

**Forest Industry Guide to the
Preparation and Submission of
Forest Tenure and Permit Documents
via the
Electronic Submission Framework (ESF)**

February 2, 2009

V1.4



Ministry of Forests and Range

Executive Summary

This guide provides forest industry clients with a clear and concise description of the process of electronically creating and submitting tenure and spatial data to the Ministry of Forests and Range's Forest Tenure Administration (FTA) application. It also explains the technical requirements, standards and processes of the Electronic Submission Framework (ESF) in a manner that is easy to understand and follow from the client perspective.

References to key documents detailing the technical aspects of electronic submissions are made but there is no intent to duplicate existing source materials. This guide also provides tips and advice that will make the process of creating, managing and submitting forest tenure applications straightforward.

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The Ministry of Forests and Range

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DOCUMENT CHANGE CONTROL

Location	Description	Updated By
Version 1.2	<p>References to Roads removed Roads Component replaced by: Industry & BCTS Guide to the Submission of Road Tenure via the Electronic Submission Framework (ESF) http://www.for.gov.bc.ca/his/FT/Industry_and_BCTS_Roads_Guide.pdf</p>	<p>Ministry of Forests February, 2007</p>
Version 1.3	<p>Page 2 – Updated web links to e-FM and ESF Technical Specifications Page 3 – Updated web links to ministry recognized ESF service providers Page 4 – Updated web links for BCeID registration Page 9 – Updated web links to ECAS Page 11 – Added Harvest application version support comment Page 12 – Updated web links to Schema 8 & 9 Technical specifications Section 3.4 Cutting Permit Applications Updated XML/GML data requirements to Harvest Application schema v8b and v9 Section 3.5 Harvest Applications Updated XML/GML data requirements to Harvest Application schema v8b and v9 Section 3.7 Timber Licence Eliminations Updated XML/GML data requirements to Harvest Application schema v8b and v9</p>	<p>Forsite June 1, 2006</p>
Version 1.4	<p>Pg 4 updated service provider BCeID use, removed tenure map service reference Section 3.4 Cutting Permit Applications Removed referenced to Harvest Application schema v8b, and added XML tags Updated examples with current procedures Section 3.5 Harvest Applications Removed referenced to Harvest Application schema v8b, and added XML tags Section 3.7 Timber Licence Eliminations Removed referenced to Harvest Application schema v8b, and added XML tags Various – replaced Licensee with MFR client Various – Updated names/acronyms for various Ministries Various – grammatical fixes as required</p>	<p>Forsite February 2, 2009</p>

1 Introduction

1.1 Intent of the Guide

This guide intends to be a non-technical document that describes the linkages between the forest industry business processes governed by legislation, policy and regulation and the supporting technology and processes for electronic submissions to the Ministry of Forests and Range (MFR).

This guide familiarizes the user with the technology required to make electronic submissions, explains the data requirements for forest tenure and permit submissions, and details the process for making common types of submissions.

This guide does not intend to provide comprehensive documentation that would enable the user to create an electronic submission document, but rather the intent is to provide background information on the process, issues, and electronic submission options.

Detailed information sources are included where appropriate to help guide the user in finding details on technical specifications and related information.

1.2 Intended Audience

This guide targets forest MFR Client managers, foresters and technical staff (forest development and support staff), as well as service providers who are responsible for producing and managing submissions and requests for forest tenure and/or permits on behalf of a MFR Client. For example, this guide is useful to operational foresters responsible for development of site plans and development of Cutting Permits and forest health foresters responsible for applying for salvage permits. Mapping and information management support staff will find this guide useful for understanding the mapping and information management related issues.

This guide intends to provide direction to MFR Clients who use varying levels of information technology to support their forest operations. It provides insight into approaches to use in supporting electronic submissions for all types and complexities of forest data management systems, even where very limited data management technology is currently being used.

