for this inventory are available in the *Technical Specifications for Providing Stewardship and Planning Inventory Information* (August 2004). These specifications are associated with FIM 2001.

5.0 PLANNING AND BASE MODEL INVENTORIES

The planning and base model inventories are used as a basis to prepare and monitor the development of a forest management plan and to support decisions made in an approved plan and subsequent work schedules. These inventories are created from the polygon forest (or similar product in cases where the polygon forest described in Section 4.0 is not available).

A planning inventory is prepared for each forest management plan and remains with the plan from its initial preparation through its implementation to its subsequent evaluation. The timeframe for a planning inventory can extend from 24-30 months prior to the start of the plan (for plan development) to several years after the end of the plan. Consequently, the normal period of use for a planning inventory associated with a ten-year plan may extend for a period of approximately 12-15 years. The usefulness of the planning inventory may extend beyond this period in support of Independent Forest Audits and may provide relevant background information when referencing and assessing past plans during the development of future plans.

The planning inventory contains updated forest description information from forest management activities and natural changes to the forest. The planning inventory also provides forecasted changes to forest description information based on the expected outcomes of planned operations which have not yet been implemented from the currently approved forest management plan. The forest description component of the planning inventory may also be projected (grown) to the end of the current plan term.

The base model inventory adds forest classification information (sometimes referred to as management decision information) to the planning inventory. The base model inventory provides the basic information required for forest modelling, habitat modelling, and landscape diversity analyses, which are applied during the strategic and operational planning stages of developing a forest management plan.

5.1 Requirements and Standards for the Planning and Base Model Inventories

The requirements for providing planning inventory and base model inventory information are directly related to specific stages in the development of a forest management plan. The technical detail about the planning inventory and the base model inventory are provided in the *FIM Forest Management Planning Technical Specifications*.

The differences between the two inventories are not related to area classification, but are related to their different purposes, the timelines when each is required, the timing for the inclusion and population of forest classification information and separate component structure versus a combined, single layer entity.

Components of the Planning Inventory

Licensees are required to create and provide two specific information products in a planning inventory:

1. A **planning composite** layer which must incorporate updated base feature and forest polygon information, and

2. A **forecast information** layer of those harvest operations projected to be implemented in the current plan.

These two types of information are collectively referred to as the planning inventory. Meeting the requirements to create a planning composite may include minor updating of some base features. Not included in the planning composite, but a component of the planning inventory, is a forecast layer of those harvest operations approved in the current plan and expected to be completed by the start of the new plan.

Components of the Base Model Inventory

Licensees are required to create and provide a base model inventory by combining the planning inventory (i.e., the planning composite and the forecast layer) with:

1. **Forest classification information** representing stand level management decision information (tabular attributes).

Forest classification information fields must be included in the planning composite tabular information, but may not be populated.

Preparation of the Planning and Base Model Inventories

The process to develop the planning inventory and base model inventory starts with the most recent and best available base features provided in accordance with Part B, Section 2.0 and with the most recent polygon forest provided in accordance with Part B, Section 4.0.

The development of the planning inventory normally includes the following steps:

1. minor updating, if required, of base features provided by the MNR;
2. assembling/updating a forest polygon layer using the most recent polygon forest information (may require adding updates to the polygon forest based on forest management activities and natural changes not reflected in the polygon forest);
3. adding changes to forest stand descriptions in the polygon forest based on growth projections to the start of the new plan term;

4. buffering centre-line features where required;
5. combining all the above into a planning composite;
6. adding forest classification information fields; and
7. preparing a layer of forecasted changes to the forest polygons based on planned harvest operations for the remaining term of the currently approved plan.

The development of the base model inventory normally includes the following steps:

1. adding stand level forest classification information to forested polygons of the planning composite;
2. combining the planning composite and forecast information into a single information product; and
3. updating attributes of the forecast information.

5.1.1 Requirements and Standards for Base Features Information component of the Inventories

The MNR will ensure that licensees are provided with the best available base features information as outlined in Part B, Section 2.0. Base features information used in preparing the planning and base model inventories may include:

- water;
- forest management unit boundaries;
- ownership and land tenure;
- parks and protected areas;
- roads;
- railways;
- utility lines; and
- small rivers and streams.

Depending upon the time between delivery of the base features information and the polygon forest and preparation of the planning inventory, it may be necessary to update some of the base features information. This is to ensure the best available, most current information is used in the planning inventory. Updates to base features information will be provided as per the *FIM Base and Values Technical Specifications*.

There is a specific requirement for the updating of road base data as described in the Roads Inventory of Part A, Section 1.1.8.10 of the FMPM. The planning team will

confirm and update an inventory or data layer of all roads on the management unit. This updated roads inventory will be used in preparing the planning composite.

5.1.2 Requirements and Standards for the Planning Composite

It is a requirement to create a planning composite which contains updated information that is current to at least the latest submitted management unit annual report information.

The forest polygons in the planning inventory must be updated based on actual forest management activities and natural changes which occurred during the period of the currently approved plan. The forest stand description attributes must be updated according to the standards in the *FIM Forest Management Planning Technical Specifications.*

An initial requirement is for licensees to update the polygon forest layer provided by the MNR. The amount of updating required is dependent upon the amount of time between polygon forest provision and licensee commencement of planning inventory development. The updated polygon forest layer will include updates/changes not reflected in the original polygon forest layer provided by the MNR. Stand description information must be updated for those productive forest areas which have been affected by forest management activities and natural changes.

The polygon forest may also be projected (grown) to the end of the current plan term. This includes projected changes to productive forest areas to bring the forest stand description attributes up to the end of the current plan term.

Licensees combine updated base features information with the updated polygon forest layer to create the planning composite.

Centre-line base features may be buffered and incorporated into the planning composite. Buffering centre-line features creates polygons which are used to refine the polygon forest information in terms of the actual area occupied by linear features such as roads, railways, utility lines, small rivers, streams, and creeks. The addition of buffered linear features provides a better approximation of the actual forested and non-forested area in a forest management unit.

Projected changes to productive forest areas in the polygon forest primarily affect forest stands which have not been managed or have not been affected by natural changes. Projected changes should only affect the tabular forest stand description attributes in the polygon forest. Any projected changes to forest stand description attributes will normally be based on accepted growth algorithms. The height attribute may be adjusted using height, age, species composition, and site class information based on regression formula which simulates the results found in yield tables. Growth projection models/algorithms must be supported by growth and development information or analysis of permanent sample plot data.

It is a requirement to provide the silviculture ground rule (SGR) with the planning composite – as a component of the planning inventory submitted with the draft and final plans. Provision of the SGR reflects a preliminary step in the development of a forest operations prescription – identification of a silvicultural ground rule for all areas of operations as outlined in the FMPM Part A, Section 1.3.5.2. The silvicultural ground rule describes the silvicultural system and types of treatments that may be used to manage forest units for a specific current forest condition in order to achieve a predicted future condition.

The standards for the planning composite (spatial and tabular) are described in the *FIM Forest Management Planning Technical Specifications*. The standards for updating the polygon forest component of the planning composite (spatial and tabular) are also described in the *FIM Forest Management Planning Technical Specifications*.

5.1.3 Requirements and Standards for the Forecast Information

Licensees are required to provide forecast information for those forest stands that are planned to receive harvest operations for the current fiscal year and the remaining three to four years of the currently approved forest management plan. An updated version of this layer is submitted in support of Phase II planning

This forecast information is not incorporated into the planning composite; however it must be compatible, such that the information can be combined and associated with the composite.

The forecast information provides a description of the planned depletion. There will be a minimal number of attributes attached to this layer. The detailed description of the stand structure expected to change as a result of the depletion (e.g., height, stocking, year of origin, etc.) will be presented in the base model inventory. Standards for this information are given in the *FIM Forest Management Planning Technical Specifications*.

5.1.4 Requirements and Standards for the Forest Classification Information

The purpose of creating and maintaining forest classification information is to track key forest-level decisions that support the amalgamation and the availability of forest stands for forest management planning purposes at the stand level. This information also provides the basis for determining available harvest area, supports the selection of areas which are eligible for harvest and renewal, and also provides an indication of how stands within a forest unit will be managed during the term of a new forest management plan.

The requirements for forest classification information apply only to the licenced Crown area on a forest management unit and then only to the productive forest areas within the licensed area. An exception is parks and protected areas which are not licensed but are classified and may contribute to wildlife habitat, old growth or other

objectives. Another exception may be unlicenced areas where trees are reserved to the Crown. All water, non-forested, and non-productive forest lands are considered as unavailable for the purpose of forest management planning and are not included as part of the managed Crown forest area for determining the available harvest area by forest unit and, therefore, do not require forest classification information.

Forest classification information is not required at the Invitation to Participate stage. The information will be submitted with the base model inventory and again with the planning inventory with the draft and final plans.

Forest classification information is a set of tabular attributes which must be assigned on a stand by stand basis. Forest classification information must be provided as attributes of the base model inventory. An exception is the SGR which is provided on the planning inventory at the draft and final plan submission. Examples of forest classification attributes are sub management unit, forest unit, age, age structure, availability indicator, silvicultural system, stage of management and silvicultural intensity.