1.3 How the guide is organized

This guide is organized into 3 main sections:

- [Section 1](#) provides an introduction,
- [Section 2](#) provides a general overview of electronic submissions,
- [Section 3](#) provides information specific to making forest tenure and permit submissions. Submission examples made in various common situations are provided,
- [Section 4](#) provides details on performing land and resource tenure checks on a submission file prior to submission to MFR,
- [Section 5](#) provides detail on how to format various components of the submission document, and

- [Section 6](#) provides details on the next steps that MFR clients may need to consider to move forward.

[Appendixes](#) provide more technical details on formatting data and tools available to help prepare submissions.

2 Introduction to Electronic Submissions

Electronic submissions to the Ministry of Forests and Range (MFR) are part of a province-wide initiative of the British Columbia government to improve service delivery through the use of electronic business mediums. The MFR has identified four key areas within their Electronic Forest Management (e-FM) initiative: electronic services for submissions of regulated information to the ministry (e-Submissions), access to ministry information holdings (e-Access), electronic record management (e-Records), and delivering training and learning opportunities (e-Learning). The aim of these initiatives is to streamline business with government in order to gain efficiencies for industry as well as government.

The Electronic Submission Framework (ESF) is a component of e-Submissions accessed by MFR clients in order to make silviculture (RESULTS), forest tenure (FTA) and other types of submissions. This is the standard for submitting information to the MFR, with the goal that each piece of information will only need to be submitted once, even though it may be used for a number of purposes.

The cornerstone of the electronic submission initiative is that all data will be submitted in a non-proprietary format based on current information technology standards. Spatial data (i.e. map information) is in Geographic Markup Language (GML), and all attribute data will be in Extensible Markup Language (XML). Refer to [Section 5](#) for more details. All information submitted to the government must be properly formatted according to the data specifications provided by the MFR.

The MFR has made the use of ESF a mandatory policy, directing all MFR Clients to submit tenure/permit information and silviculture information electronically.

General information on e-FM can be found at:
<http://www.for.gov.bc.ca/his/efm/index.htm>

Information on ESF can be found at:
<http://www.for.gov.bc.ca/his/esf/>

Detailed data specifications (schema) and an ESF user guide are available on the MOF website:
<http://www.for.gov.bc.ca/his/esf/>

2.1 Approaches to Making e-Submissions

MFR Clients, BC Timber Sales, small scale salvage operators, etc (collectively referred to as MFR Clients) have options available for preparing and managing electronic submissions for forest tenure & permit documents, appraisal documents and silviculture reporting. Two general options for submitting electronically are: 1) in-house systems and resources that directly support the creation of the electronic documents required for the applications, or 2) the use of qualified service providers capable of preparing and submitting on behalf of a MFR Client.

References to information management systems that are commonly used by MFR Clients are provided in [Appendix A](#). These systems should enable the MFR Client to prepare properly formatted electronic submission documents. Other technology tools that can create properly formatted submission documents from less sophisticated systems are also available. These are also addressed in [Appendix A](#).

Utilizing qualified service providers is another option for creating and submitting submissions. A listing of qualified service providers can be found at <http://www.for.gov.bc.ca/his/results/serviceproviders.htm>. This approach requires minimal infrastructure, knowledge and experience on the part of the MFR Client to perform the submissions.

2.2 Security for Electronic Submissions

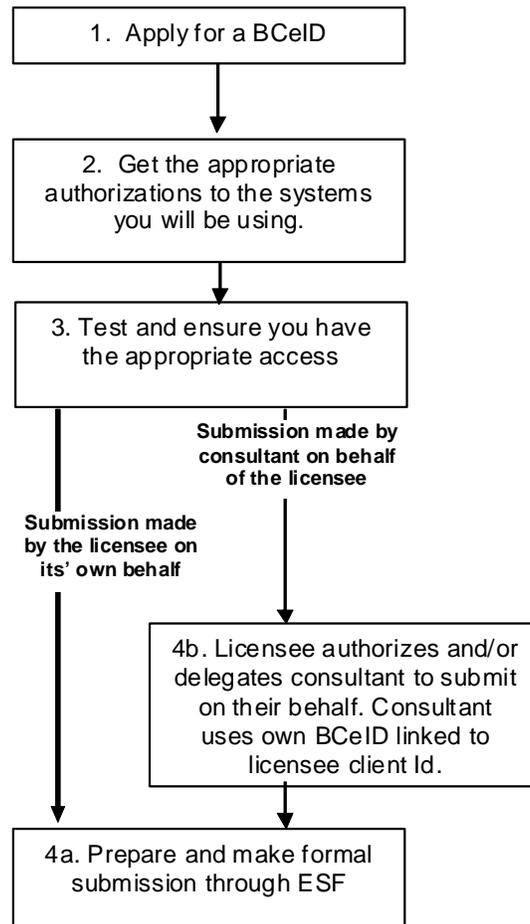


Figure 1 – Steps to obtain secure access to the necessary government computer systems

Access to all websites and applications for making electronic submissions to the MFR requires secure access. The Ministry of Forests and Range and the Integrated Land Management Bureau (ILMB) provide a common approach to creation, management and access to government applications for the private sector through BCeIDs. A MFR Client can apply for a BCeID and have one corporate login for all participating government sites. The BCeID account is administered by the individual MFR Client, and access and authorization for account use is the responsibility of the MFR Client.

Further information on BCeIDs and the use in the BC Government can be found on the following website: <https://www.bceid.ca/>

To request a BCeID for your company for access to MOF or ILMB resources, refer to <https://www.bceid.ca/register/>

To request access to specific applications such as RESULTS or FTA with the Ministry of Forests, refer to <http://www.for.gov.bc.ca/his/efm/access.htm>

Once a MFR Client has a valid BCeID, they must request the appropriate access to the appropriate applications for which the MFR Client will be using. For those making submissions through ESF, access is granted for each individual that will be making submissions. Once a MFR Client has a BCeID, all connections to BC government submission sites should use the MFR Client's BCeID.

Access for Consultants

For consulting companies that are preparing and managing submission on behalf of a MFR Client, access to submit to the BC government is with a BCeID as well; however, in this instance the consultant should establish its own BCeID and request that each access to each system, for each MFR Client, is tied to the consultant's BCeID. With this approach a consultant may have access to multiply government systems for multiple MFR Clients, but only has one BCeID. Note that access to a government system for a consultant is authorized/delegated by the MFR Client. To get the necessary access using BCeID as a consultant acting on behalf of a MFR Client requires the MFR Client to provide authorization to the consulting firm. This is necessary as all authorizations to perform tasks for a given MFR Client are only granted to that specific MFR Client and management of access is the responsibility of each MFR Client.

Systems Access Requirements for Forest Tenures

There are two systems that a client will require access for performing all tasks for e-submission of tenure and permit applications. Access to some government systems is automatically granted when related system access is requested. Outlined below are MFR systems and the types of access required for making submissions

System	Descriptions	Gaining the required access
Electronic Submission Framework Website	A web site for uploading and reviewing the status of electronic submissions. Site also allows for testing submissions for land or resource tenure conflicts prior to submitting using the View Map function in ESF.	To gain access, visit www.for.gov.bc.ca/his/ft/access.htm and complete the online application form. Applicants have to option to select FTA_Submitter role (required for submission), and/or FTA_Reporting role (required for generating FTA reports, but not required for submitting tenure applications to FTA)
MapView for the Web	Provides an on-line mapping utility to see the information submitted to the ministry with base information including TRIM, Forest cover, and other base information.	Requires BCeID account with permissions for access to the MapView website. This access is automatically provided with requests for access to the FTA, or RESULTS, or Electronic Submission Framework Website.