The standards for creating and updating the forest classification attributes are described in the *FIM Forest Management Planning Technical Specifications*.

5.2 Roles and Responsibilities for the Planning and Base Model Inventories

Licensees are responsible for updating information in all components of the planning and base model inventories: the planning composite; the forecast information; and the forest classification information. This update is done to prepare inventories used for plan development, implementation and assessment.

The MNR will ensure that information contained in the planning composite and the forecast information layer is checked for completeness. The MNR will also ensure that the forest classification information is complete and that all components have been correctly combined into a base model inventory.

Licensees, the MNR and the planning team share the responsibility of meeting progress checkpoints. Progress checkpoints, outlined in Part A, Section 1.1.6 of the FMPM are key steps in the development of a forest management plan. All parties must confirm satisfactory completion of the progress checkpoints and document this decision in the analysis package.

5.2.1 Checking for Completeness

The MNR and the licensee must check that information provided by either party is complete and meets the requirements of two forest management planning progress checkpoints – the Planning Inventory progress checkpoint and the Base Model Inventory and Base Model progress checkpoint. Inventory information submitted to

the FI Portal undergoes an automatic and mandatory validation process. The validation process assists ensuring these information products meet the requirements of the FIM and the progress checkpoints.

Checking for completeness includes, but is not limited to, ensuring that:

- the spatial area in the planning composite and the forecast layer is correctly represented for:
  - area delineation,
  - correct representation of area and spatial features by theme based on the forest management unit area extent,
  - no overlapping areas or holes in the planning composite (this does not apply to the forecast layer),
  - correct total area, and
  - correct datum, map projection, and coordinate requirements;
- the correct data contents for spatial and tabular attributes required in each layer as described by the applicable standards;
- the compatibility of the layers (i.e., proper use of coincident or contiguous lines, same geo-referenced map extents based on a forest management unit boundary); and
- the correct formats in accordance with the conditions and technical specifications.

The MNR and licensee must determine whether information meets the requirements and standards. These considerations include, but are not limited to, verifying the following planning and base model inventory components at the identified step in forest management plan development as per the FMPM (shown in brackets). These are shown below.

- Planning Composite (Planning Inventory progress checkpoint)
  - the updated polygon forest and the buffered line features have been correctly assembled into a planning composite; and
  - the planning composite contains sufficient information to support the remaining forest management plan development process which includes land base summary, forest modelling, habitat supply modelling, landscape diversity analysis, and identification of eligible areas for operations for the new plan term.

- Forecast Information (Planning Inventory progress checkpoint)

- the forecast information represents the remaining three to four years of harvest (and large natural disturbances not yet reported in an annual report) from the current forest management plan; and
- the forecast information will contain sufficient information to support the remaining forest management plan development process which includes land base summary, forest modelling, habitat supply modelling, landscape diversity analysis, and identification of eligible areas for operations for the new plan term.

- Forest Classification Information (Support for Base Model Inventory and Base Model progress checkpoint)
  - the forest classification information is correct and supports the remaining forest management plan development process which includes land base aggregation, silvicultural ground rule development, forest modelling, habitat supply modelling, landscape diversity analysis, identification of eligible areas for operations, and selection of areas of operations and road construction areas for the new plan term; and
  - the combination of the planning composite, the forecast information and the forest classification information is correct and integral.

- Submission of Revised Information (Submission at draft and final plan – Revisions Made)
  - the planning inventory information provided with the final plan accurately reflects the approved forest management plan in all planning inventory aspects (i.e., planning composite and the forecast layer); and
  - the planning inventory and base model inventory support decisions made in the approved forest management plan.

The MNR must notify the licensee that the information has been checked for completeness and whether the information meets the requirements prescribed by the FIM. If the information does not meet the requirements described by the FIM and the *FIM Forest Management Planning Technical Specifications*, the MNR must provide a description of the errors or the reasons why the information does not meet the requirements. The MNR and the licensee must determine the extent of the corrections required and a timeframe in which the required revisions can be made. The objective is to correct and resubmit the information such that it does not affect the completion of the new forest management plan.

5.3 Timelines and Conditions for the Planning and Base Model Inventories

Licensees must provide all of the planning inventory information to meet the planning inventory progress checkpoint. The planning inventory, with forest classification

information added, is submitted also with the draft plan and final plan. The final plan submission of the planning inventory does not necessarily represent an update to the product submitted at draft plan; rather it is submitted for file retention purposes and assists the MNR in meeting its requirements of the *Archives and Bookkeeping Act*. An updated version of the Forecast Information layer component of the Planning Inventory is submitted during phase II planning.

Licensees must provide all of the base model inventory information to meet the base model inventory and base model progress checkpoint stage of forest management plan development. The base model inventory is submitted also with the final plan. The final plan submission of the base model inventory does not necessarily represent an update to the product submitted to meet the progress checkpoint; rather it is submitted for file retention purposes and assists the MNR in meeting its requirements of the *Archives and Bookkeeping Act*.

The MNR and the licensee must allow for a period of review and revision in advance of the progress checkpoints. The FMP terms of reference and/or project plan may outline the timelines associated with the review and approval process.

The MNR must ensure that licensees are provided with base features information as described in the *FIM Base and Values Technical Specifications* and with the polygon forest as described in the *FIM Forest Resources Inventory Technical Specifications.*

Licensees must provide the MNR with planning and base model inventory information as described in the *FIM Forest Management Planning Technical Specifications*. These specifications describe the format and detailed data standards for providing these inventories.

6.0 OPERATIONAL PLANNING INFORMATION

Operational planning information is a component of both a draft forest management plan and the final forest management plan. It represents the results of planning and summarizes decisions made in respect of forest operations. This information identifies all forest operations including planned harvest, forest operations prescriptions, areas of concern, planned road corridors, planned clearcuts, operational road boundaries, renewal and maintenance areas, and existing roads use management strategies.

6.1 Requirements and Standards for Operational Planning Information

6.1.1 Requirements and Standards for Planned Harvest

The planned harvest information identifies areas selected for harvest for the ten-year period of the new plan as per the FMPM, Part A, Section 1.3.3.1, Part B, Section 3.6.2 and 4.3. It is a requirement to provide planned harvest information distinguished by distinct harvest categories. These categories include:

- regular harvest first 5-year term;
- regular harvest second 5-year term;
- surplus harvest;
- contingency harvest;
- salvage harvest;
- fuelwood harvest opportunities;
- bridging harvest operations; and
- second-pass harvest operations.

Phase II planning requirements for planned harvest areas for the second five-year term are given in the FMPM Part A, Section 2.1.7 and Part B, Section 8.3. The requirements are to confirm or change the information supplied at the time of submission and approval of the forest management plan.

The planned harvest information shall be submitted as digital geospatial data and contains both spatial and tabular attributes. The information contained in this layer must correspond to Areas Selected for Operations Maps which are required for the public consultation process in accordance with the FMPM.

Typical attributes of the planned harvest layer would contain information to identify such things as harvest category, silviculture system, and harvest block identifier. The

planned harvest layer must be spatially compatible, such that it can be overlaid and/or spatially linked to the planning inventory.

6.1.2 Requirements and Standards for Areas of Concern

Requirements for areas of concern (i.e., an area adjacent to a value that may be affected by forest management activities) are described in the FMPM, Part A, Sections 1.3.5.1 and 2.1.8.1 and Part B, Sections 4.2.1 and 8.2.1. All areas of concern within harvest, operational road boundaries, renewal and maintenance areas, primary and branch road corridors, and aggregate extraction areas for the five-year term, as minimum, are to be included in this information requirement.

Areas of concern for renewal and maintenance areas are normally only required for modified operations (e.g., timing and aesthetic restrictions) or where the identification of a value has occurred subsequent to the area being harvested and the value may be impacted by renewal and maintenance activities. Exceptions to this may be for areas selected for stand improvement activities and naturally depleted areas where area of concern prescriptions were not previously developed.

For areas identified for bridging operations and second-pass harvest operations, the areas of concern have already been identified in the current plan or plan term documentation. They are to be included in table FMP-10 and are required to be displayed on operations maps.

The areas of concern information is associated with the harvest, renewal and tending, and road construction areas and is identified through area of concern planning. The description of planned areas of concern must contain the identification of the area of concern or area of concern group which links to tables FMP-10 and FMP-19.

The areas of concern layer contains both spatial and tabular attributes and meets the requirements in Part B, Section 4.2.1. The information contained in this layer must also correspond to Areas Selected for Operations Maps which are required for the public consultation process in accordance with the FMPM.

Typical attributes of the areas of concern layer would contain an area of concern or area of concern group identifier and area of concern type (reserve or modified). The areas of concern information must be spatially compatible, such that it can be overlaid and/or spatially linked to the planning inventory.

6.1.3 Requirements and Standards for Planned Road Corridors

Licensees must provide a layer which identifies the corridor locations for planned construction of primary and branch forest access roads for each five-year term of the new plan.

The planned road corridors information contains planned primary and branch road corridors, as per the FMPM, Part A, Sections 1.2.6, 1.3.6.1 and 1.3.6.2, and Part B,

Sections 4.5.1 and 8.5.1. It includes planned primary and branch road corridors and reconstruction corridors for each five-year term of the forest management plan. Primary and branch road corridors which traverse areas of concern must identify preferred 100 metre wide locations for each crossing and, where practical, acceptable variations on the crossing location for the five-year term.

Typical attributes of the road corridor layer would contain information to identify such things as road type, road identifier, area of concern crossing location identifier, the plan term (first five-year term or second five-year term), and use management strategy.

The roads features maintained in this layer are comprised of polygon spatial features only. The planned road corridor information must be spatially compatible, such that it can be overlaid and/or spatially linked to the planning inventory.

6.1.4 Requirements and Standards for Aggregate Extraction Areas

Licensees must provide a layer which identifies the aggregate extraction areas for each five-year term of the new plan. It will delineate aggregate extraction areas along existing roads, as per the FMPM, Part A, Section 1.3.6.6 and Part B, Section 4.5.6.

The aggregate extraction areas information must be spatially compatible, such that it can be overlaid and/or spatially linked to the planning inventory.

6.1.5 Requirements and Standards for Planned Clearcuts

The planned clearcut information outlines the outer extents of planned clearcuts greater than 260 hectares as per the FMPM Part A, Section 1.3.5.2 and Part B, Section 4.3.4. These clearcuts are reported for the 5-year term of the forest management plan and are reported in table FMP-12. Clearcuts are defined in accordance with the direction provided by the Forest Management Planning Section of the FMB. Planned clearcuts will include planned harvest area for forest units managed using the clearcut silvicultural system and may include area harvested in previous plans or terms. The planned clearcuts layer must be spatially compatible, such that it can be overlaid and/or spatially linked to the planning inventory.

6.1.6 Requirements and Standards for Operational Road Boundaries

The areas within which new operational roads are permitted are defined as operational road boundaries as per Part A, Section 1.3.6.4 and Part B, Section 4.5.2 of the FMPM. An operational road boundary identifies the perimeter of the harvest area and the area from an existing road or planned road corridor to the harvest area.

The planned operational road boundaries information must be spatially compatible, such that it can be overlaid and/or spatially linked to the planning inventory.

6.1.7 Requirements and Standards for Planned Renewal and Maintenance

The renewal and maintenance information provides the areas selected for renewal and maintenance operations as per Part A, Section 1.3.3.3 and Part B, Sections 4.4 and 8.4 of the FMPM. It is comprised of all areas meeting the following criteria:

- planned harvest areas;
- previously depleted areas from the current or past plans that are not yet renewed;
- naturally disturbed areas; and
- previously renewed areas requiring maintenance.

The renewal and maintenance information must be spatially compatible, such that it can be overlaid and/or spatially linked to the planning inventory.

6.1.8 Requirements and Standards for Existing Roads Use Management

Includes existing roads for which the SFL has responsibility, or roads for which the SFL will undertake activities, and identifies planned access control, maintenance and monitoring for the applicable five-year term. It also identifies planned decommissioning. Responsibility for water crossings may vary from the associated road. This information is required as per the FMPM Part A, Sections 1.3.6.5, 1.3.6.7 and 2.1.9.4 and Part B, Sections 4.5.5 and 8.5.2.

This layer is used to identify the linear road segments that are planned to be impacted by road access controls or road maintenance activities during the applicable five-year term. Similarly, all roads or road networks planned for decommissioning during the applicable five-year term are to be provided. This could include these activities planned for roads outside of SFL responsibility (e.g., SFL maintenance of a municipal road).

The road use management information must be spatially compatible, such that it can be overlaid and/or spatially linked to the planning inventory.

6.2 Roles and Responsibilities for Operational Planning Information

In most cases it is the responsibility of the licensee to prepare and submit operational planning information.

The MNR will verify that the operational planning information meets the standards defined in the *FIM Forest Management Planning Technical Specifications* and is consistent with the information contained in the forest management plan documentation.

6.3 Timelines and Conditions for Operational Planning Information

Operational planning information is required for both Phase I and Phase II of the ten-year forest management plan. It is submitted both at draft and final plan submission for both phases.

Licensees must provide the MNR with operational planning information as described in the *FIM Forest Management Planning Technical Specifications*. These specifications describe the format and detailed data standards for providing operational planning information.

7.0 FOREST MANAGEMENT PLANNING MAPS

The importance of maps in conveying forest management planning information and engaging stakeholders in the planning process has been mandated by the Environmental Assessment Board and reflected in forest management planning manuals.

The FIM prescribes that the MNR and licensees shall provide maps to assist public understanding of forest management planning. These maps shall be easy to read and their format shall be standardized across the Area of the Undertaking. Forest management plans and the associated maps have an audience beyond local stakeholders. Standardization of maps is crucial in supporting the publication of this information on the MNR website.

7.1 Requirements and Standards for FMP Maps

The mapped information evolves as planning teams progress through the forest management planning process. Many maps are updated and enhanced to reflect the input received and decisions made. Therefore, some maps are required to be submitted at more than one stage. Irrespective of changes to the maps, they may be required to be submitted or made available to support public consultation or other forest management planning processes. Ultimately, the final maps are included in the approved forest management plan.

Mapping requirements, in terms of numbers and type of maps, prescribed by the FIM are decreasing. For example, annual report maps are no longer required. Some forest management planning and reporting mapping requirements could be met by the provision of digital geospatial data. Public review and consultation opportunities are not limited by a reduction in the number of paper maps. Using the digital geospatial data may enhance the public consultation experience and make easier the effort of review and approval. MNR staff that review management plan documents or use them for updating information will now use the digital geospatial data for these purposes. In circumstances where a paper map is required for internal MNR use, the MNR may produce these from the prescribed digital spatial data.

Mapping requirements will be continually examined for efficiency in production and where possible, emphasis on meeting the information requirement, public consultation or business requirement will be through the use of submitted digital spatial data.

The map products can be grouped into five categories.

i. Strategic Planning Maps - provide information relevant to the 10-year period for which a forest management plan is written. Examples include:

- Public Notice Map
- Index Map
- Values Maps
- Aboriginal Values Maps
- Landscape Pattern Map(s)
- Preferred and Optional Harvest Areas Map

ii. Operational Planning Maps - provide information relevant to the two five-year terms of a forest management plan. Examples include:

- Areas Selected for Operations Maps
- FMP Summary Map

iii. Annual Operations Maps – provide information relevant to the annual work schedule. Examples include:

- Annual Work Schedule Operations Maps
- Annual Work Schedule Summary Map
- Prescribed Burn Operations Map
- Aerial Herbicide Project Map
- Aerial Insecticide Project Map

iv. Other Maps Used for Forest Management Planning Purposes - Not all of the maps which may be used during the preparation or implementation of forest management plans are listed above or detailed in the technical specifications. Planning teams and/or licensees may create and utilize additional map products for the purpose of preparing a forest management plan. Other maps may also be described by guides and other manuals relevant to the preparation and implementation of the plan. The planning team will determine the requirement for provision of other map products and information used in forest management planning. These decisions should be identified in the terms of reference and/or project plan for the forest management plan. The FIM recommends that these maps follow one of the chosen three FIM scales; particularly if they are submitted as part of the FMP electronic submission.

7.1.1 Map Format and Content

Prescribed map products will be provided in this section and in the technical specifications [e.g., Encapsulated Post Script (eps); Portable Document Format (pdf)]. In some circumstances, paper copy maps for public display may also be required.

The mandatory information requirements for each map are provided in the associated technical specifications and other guides and manuals. The mapping requirements prescribed by the FIM are outlined in the associated technical specifications. Three key technical specifications that describe mapping requirements are the *FIM Forest*

Management Planning Technical Specifications, the *FIM Base and Values Technical Specifications* and the *FIM Annual Work Schedule Technical Specifications.*

7.1.2 Map Scale

Each map produced for inclusion in the FMP must be prepared according to one of three map scale ranges: operational, composite or summary.

Operational Map Scale Range

Acceptable operational scales range from 1:10,000 to 1:50,000. Operational scale maps are also referred to as large scale maps. The operational scale is primarily influenced by the grid structure and size commonly used on the management unit. Use of a grid can provide a convenient and appropriate scale for portraying base features, forest resources inventory information, values, and other resource information or features that requires a reasonable degree of detail.

Composite Map Scale Range

Acceptable composite scales range from 1:50,000 to 1:250,000. Composite scale maps are also referred to as small scale maps. The composite scale chosen must allow for easy, clear interpretation of map themes and ease of reproduction. The scale chosen for these small scale maps should be one that minimizes the number of maps or plotter sheets required to display an entire management unit.

Summary Map Scale Range

Acceptable summary map scales generally allow for portrayal of the target area on an 11 x 17” or 8.5 x 11” sheet of paper and allow for the appropriate resolution of information and ease of reproduction. These very small scale maps are designed and created for public distribution.