Logging into ESF

The ESF application can be accessed with this link: <http://apps.for.gov.bc.ca/esf>, or by following the ESF Application Link on the left-hand-side of the ESF communication webpage (www.for.gov.bc.ca/his/esf). Users must log in to the ESF application prior to submitting any tenure or permit documents. The figure below shows the BCeID logon screen. User must supply their username and password. Note that the password is case sensitive. IDIR users must first select the Government User button, and then they can enter their IDIR account user ID and password.

BRITISH COLUMBIA

Help ?

Logon

BCeID

apps18.for.gov.bc.ca requires you to logon.

BCeID User Government User

BCeID: Forgot My BCeID

Password: Forgot My Password

Next

Access to or unauthorized use of data on this computer system by any person other than the authorized employee(s) or owner(s) of an account is strictly prohibited and may result in legal action against such person.

» Contact Us

» How to get a BCeID

Figure 2: BCeID logon screen.

2.3 Technology Required to Access and Use ESF

The process of making electronic submissions to the MFR requires very little technology and no special software. Required technology necessary to make a submission likely already exists on your computer. All that is required to submit a properly formatted submission document is a web browser (such as Microsoft's Internet Explorer) and a connection to the internet. The process of preparation of the submission document, however, involves specific technology requirements.

It is important to note the requirements for **preparation** of the submission document are different than those technology requirements to submit the prepared document through the web and check on the status of the submission. For a discussion on the tools and approaches to creating properly formatted documents see [Section 5](#) and [Appendix A](#)

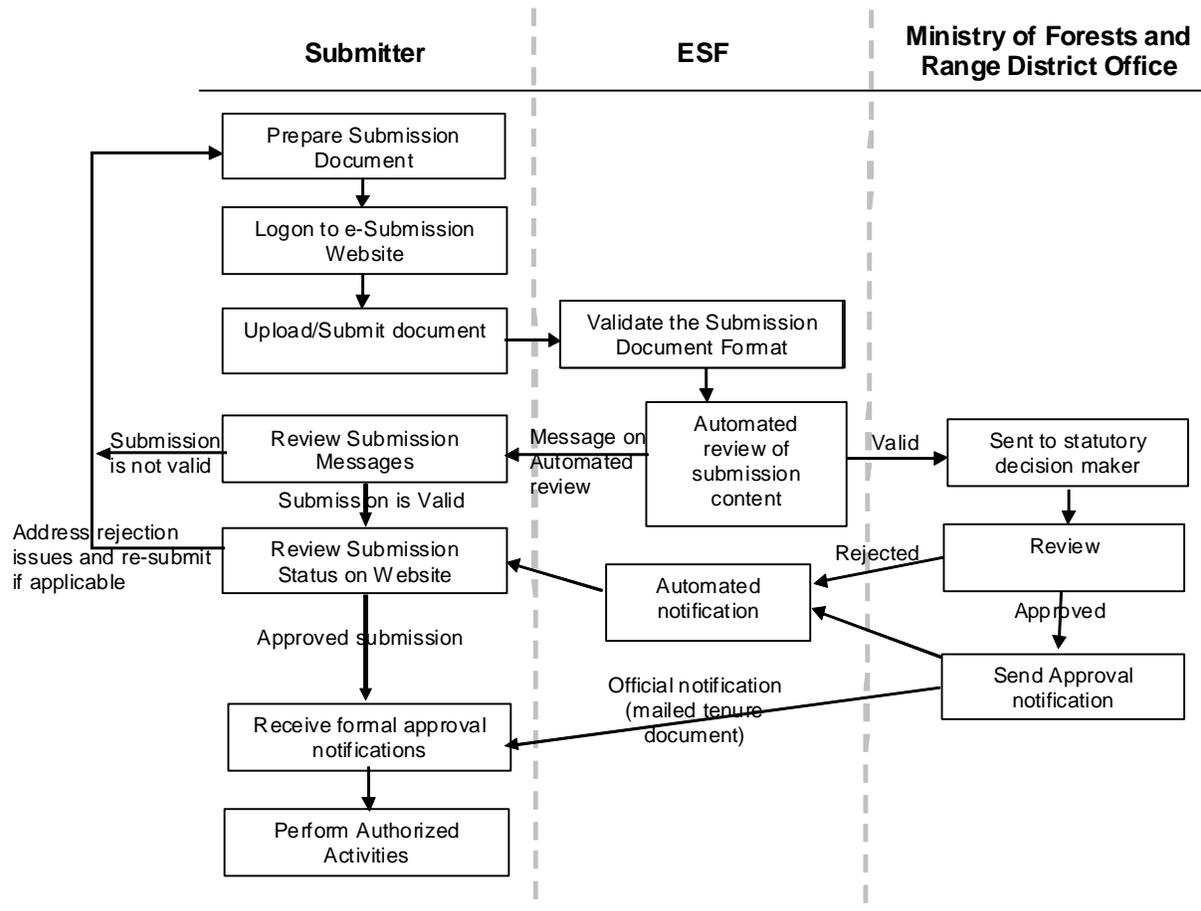
The required internet connection for submissions is dependent on the size of the documents being submitted. Generally, all types of internet connections from dial-up to high speed should function reasonably well. Where internet service is limited or unreliable it is recommended to make the submission documents smaller by including only one or maybe two types of submissions (such as 1 Cutting Permit rather than 15 Cutting Permits) per document. All internet mapping applications (such as Mapview for the Web) delivered through the BC government should function reasonably well through dial-up connections as they transmit a minimal amount of data across the connection.