The map product requirements, described in the technical specifications, identify a map scale range as either operational, composite, or summary. Planning teams must determine one scale from each of the operational and composite scale ranges and then apply the chosen map scale to each map required at that map scale. For example, if 1:100,000 is the chosen map scale from the composite scale range, then all composite maps must be produced at a scale of 1:100,000. Maps required at a summary scale can be produced at any of the acceptable summary scales.

7.1.3 Map Surround Components

All maps will have a similar map surround. Maps produced for forest management planning purposes, but which are not displayed at forest management planning information centres, are still considered available for public viewing and external distribution and therefore must conform to the map surround standards described in this section. Where particular features of these map surround standards do not apply

to a map, it will be noted in the technical specifications. Map surround components are as follows:

- logo - Ontario Government logo or forest company logo (or combination) as appropriate;
- title block - includes the forest management unit name, the term of the forest management plan, and the map name. The naming standard for the map is indicated in the detailed map descriptions;
- index map - indicates the extent of the area shown on the map in relation to a larger area. Composite maps will show their extent in relation to the rest of Ontario. Operational scale maps (1:10,000-1:50,000) will show their extent in relation to the forest management unit;
- legend - provides a list of map symbols used for theme and base features;
- disclaimer - required for safeguarding against liability on the part of the MNR or the licensee. A disclaimer is of particular importance with the take-home summary maps;
- scale bar/statement – provides the relationship between map distance and true (ground) distance;
- map publication date - indicates the version or current edition of the map;
- copyright - indicates who maintains ownership of the data/information or a contact name for more information on copyright applicable to the map data;
- datum – identifies the projection and datum of map information;
- notes – includes general information not provided elsewhere, such as sources for data used to create the map and contact names;
- north arrow - grid north direction indicator. This information is not required if map is oriented with north to the top of page; and
- border - map frame.

7.1.4 Map Symbology

Standard symbols are to be used for portraying values on FMP maps. The standards for symbols used on values maps are described in the *FIM Base and Values Technical Specifications*. The MNR and licensees must use the values symbology as described in the *FIM Base and Values Technical Specifications* for all values maps, or maps which portray values information, which are used for the purpose of forest management planning.

The intention with standard symbology is to provide clear, consistent and unambiguous portrayal of values on all maps of the forest management plan. In circumstances where the standard values symbology is in conflict with other map symbology, adjustments should be made to reduce the conflict. In these

circumstances, planning teams are directed, to the greatest extent possible, to adhere to the standard and ensure that maps clearly and unambiguously convey the intended message.

The FIM does not prescribe standards for the symbology on other maps used for forest management planning purposes. Consequently, planning teams must determine the map symbols which will be applied on all other maps used for these purposes. Map symbology will be selected based on the clear portrayal of map features with consideration for reproducibility and display on computer monitors.

7.2 Roles and Responsibilities for FMP Maps

The responsibility to prepare maps to support forest management planning is shared by the MNR and licensees. The licensee is generally responsible for all maps except the values maps. The planning team may designate specific members of the team to prepare specific maps. As we evolve from a printed format for maps to a digital format, MNR and licensee retain the responsibility to prepare and provide maps and information to support public consultation. Moving to geospatial data layers and reducing mapping requirements must be done within a framework of providing suitable and appropriate information to allow the public and other stakeholders to completely and easily engage in the resource management planning process.

Part A, Section 1.1.8.9 of the FMPM indicates that values information will be continually updated as information is assembled during the production and implementation of the forest management plan. At each specific public consultation stage of the planning process, where significant changes to the values information data has occurred, updated values maps will be available. The values maps will be maintained at the appropriate MNR office.

Summary maps will be made available for public distribution at each information centre and plan review and inspection opportunity. Copies of summary maps may also be obtained without charge from the licensee or MNR.

7.2.1 Sensitive and Confidential Map Information

In most cases, the maps and related information prescribed by the requirements in Part B, Section 7.1 are part of the open public consultation process for forest management planning on Crown lands. However, some maps and related information may contain sensitive or confidential information that, if made available, could threaten the existence, integrity, or health of natural resources or uses (values), or may expose confidential or personal information. The MNR may make decisions regarding the map portrayal of sensitive or confidential information in accordance with Part B, Section 3.1.4 and 3.1.5.

7.3 Timelines and Conditions for FMP Maps

The timelines for provision of strategic and operational planning maps are directly related to the maps and information which must be available for each stage in the public consultation process described in Part A, Section 3.3 of the FMPM. The annual operations maps are required with submission of the annual work schedule. Upon approval, the Prescribed Burn Operations map and Aerial Spray project maps are available with the annual work schedule. The insect pest management maps are required for the planning of the insect pest management program and related public consultation opportunities. The planning team will determine the timelines for the provision of other maps used for forest management planning purposes.

Table 2 identifies the timelines for strategic and operational planning maps relative to each stage of the forest management planning process. The timeline in the table represents the earliest or initial point at which the map must be produced. Subsequent to initial production, all maps and updated versions of the maps are to be available at each remaining stage.

Licensees and the MNR must prepare and provide the maps described by the requirements and standards in Part B, Section 7.1, in accordance with the *FIM Forest Management Planning Technical Specifications*, the *FIM Base and Values Technical Specifications* and the *FIM Annual Work Schedule Technical Specifications.*

Table 2. Timelines for Strategic and Operational Planning Maps

Phase I : Stage One Invitation to Participate	Public Notice Map Landscape Pattern Map(s) Values Maps
Phase I : Stage Two Review of Proposed Long-Term Management Direction	Aboriginal Values Maps Preferred and Optional Harvest Areas Map FMP Summary Map *Plus maps listed in Stage One*
Phase I : Stage Three Information Centre: Review of Proposed Operations	Areas Selected For Operations Maps *Plus maps listed in Stages One and Two*
Phase I : Stage Four Information Centre: Review of Draft Forest Management Plan	Index Map (for MNR website display purposes) *Plus maps listed in Stages One, Two and Three*
Phase I : Stage Five Inspection of the MNR-Approved Forest Management Plan	*All maps listed in all previous stages*
Phase II : Stage One Information Centre: Review of Proposed Operations	Values Maps Aboriginal Values Maps Areas Selected For Operations Maps FMP Summary Map
Phase II : Stage Two Review of Draft Planned Operations	Index Map *Plus maps listed in Stage One*
Phase II : Stage Three Inspection of MNR-Approved Planned Operations	*All maps listed in all previous stages*

8.0 FOREST MANAGEMENT PLANNING DOCUMENTATION

To improve the efficiency in production, dissemination and storage of forest management plan documents, the FIM prescribes the submission of these documents in digital format. Formerly, most plans and associated maps and supplementary documentation were submitted in paper format. Packaging often required several binders, dividers, folders, and map tubes. Further, several copies of each plan were required. With the FIM now prescribing only digital documents, a submission via the FI Portal will meet the requirements for plan submission.

Additional benefits associated with a digital submission of forest management plans and supplementary documentation include reduced printing and storage costs, availability of a highly accessible forum for public review, and improved efficiency in management and utilization of forest planning information.

Public consultation requirements of the forest management planning process may be met by digital information. The MNR publishes forest management planning documentation on the MNR website. This makes for an efficient dissemination of planning documents and information, increases transparency, enhances public involvement, and facilitates external review and input to plans. The site provides a view of text and map components of forest management plans. It also provides a forest management plan renewal schedule, a list of map and data vendors, and detailed information on forest resource planning in Ontario. Also available is a forest management plan comment form which may be completed and forwarded to the appropriate MNR office.

8.1 Requirements and Standards for FMP Documentation

8.1.1 FMP Documentation

All FMP documents, including plans, amendments, annual work schedules, revisions, and changes to values documentation are required to be submitted in digital format.

The exchange format for the electronic FMP documents will be a common and widely used format that will aid in web publishing of these documents and permit an efficient exchange [e.g., Encapsulated Post Script (eps) format; Portable Document Format (pdf) format]. The detailed technical standards are given in the *FIM Forest Management Planning Technical Specifications* and the *FIM Annual Work Schedule Technical Specifications*. These standards/specifications include naming conventions for the series of files that will be necessary to complete a submission of an entire forest management plan. The file naming convention and structure standards will accommodate the information management requirement of linking amendments, revisions or changes to values documentation to the original plan submissions.

Draft and final forest management plans require signing and sealing of the title, certification and approval page as per Part B, Section 8.0 of the FMPM. The *FIM Forest Management Planning Technical Specifications* describes the process of meeting this requirement when submitting electronic documentation.

8.1.2 Other Public Consultation Documentation

Preliminary versions of FMP documentation required for public consultation opportunities (Part A, Section 3.3 of the FMPM) may or may not be exchanged in a digital format.

The MNR and licensees have a responsibility to exchange components of this public consultation documentation in advance of the actual FMPM timeline to permit paper copy production where required, or to permit incorporation into other documents.

Standards for the other public consultation documentation should follow the standards for FMP documentation and information. Alternate formats may be suitable for some of the documentation and the planning team may determine standards beyond those outlined in the *FIM Forest Management Planning Technical Specifications*.

8.2 Roles and Responsibilities for FMP Documentation

The specific roles and responsibilities associated with producing any FMP document are not altered or superseded by a requirement to provide it digitally. In most cases it is the responsibility of the licensee to submit the electronic FMP documents. It is the responsibility of the MNR to arrange for dissemination of, and access to, documents submitted via the FI Portal. The MNR carries the added responsibility in managing FI Portal documents and information to ensure that the proper, official copies are published on the MNR website for the appropriate timeframes.

Some components/products of the FMP are normally the responsibility of the MNR to prepare or have prepared, such as the values maps, Statement of Environmental Values Consideration Document, Local Citizens Committee Report, and Aboriginal consultation summaries.

MNR and licensees have a responsibility to exchange required components in advance of the actual FMPM timeline to permit paper copy production, where required, or to permit incorporation into other documents.

The MNR and licensees may provide other public consultation documentation (e.g., large scale values maps) available to the public. Note that this additional or extra public consultation documentation is not be submitted with the draft or final plan.

8.3 Timelines and Conditions for FMP Documentation

Generally, no timeline associated with specific FMP documents is altered by the requirement to submit digitally. The two exceptions to this are where MNR is to provide information components to the licensee for inclusion into the submission, and where the licensee must provide information components to MNR for display purposes at an information centre.

The MNR-produced components will be provided to the licensee in advance of the scheduled submission date for the information in order for the components to be incorporated into the submission product.

PART C INFORMATION FOR ANNUAL OPERATIONS

1.0 INTRODUCTION

Part C of the FIM identifies the information requirements for the planning, scheduling and monitoring of annual forest operations. The information requirements are related to the development of forest operations prescriptions and to the production of an annual work schedule (AWS) as outlined in Part D of the *Forest Management Planning Manual* (FMPM).

The FMPM Part D also describes the information requirements for two types of forest operations for which detailed project planning and approval is required prior to their implementation; prescribed burning and aerial application of pesticides (FMPM Part D, Sections 4.0 and 5.0, respectively). The FMPM requires these operational project plans to be available with the annual work schedule.

2.0 INFORMATION FOR ANNUAL WORK SCHEDULES

Licensees are required to provide the information as described in Part D of the FMPM for the preparation and submission of the AWS. The FIM, along with the *FIM Annual Work Schedule Technical Specifications* describe the current AWS information requirements.

2.1 Requirements and Standards for AWS Information

Part D of the FMPM requires development and submission of an AWS. The AWS is typically used by the licensee and MNR district staff for scheduling of operations and for public inspection. Information associated with the AWS does not have the same level of province-wide reporting as management unit annual reports, nor the same broad appeal for public review and comment as associated with forest management plan development.

FIM prescribed AWS information is designed to achieve efficiencies in meeting the requirements specified in the FMPM, to provide a level of standardization to the information, and to minimize restrictions and impediments to operations. Also, as with forest management plans and annual reports, standardization is mandatory to enable publication of AWS information on the MNR website.

All AWS components, including text, tables, maps, geospatial data layers, revisions, changes to values, and appended documentation are required to be submitted in digital format via the FI Portal. The AWS is provided as described in the *FIM Annual Work Schedule Technical Specifications.*

2.1.1 AWS Text and Tables

The exchange format for AWS text and tables will be a common and widely used format that will aid in web publishing of these documents and permit an efficient exchange [e.g., Encapsulated Post Script (eps); Portable Document Format (pdf)]. The detailed technical standards are given in the *FIM Annual Work Schedule Technical Specifications*. These standards/specifications include naming conventions for the series of files that will be necessary to complete a submission of an entire AWS. The file naming convention and structure standards will accommodate the information management requirement of connecting revisions and changes to values documentation to the original AWS submission.

An AWS and any required revisions must be certified by a registered professional forester (see FMPM, Part D, Section 3.2). The *FIM Annual Work Schedule Technical Specifications* describes the process of meeting this certification requirement when submitting electronic documentation.

2.1.2 AWS Maps

In addition to text and table components, an AWS submission also includes maps. The number and type of maps may include an Index Map of the forest management unit, AWS Operations Maps, and AWS Summary Map.

Prescribed map products will be provided as outlined in Part B, Section 7.0 of the FIM and in the technical specifications [e.g., Encapsulated Post Script (eps) format; Portable Document Format (pdf) format]. The mandatory information requirements for each map are provided in the *FIM Annual Work Schedule Technical Specifications.*

2.1.3 AWS Scheduling Layers

Geospatial data layers are required to meet AWS requirements. The layers contain minimal attribution. These layers may be subsets of information included with the FMP submission or a resubmission of the FMP layers. In both cases they will require attribution related to the AWS. An example of the attribution is given below in the layers or grouping of layers described in Sections i through xi.

i. Scheduled Harvest Operations

The areas scheduled for harvest are required as per the FMPM Part D, Section 3.3.1. This requirement provides detail on the harvest operations, such as the harvest category, silvicultural system, the harvest method, and the logging method for each area scheduled for harvest in the AWS. This includes fuelwood operations.

ii. Areas of Concern in Scheduled Operations

The operational prescriptions for areas of concern (AOCs) associated with the areas scheduled for harvest and maintenance activities, road activities and aggregate

extraction areas are required as per the FMPM Part D, Section 3.3. The layer identifies an AOC ID and the AOC type.

iii. Scheduled Road Corridors

The one kilometre-wide corridors for new primary and branch roads that will be constructed during the year are submitted as per the FMPM Part D, Section 3.3.3. Typical attribution includes road class and activity (e.g., maintenance, access controls, decommissioning).

iv. Scheduled Aggregate Extraction Areas

This layer identifies aggregate extraction areas as per FMPM Part D, Section 3.3.4. Typical attribution includes aggregate extraction area identifier.

v. Scheduled Existing Road Activities

Existing roads or road networks that will be maintained, monitored, access controlled, or decommissioned during the year are submitted as per the FMPM Part D, Section 3.3.3.

vi. Scheduled Operational Road Boundaries

Areas within which new operational roads may be constructed during the year are submitted as per the FMPM Part D, Section 3.3.3. Typical attribution includes an operational road boundaries identifier.

vii. Scheduled Renewal and Maintenance Operations

Areas scheduled for renewal and maintenance (i.e., tending and protection) will be identified per the FMPM Part D, Section 3.3.2. This information, consisting of a series of layers (similar to the annual report layers), includes the treatment method (e.g., site preparation, planting, seeding and tending).

vii. Scheduled Water Crossing Activities

This layer indicates the locations of water crossings scheduled to be constructed during the year and the following year as per the FMPM Part D, Section 3.3.3. Also shown are water crossings to be decommissioned or transferred to the MNR. Typical attribution includes the construction year, decommissioning type and a crossing indentifier.

ix. Scheduled Non-Water AOC Crossings

This layer indicates the 100 metre-wide crossing locations of operational roads through a non-water AOC that are scheduled to be constructed as per the FMPM Part D, Section 3.3.3. Details include a crossing indentifier.

x. Forestry Aggregate Pit Locations

Existing Forestry Aggregate pit locations that will be used for construction and maintenance of roads during the year are provided as per the FMPM Part D, Section 3.3.4. Typical attributes include a pit identifier, pit opening date, and a pit closure date or Category 9 application date.

xi. Scheduled Residual Areas

The scheduled residual patches layer is required if stand level residual requirements were identified in the forest management plan to be addressed during the implementation of operations. This requirement is specific to plans written under the 2004 FMPM. Attributes include a residual patch identifier.

2.1.4 Forest Operations Prescriptions Information

Forest operations prescriptions and silvicultural activities for a given area of operations must be maintained by the licensee as part of their information records. The information must be maintained for each area within an area of operations.

A forest operations prescription for an area is not normally required to be submitted as a complete, comprehensive package. However, at the request of the MNR the licensee is required to provide access to, or provision of, information relating to the forest operations prescription for the purposes of silviculture effectiveness monitoring, compliance and auditing.

Existing requirements for silvicultural effectiveness monitoring, as outlined in the *Silvicultural Effectiveness Monitoring Manual for Ontario* (SEMMO) or its successor, are largely met by meeting the information requirements of the FIM. The SEMMO provides guidance regarding the linkages between silvicultural objective setting, assessing the effectiveness of silvicultural treatments and forest operations prescriptions, and tracking and reporting of silvicultural effectiveness monitoring at the site, forest, management unit, and provincial levels.

2.1.5 Additional and Appended Documents

Prescribed burn plans and aerial pesticide project plans are required to be available with the AWS for the year in which they are scheduled. They are submitted separately from the AWS through the FI Portal but are available together on the MNR website. These documents require a certified approval page which is provided as per the *FIM Annual Work Schedule Technical Specifications.*

Prescribed burn plans are prepared as directed by the FMPM Part D, Section 4.0. Aerial pesticide project descriptions and plans are prepared as directed by the FMPM Part D, Section 5.0. Aerial insecticide projects can only occur after the requirements for an insect pest management program have been completed, as outlined in the FMPM Part D, Section 6.0.