Recommended Web Browser

Internet Explorer 6 (or newer) is recommended when working with the ESF website.

2.4 Generic Submission Process

No matter what type of application is being made to the MoF, a generic process exists to properly submit and receive notifications through ESF and receiving business application.



MFR Client Steps to Submitting an Application

Preliminary Steps

1. *Ensure that all the necessary access and technologies are in-place for your company.*

See [Section 2.3](#) for an overview of the technologies necessary for making electronic submission to the Ministry of Forests and Range. It is also necessary to ensure that the company that is submitting the applications has the appropriate access to the required government computer systems. For details on the required access see [Section 2.2](#).

2. *Gather the necessary information to make the submission document.*

This will include all the digital files, survey information, and contact information required for inclusion in the submission document being prepared. Having all the appropriate information will make the entire process much faster. The types of information required to make submission are identified in the submission content and structure guides available at <http://www.for.gov.bc.ca/his/ft/>. Information and further details on forest tenure and permit submission can be found in [Section 3](#) of this guide.

Creation and Submission of the document

1. *Prepare a properly formatted submission document for each application being made*

Preparation of the submission documents could occur through a variety of mechanisms and is dependent on the MFR Client mapping and information management environment, level of computer and software expertise and the type of submission being made. [Appendix A](#) outlines various computer tools and common applications that are utilized for management of forest information in British Columbia and approaches for preparing electronic submissions with these applications.

2. *Logon to the Electronic Submission Website*

Logon to the ESF website requires the proper security access. For information on the required access, see [Section 2.2](#).

3. *Upload/Submit Document*

Prior to submitting a document through the ESF website, it is useful to check for existing land or resource tenure conflicts using the View Map function in ESF (note: this replaces the TMS application) (see [Section 4](#) of the guide). Uploading submission files is as simple as selecting the submission type and supplying a properly formatted submission document. During the initial upload stage the submission document can be cancelled from the process.

4. *Review Automated Messages*

Shortly after uploading a submission, the submitter is notified as to whether the submission has been accepted or if automated format verifications and submission content checks have caused the submission to fail. If the submission fails, resolve the issues identified in the automated messages and resubmit the application. If the submission is successful, it will then be forwarded to the statutory decision maker for approval or rejection.