The documents described in this section are similar to many of the documents associated with forest management plans or annual work schedules and are available for public inspection. Therefore, when preparing these documents, the MNR or licensees should refer to the *FIM Annual Work Schedule Technical Specifications* and the *FIM Forest Management Planning Technical Specifications* for general guidance and direction in preparing this type of documentation. The FIM Part B, Section 8.0,

which contains general direction on mapping in support of forest management planning, is another source of guidance in preparing these additional and appended documents. Preparing these documents in accordance with the FIM and the technical specifications will assist in maintaining a consistent approach and standard for all forest planning-related documents. It will also ensure the ability for integration of the various information and documentation.

2.1.6 AWS Revisions and Changes to Values

Revisions are to be available with the AWS as per the FMPM Part D, Section 3.5.1. FMPM Part D, Section 3.5.3 outlines the documentation requirements for submitting information required for all changes to values that do not require an AWS revision (e.g., updated information on the location and description of values).

Information associated with AWS revisions and changes to values is generally small in volume compared to that of a full AWS or FMP submission. In some cases the mapping format varies from the standard. This is because the small maps associated with AWS revisions and changes to values can be submitted in pdf format and do not require conversion from eps format. Direction on submitting this prescribed information appears in the *FIM Annual Work Schedule Technical Specifications* and/or the *FIM Base and Values Technical Specifications.*

2.1.7 Water Crossing Review

Normally, in the AWS for the year prior to construction, the licensee will identify, confirm or change the location and conditions of construction of proposed water crossings. The MNR will review the location and conditions of construction as per the *Protocol for the Review of Water Crossings Proposed through the Forest Management Planning Process* and provide the licensee with the results of the review. The MNR's results as per the required *Fisheries Act* review, of water crossings planned to be constructed in a future AWS, will be provided to the licensee by MNR for inclusion in table AWS-1 as outlined in the FMPM Part D, Section 3.2.5.1. Completion of this table is a joint MNR-licensee obligation. A process for the exchange of the required information to meet this table requirement is outlined in the *FIM Annual Work Schedule Technical Specifications.* Additional direction on this information item is available in the *Protocol for the Review of Water Crossings Proposed through the Forest Management Planning Process*.

2.1.8 AWS Documents

The format for the submission of electronic AWS documents will be the same exchange format used in meeting the requirements of an FMP submission as outlined in FIM Part B, Section 8.0. The detailed technical standards are given in the *FIM Annual Work Schedule Technical Specifications*. These technical specifications will describe the format and include naming conventions for the series of files that will be necessary to complete a submission of the AWS. The file naming convention and structure standards will accommodate the information management requirement of linking revisions and appended documents to the original AWS submission.

2.2 Roles and Responsibilities for AWS Information

It is the responsibility of the licensee to prepare and provide the electronic AWS documents. The specific and detailed responsibilities are outlined in the *FIM Annual Work Schedule Technical Specifications*.

2.3 Timelines and Conditions for AWS Information

As per the FMPM, an AWS is required to be submitted to the MNR District Manager at least three months prior to April 1. At least four and one-half months prior to April 1, by November 15, the MNR must provide the licensee with information to be included in the AWS.

Refer to the FMPM Part D and the *FIM Annual Work Schedule Technical Specifications* for specific direction on timelines related to AWS components.

PART D INFORMATION FOR REPORTING, MONITORING AND EVALUATION

1.0 INTRODUCTION

Part D of the FIM discusses the requirements for information related to monitoring, reporting and evaluation of forest management activities, including forest operations compliance information, roads and water crossings monitoring, exceptions monitoring, and silvicultural effectiveness information. Reporting, monitoring and evaluation information is required at various times during and after the ten-year period of a forest management plan.

Section 2.0 identifies the information required to support the production of management unit annual reports in accordance with Part E of the FMPM. The annual report includes results of monitoring activities (e.g., forest operations inspections, assessments of regeneration success).

Section 3.0 identifies requirements to provide information collected from forest inspections in accordance with the *Forest Compliance Handbook* and the MNR's compliance information system.

Section 4.0 discusses silvicultural effectiveness monitoring information.

2.0 ANNUAL REPORT INFORMATION

2.1 Requirements and Standards for Annual Report Information

The requirement to create and submit annual reports has its basis in Part E of the FMPM which requires that an annual report be prepared for each forest management unit. Annual reports are prepared for a one-year period starting April 1 and ending March 31 and contain information on forest management activities and natural events occurring during that period. The licensee is responsible for preparing and submitting the annual report. Additional requirements apply for year three, seven and ten annual reports in relation to each ten-year plan period.

Reporting on forest management activities, specifically the actual treatments applied and results of these treatments (as expressed in the reporting of assessments of regeneration success) completes the forest operations prescription and permits effectiveness monitoring and assessment to be undertaken.

The FMPM also specifies that each year the MNR must provide certain information to licensees for their use in fulfilling their annual report requirements. The MNR is

required to provide licensees with information on forest operations inspections, natural disturbances, and harvest volume utilization for the annual report period. The MNR provides content input for the annual report tables which record volume utilization and compliance inspection information. MNR provides natural disturbance information in the form of geospatial data layers. These layers identify the gross area affected by the type of natural disturbance and provide licensees with a preliminary area from which further investigation is required to identify the actual net depleted areas. Licensees are required to identify the actual net area depleted by natural causes and provide this information in their annual report submission.

Licensees must provide the annual report in the form of digital text, tables and geospatial data layers. Licensees are required to create and provide this information in accordance with the *FIM Annual Report Technical Specifications.*

2.1.1 Annual Report Text and Tables

The exchange format for annual report text and tables will be a common and widely used format that will aid in web publishing of these documents and permit an efficient exchange [e.g., Encapsulated Post Script (eps); Portable Document Format (pdf)]. The detailed technical standards are given in the *FIM Annual Report Technical Specifications*. These specifications include naming conventions for the series of files that will be necessary to complete a submission of an annual report.

An annual report must be certified by a registered professional forester (see FMPM, Part E, Section 2.1.1). The *FIM Annual Report Technical Specifications* describes the process of meeting this certification requirement when submitting electronic documentation.

2.1.2 Annual Report Layers

The annual report geospatial data layers identify the geographic location and extent (area) of forest management activities and natural changes that occurred during the previous fiscal year of operations. Each of these layers contains a set of associated tabular attributes which provide further description and definition of the spatial features. These layers may be used to update base feature information (e.g., roads). The information which is reported geospatially is described below in Section i through vii.

i. Areas of Natural Disturbance

This identifies the areas of net natural disturbance as per the FMPM, Part E, Section 2.4.2. Examples of natural disturbance attribution include forest unit, age class, estimated volume, and disturbance type.

ii. Areas of Harvest Disturbance

This identifies the areas of harvest operations as required by the FMPM, Part E, Section 2.4.1 Examples of harvest attribution include forest unit, stage of

management, silvicultural ground rule, AOC identifier, silvicultural system, harvest method and harvest category.

iii. Areas of Renewal and Maintenance
This identifies the areas of renewal, tending and protection activities as required by the FMPM, Part E, Section 2.4.3. Typical attribution includes treatment method.

iv. Road and Water Crossing Construction and Use
This identifies road construction and use management, water crossing construction, monitoring or decommissioning as required by the FMPM, Part E, Section 2.4.4. Typical attribution includes a road identifier, class, activity, crossing identifier, and crossing type.

v. Assessment of Regeneration Success
This identifies the assessments of regeneration success as per the FMPM, Part E, Section 2.4.6. Typical attribution includes disturbance group, year of disturbance, forest unit at the time of disturbance, silvicultural ground rule, target forest unit, free to grow indicator, forest unit, species composition, height, and stocking.

vi. SGR Changes
This identifies changes to SGR since reporting in planning inventory.

vii. Forestry Aggregate Pits
This identifies Forestry Aggregate pits.

The geospatial data layers are used for provincial-level reporting. Layers from individual management units are combined to provide a province-wide summary of management activities and natural disturbances.

All annual report information is exchanged in digital format. The standards for exchanging annual report information are outlined in the *FIM Annual Report Technical Specifications*. The document includes specifications for both the provision of annual report support information from MNR to licensees, and the submission of the management unit annual report by licensees to the MNR. The FI Portal is used as the exchange mechanism for digital annual report information.

2.2 Roles and Responsibilities for Annual Report Information

The FMPM specifies that each year the MNR must provide certain information to licensees for use in fulfilling their annual report requirements. The MNR is required to provide licensees with information on forest operations inspections, natural disturbances and harvest volume utilization.

Licensees are responsible for ensuring that the information provided by the MNR is checked for completeness. They must notify the MNR of any discrepancies between information provided by the MNR and similar data, records, and information which

are maintained by the licensee. Discrepancies in annual report information must be resolved prior to the submission of the annual report.

Licensees are responsible for the final preparation and submission of complete annual reports which incorporate the required information provided by MNR.

The MNR will have the opportunity to review the annual report for completeness and accuracy and to validate it against the *FIM Annual Report Technical Specifications*. The district manager will provide the results of the review to the plan author. Year three, seven and ten management unit annual reports will be reviewed by the MNR. The status of report submissions and notice of review results is provided via the FI Portal.

2.3 Timelines and Conditions for Annual Report Information

An annual report is prepared and submitted by the licensee for a one-year period (i.e., April 1 to March 31), and must be submitted by November 15 each year. MNR is required to provide information as per Part D, Section 2.1, to the licensee at least 2 months earlier; by September 15 each year. Natural disturbance information, specifically fire disturbance, insect and disease related disturbance, and abiotic disturbance related to wind, ice storm or other events, are provided by MNR on April 1 of each year.

As per Part E, Section 5.1 of the FMPM, the MNR has the opportunity to review the licensee submitted annual report for completeness and provide review results to the licensee within 30 days of receipt of the annual report. The licensee will address the comments resulting from the MNR review and, if necessary, a revised annual report will be resubmitted by February 15 or 60 days from receipt of MNR review comments.

As per Part E, Section 5.2 of the FMPM, the MNR will review the licensee submitted year three, seven and ten annual reports for completeness and must provide review results to the licensee within 30 days of receipt of the annual report. The licensee will address the comments resulting from MNR review and, if necessary, a revised annual report will be resubmitted by February 15 or 60 days from receipt of MNR review comments.

Licensees and the MNR must provide annual report information in accordance with the *FIM Annual Report Technical Specifications.*

3.0 FOREST OPERATIONS COMPLIANCE INFORMATION

Licensees have the responsibility for compliance planning, monitoring, inspection, and reporting. MNR is responsible for performing audits or spot checks of company

inspections, verifying all reported instances of non-compliance, and determining enforcement actions and applicable remedies. The *Forest Compliance Handbook* describes the various policies and procedures which govern forest compliance business and operational requirements for the forest operations compliance program and incorporates the former *Guideline for Forest Industry Compliance Planning* and all the requirements it imposed.

One of the primary goals of the forest operations compliance program is to provide a standard process and format for recording observations from individual forest operations inspections. Licensees must prepare a ten-year strategic compliance component in their forest management plan in accordance with Part B, Section 4.7.1 of the FMPM and the *Forest Compliance Handbook*. Each year, Licensees must prepare an annual component of the strategic compliance plan to be included with the annual work schedule as described in Part D, Section 3.2.7 of the FMPM.

Licensees are required to conduct forest operations inspections as per an approved strategic compliance plan. Compliance planning identifies methods and intensities of inspections, and the frequency and circumstances for which licensees must conduct forest operations inspections and submit reports of those inspections to the MNR.

The MNR also does compliance planning for the purposes of monitoring and auditing forest operations and dealing with the results of compliance inspections conducted by licensees. All reports of non-compliance which are provided by a licensee must be verified by the MNR. The MNR must identify actions required for every report of non-compliance.

Forest operations inspection reports are available for public inspection. The MNR may make decisions regarding the availability of certain information contained in a forest operations inspection report based on the confidentiality or sensitivity of that information with respect to the FIPPA or to ensure the protection of values.

3.1 Requirements and Standards for Forest Operations Compliance Information

Licensees must conduct monitoring, which includes inspecting and reporting on all forest operations carried out on Crown forests and must provide a report to the MNR in digital form in accordance with the *Forest Compliance Handbook*. The *Forest Compliance Handbook* also describes the process for the conduct of forest operations inspections and the requirement to provide a report in each case. The digital information required in a forest operations inspection report must be provided to the MNR district office responsible for approving and monitoring the implementation of forest management operations conducted by the licensee.

The MNR must similarly provide licensees with forest operations inspection information. The MNR must further ensure that all forest operations compliance

information produced by licensees and the MNR is maintained in the MNR's compliance information system.

The requirement to provide digital forest operations inspection information complements the direction in the following documents:

- *Forest Compliance Handbook* – all policies and procedures related to the MNR's compliance information system;
- approved compliance plans and their implementation through forest management plans and annual work schedules; and
- conditions in Sustainable Forest Licenses that pertain to the collection and provision of forest operations compliance inspection information.

Licensees must provide operations inspections information to the MNR in accordance with the *Forest Compliance Handbook*. MNR must provide forest operations inspection information to licensees in accordance with the *Forest Compliance Handbook*. Additionally, standards for operations inspections information are dictated by MNR's compliance information system.

3.2 Roles and Responsibilities for Forest Operations Compliance Information

Licensees are responsible for completing an inspection of forest operations and providing a digital report. For each forest operations inspection, licensees must confirm that the mandatory data requirements and standards have been met in accordance with the FIM, Part D, Sections 3.1.

The MNR must ensure that the digital information provided by licensees is checked for completeness and where required, verified. The check for completeness and verification may consist of, but is not limited to, the following:

- the comments and rationale which are provided as part of the forest operations inspection report information are sufficient to evaluate each instance of non-compliance;
- the forest operations inspection information has been received in accordance with the compliance component of the approved company forest management plan and in accordance with the timelines in the *Forest Compliance Handbook*;
- the reference and location to source data, information and records which have been used in the preparation of the forest operations inspection report information, is complete and traceable; and

- verification, in some cases, of the ground observations and the information related to those observations.

The MNR is responsible for completing forest operations inspections reports for inspections they conduct and for providing the digital information to the licensee.

3.3 Timelines and Conditions for Forest Operations Compliance Information

The timeline for the provision of forest operations inspection report information described in this section apply to both licensees and the MNR. Forest operations inspection reports must be provided at different times depending on the following direction:

- the frequency and timelines (inspection schedules) described in the company and/or district compliance planning and strategies identified in the approved forest management plan, and in the approved AWS related to submission of forest operations inspection reports; and
- the timelines described in the *Forest Compliance Handbook* – specific to Directive FOR 07 03 04 and FOR 07 03 05 or their successors.

Forest operations inspections information is specified in the *Forest Compliance Handbook* and the MNR's compliance information system.

4.0 SILVICULTURAL EFFECTIVENESS INFORMATION

4.1 Requirements and Standards for Silvicultural Effectiveness Information

The requirement to develop a monitoring program is defined in the FMPM, Part B, Section 4.7.3, and Part A, Section 1.3.8. The program is to be described in the forest management plan. The FIM provides a framework for the information to support a monitoring program as many of the information requirements to support a monitoring plan are met by existing FIM requirements.

The results of assessments of regeneration success are required to be recorded in the annual report. The information collected during implementation of the program will support the review of renewal and maintenance activities requirement of Part E, Section 4.3 of the FMPM. The information supports an adaptive management approach to forest management.

The FMPM prescribes use of the *Silvicultural Effectiveness Monitoring Manual for Ontario* or its successor to define the information to be collected and survey methodologies to be used during monitoring.

4.2 Roles and Responsibilities for Silvicultural Effectiveness Information

The licensee is responsible for developing a monitoring program for the management unit, recording it in the forest management plan as per the FMPM, and implementing the program. The licensee is also responsible for maintaining all records of information gathered during implementation of the monitoring program, and for using this information in annual reporting and in future forest management plan development.

The MNR is responsible for reviewing the monitoring program as part of the approval process for the forest management plan.

4.3 Timelines and Conditions for Silvicultural Effectiveness Information

The timeline associated with provision of silvicultural effectiveness monitoring information is linked to the annual reporting timelines and to forest management plan development timelines.

Technical guidance and other direction in meeting silvicultural effectiveness monitoring requirements are available in the FMPM, the *FIM Annual Report*

Technical Specifications, and the *Silvicultural Effectiveness Monitoring Manual for Ontario* or its successor.

GLOSSARY OF TERMS

Definition Source

Definitions taken fully, modified or adapted from an already existing source, note the source following the definition – [source]. Sources are abbreviated as follows:

AGI	On-line dictionary of GIS terms by the Association for Geographic Information and the University of Edinburgh Department of Geography (http://www.geo.ed.ac.uk/agidict/welcome.html).
ESRI	On-line GIS Dictionary at Environmental Systems Research Institute (ESRI) Support Center website (http://support.esri.com).
FITC	Forestry Canada, 1988. Forest Inventory Terms in Canada. Canadian Forest Inventory Committee, Forestry Canada.
FMPM	OMNR. August 2009. Forest Management Planning Manual for Ontario's Crown Forests. Toronto: Queen's Printer for Ontario.
ISAC	Province of Ontario, Information Security Advisory Council.
ISO	International Standards Organization.
OpenGIS	On-line glossary at Open Geospatial Consortium, Inc. website (http://www.opengeospatial.org/resource/glossary).
U GIS	ESRI. 1992. Understanding GIS: The Arc/Info Method.

Definition/Term

Attribute
Nonspatial information about a geographic feature in a GIS, usually stored in a table and linked to the feature by a unique identifier. For example, attributes of a river might include its name, length, and sediment load at a gauging station. [Source: ESRI]

Base Features
Base features represent the geographic locations and descriptions of topographic, cultural, and cadastral entities of Ontario's landbase. They can be natural, physical features, such as lakes, rivers, and wetlands, or they can be features of human influence such as hydro lines, gas pipelines, provincial highways, roads, and railways. They include areas which identify subdivisions of land, water, vegetation, environmental features, and other physical and administrative boundaries. Examples

of this latter type of base features include forest management units and ownership parcels, which identify areas designated for legal, political, tax base, population base, land-use zoning, or management decision purposes.