5. *Check Status of Submission*

Official notification of submission approval is made in hardcopy form to meet legal requirements; however, non-official, electronic notifications are made for each submission and are sent to the submitter from the receiving application. These are stored on the electronic submission website. E-mail

notifications are sent to the contact identified in the submission on status changes to a submission, but it is important to check the submission website on the status of applications to confirm state.

If there are any problems associated with a submission, the statutory decision maker may provide additional information through e-mail and/or hardcopy notification explaining the rejection of the submission. If issues are identified, the submission will need to be resubmitted through the ESF website after the proper adjustments are made.

3 Forest Tenure and Permit Submissions

3.1 Background on Forest Tenure & Permit Submissions

The Ministry of Forests and Range (MFR) and Integrated Land Management Bureau (ILMB) share responsibility for information submitted for forest tenures and permits. The MFR is responsible for Forest Tenure & Permit administration, whereas ILMB is responsible for registry of land and resource tenure and permitting information. The land and resource registry conducted by ILMB involves maintenance and identification of land and resource tenures in the province. This includes the location, status and holder of the tenure or permit. ILMB is responsible for registry of many resource and land tenure and permits including subsurface resources, forest resource, crown land, recreation and many more. MFR is responsible for the management of forest, road and range tenure and permits including compliance monitoring, fee collection, approvals and issuance of permits, and processing of Exhibit A's.

The information submitted through the electronic submission framework is shared between MFR and ILMB reducing the total number of submission required by these agencies. The MFR and ILMB are committed to reducing the number of submissions required of industry by sharing information between agencies and streamlining the submission process.

Forest MFR Clients will make applications for Cutting Permits by submitting the application, including spatial information, electronically through ESF (see figure 3). The system will check whether the submission is valid (all of the required data is provided and in the correct format), and once it is validated, the submission will be processed by the MFR. If the submission is not valid, a report will be returned to the MFR Client outlining the problem. MFR Clients will be able to track the status of their application through the system.

Note: Appraisal information is not submitted through the ESF system. It is submitted separately through the E-commerce Appraisal System (ECAS).