Buffer
A polygon enclosing a point, line, or polygon at a specified distance. [Source: ESRI]

Data
Any collection of related facts arranged in a particular format; often, the basic elements of information that are produced, stored, or processed by a computer. [Source: ESRI]

Data Attribute
See *Attribute*

Datum
The reference specifications of a measurement system, usually a system of coordinate positions on a surface (a horizontal datum) or heights above or below a surface (a vertical datum). [Source: ESRI]

Digital Data / Digital Information
Data / information represented in a computer compatible format. [Source: modified AGI]

Electronic Information
See *Digital Data / Digital Information*

Forest Information Portal
The Forest Information Portal is an extranet (an internet site with user name and password security restrictions) available to MNR and the licensees for the sharing, distribution and exchange of forest information and data.

Forest Management Planning Manual (FMPM)
This refers to the August 2009 revision (and subsequent addendums) of a manual prepared in accordance with Section (68) of the *Crown Forest Sustainability Act*. This FMPM provides direction for all aspects of forest management planning for Crown lands in Ontario.

Forest Management Unit
An area of Crown forest designated under section 7 of the *Crown Forest Sustainability Act, 1994.*

Forest Resources Inventory
The Forest Resources Inventory (FRI) is a spatial product that provides description of all areas within a forest management unit and provides a snapshot in time of the

characteristics of water and land base geography. [Source: *FIM Forest Resources Inventory Technical Specifications*]

Forest Resource Licence Holder
The holder of a licence issued under the *Crown Forest Sustainability Act* (Part III).

Geographic Information / Geographic Data
Information describing the location and attributes of things, including their shapes and representation. Geographic data is the composite of spatial data and attribute data. [Source: ESRI]

Geographic Information System (GIS)
(1) An integrated collection of computer software and data used to view and manage information about geographic places, analyze spatial relationships, and model spatial processes. A GIS provides a framework for gathering and organizing spatial data and related information so that it can be displayed and analyzed. [Source: ESRI]

(2) A computer system for capturing, storing, checking, integrating, manipulating, analyzing and displaying data related to positions on the Earth's surface. [Source: modified AGI]

Geographically Referenced
Refers to the condition of data for which "positional" information is available, enabling the geographical position of the data to be established and communicated. The normal functioning of a geographic information system requires the existence of geographically referenced data in a spatial data base and a means of manipulating these data. [Source: FITC]

Geo-referenced
See *Geographically Referenced*

Geospatial Data
See *Geographic Information / Geographic Data*

Information
Information comes from data that have been processed (e.g., synthesized, organized, selected, sorted, etc.) to provide products which can be used in decision making. Information includes numerical data, text, drawings, designs, maps, photographs, video and audio recordings, and ideas.

Information Management
The application of a set of management disciplines for the purposes of managing all of the data and information and related technological, physical and human resources relevant to the business of the organization. [Source: ISAC]

Information System
A system (manual or automated or computerized) which enables the processing and dissemination of information. [Source: modified ISO]

Intellectual Property
Data, information and their related intellectual property rights, including: text, brochures, books, tables, software, maps, photographs, research findings, and new plant strains.

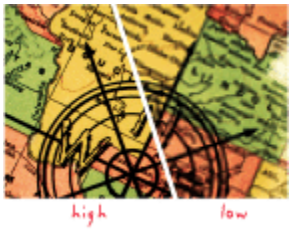
Intellectual Property Rights
Intellectual property rights include copyright, patent, trademark, and other forms of intellectual property protection.

Known Value
Values are features, benefits, or conditions of the forest that are linked to a geographic area, that are of interest from various points of view, and that must be considered in forest management planning. A value is considered to be a known value when there is sufficient information to describe its geographic location and its basic features.

Layer
A reference to a spatial data source, such as a shapefile, coverage, geodatabase feature class, or raster image. [Source: modified ESRI]

Map Projection
A mathematical model that transforms the locations of feature on the Earth's surface to locations on a two-dimensional surface. Because the Earth is three-dimensional, some method must be used to depict a map in two dimensions. Some projections preserve shape; others preserve accuracy of area, distance, or direction. Map projections project the Earth's surface onto a flat plane. However, any such representation distorts some parameter of the Earth's surface be it distance, area, shape, or direction. [Source: U GIS]

Resolution
(1) The detail with which a map depicts the location and shape of geographic features. The larger the map scale, the higher the possible resolution. As scale decreases, resolution diminishes and feature boundaries must be smoothed, simplified, or not shown at all; for example, small areas may have to be represented as points.
(2) The dimensions represented by each cell or pixel in a raster.
(3) The smallest spacing between two display elements, expressed as dots per inch, pixels per line, or lines per millimeter. [Source: ESRI]



Map Scale
The relationship between distance on a map and the corresponding distance on the earth's surface. Map scale is often recorded as a representative fraction such as

1:1,000,000 (1 unit on the map represents a million units on the earth's surface) or 1:24,000 (1 unit on the map represents 24,000 units on the earth's surface. The terms 'large' and 'small' refer to the relative magnitude of the representative fraction. Since 1/1,000,000 is a smaller fraction than 1/24,000, the former is said to be a smaller scale. Small scales are often used to map large areas because each map unit covers a larger earth distance. Large-scale maps are employed for detailed maps of smaller areas. [Source: OpenGIS]

Meta Data

Information that describes the content, quality, condition, origin, and other characteristics of data or other pieces of information. Metadata for spatial data may describe and document its subject matter; how, when, where, and by whom the data was collected; availability and distribution information; its projection, scale, resolution, and accuracy; and its reliability with regard to some standard. Metadata consists of properties and documentation. Properties are derived from the data source (for example, the coordinate system and projection of the data), while documentation is entered by a person (for example, keywords used to describe the data). [Source: ESRI]

Personal Information

Personal information means recorded information about an identifiable individual, including:
(a) information relating to the race, national or ethnic origin, colour, religion, age, sex, sexual orientation or marital or family status of the individual,
(b) information relating to the education or the medical, psychiatric, psychological, criminal or employment history of the individual or information relating to financial transactions in which the individual has been involved,
(c) any identifying number, symbol or other particular assigned to the individual,
(d) the address, telephone number, fingerprints or blood type of the individual,
(e) the personal opinions or views of the individual except where they relate to another individual,
(f) correspondence sent to an institution by the individual that is implicitly or explicitly of a private or confidential nature, and replies to that correspondence that would reveal the contents of the original correspondence,
(g) the views or opinions of another individual about the individual, and
(h) the individual's name where it appears with other personal information relating to the individual or where the disclosure of the name would reveal other personal information about the individual; ("renseignements personnels") [Source: FIPPA]

Plan Holder

On management units where no licence has been issued, the Crown or another designated party (e.g., Algonquin Forestry Authority) is responsible for preparing and implementing forest management plans and is referred to as the plan holder.

Planning Inventory

The planning inventory is a specific forest resources inventory product required for the preparation, implementation and monitoring of a forest management plan. It is prepared for each specific plan and stays with the perspective forest management plan for the life of that plan. The planning inventory is a generic term which encompasses the following information components: planning composite and the forecast layer.

Polygon
A closed shape defined by a connected sequence of x and y coordinate pairs, where the first and last coordinate pair are the same and all other pairs are unique. [Source: ESRI]; A feature used to represent areas. [Source: AGI]

Polygon Forest
The polygon forest is an information layer that provides a description of the forest, water and other landbase features within a forest management unit. The management unit is delineated and classified based on geographic features and characteristics into homogeneous water and land types called polygons. Polygons have both a spatial component (geographic location) and a tabular component (description of characteristics).

Precautionary Principle
In the absence of conclusive information to confirm the presence or features of a value, this principle requires the consideration of the value in the planning of road locations and area of concern prescriptions in order to ensure that the value is protected, based on the high probability of its presence and the potential that it may be affected by forest management operations in a significant and negative way.

Quality Assurance
All the planned and systematic activities implemented within the quality system, and demonstrated as needed, to provide adequate confidence that an entity will fulfill requirements of quality. [Source: ISO]

Quality Control
Comprises the operational techniques and activities that are used to fulfill requirements of quality and quality assurance. [Source: modified ISO]

Records
A record is any information however recorded, whether in printed form, on film, by electronic means or otherwise and includes:
(a) correspondence, memorandum, a book, a plan, a map, a drawing, a diagram, a pictorial or a graphic work, a photograph, a film, a microfilm, a sound recording, a videotape, a machine-readable record, any other documentary material regardless of physical form or characteristics, and any copy thereof; and
(b) subject to the regulations, any record that is capable of being produced from a machine readable record under the control of an institution by means of computer hardware and software or any other information storage equipment and technical expertise normally used by the institution. [Source: FIPPA]

Scale
See *Map Scale*

Standard
Measurable parameters established for use as a rule or basis for comparison in measuring or judging quantity, quality, value, capacity, or other characteristics.

Tabular Data/Information
Descriptive information that is stored in rows and columns in a database and can be linked to spatial data. [Source: ESRI]
See also Attribute

Theme
See *Layer*

Value
Values are features, benefits, or conditions of the forest that are linked to a geographic area, that are of interest from various points of view, and that must be considered in forest management planning.
Also see *Known Value*