<http://www.for.gov.bc.ca/hva/ecas/index.htm>

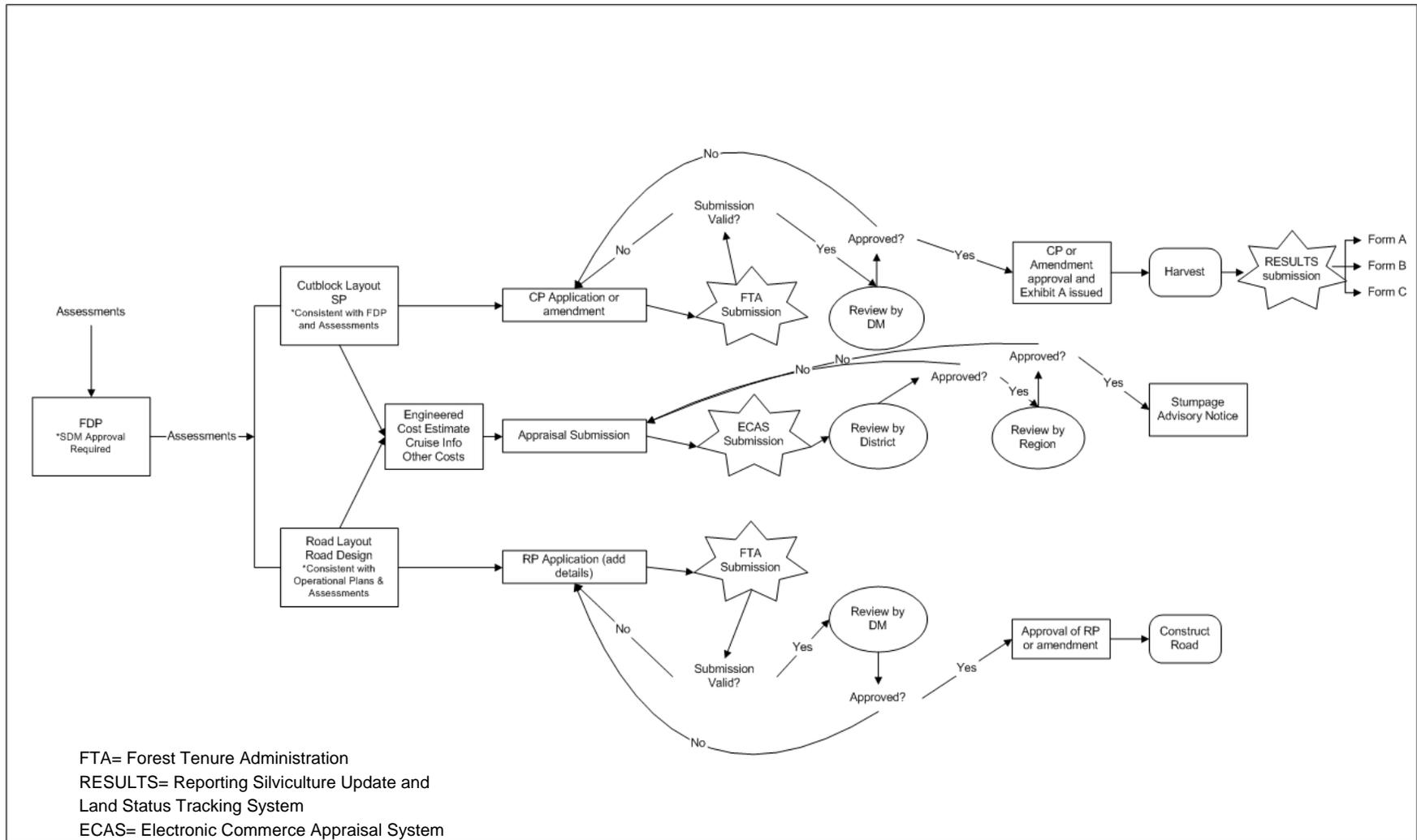


Figure 3 – Integration of electronic submission into the permit and tenure approval and obligation reporting for forest management in British Columbia

This guide covers types of tenure and permitting submissions that will commonly be used by non-District staff (e.g., major and minor Licensees and BCTS). Chart creation and amendment submissions will be made by the forest district and are not covered in this guide. The submission types that are covered in this guide are described below.

Submission Type	Examples	Details
New Cutting Permits/Cut Block and Amendments	Cutting Permit/Cut Block applications for: Forest Licence Woodlot Licence Tree Farm Licence Timber Sale Licence Timber Licence Community Forest Licence Timber Sale Licence-Multi Mark Forestry Licence to Cut with CPs	This is the mechanism for getting authority to harvest through Cutting Permit issuance by the district manager. (Forest Act Part 3 Sec 14, 22, 30, 35, 43.3, 45). Amendments to Cutting Permits will also be made using this submission type.
New Road Permit/Section Applications and Amendments	Road Permit/Section	This is the mechanism for getting authority to construct, modify, or maintain a road. (Forest Act Part 8 Sec. 115). Amendments to Road Permits will also be made using this submission type.
New Harvest Applications/Cut Block and Amendments (No Cutting Permit)	Licence to Cut Timber Sale Licence-Single Mark.	This is the mechanism for getting authority to harvest, cut, or salvage timber for tenures that do not provide for Cutting Permits. Amendments to these permits will also be made using these submission types. These submissions will generally be made by BCTS.
Timber Licence Elimination	Timber Licence	To be used by the MFR Client to make annual submissions of license blocks harvested and eliminated from a Timber Licence.

3.2 General Submission Guidelines

Electronic submissions are made by uploading a submission document to the ESF website. An FTA submission document could contain more than 1 type of submission (for example, the same document could contain Cutting Permit applications for 2 different CP's as well as an application for a Road Permit amendment) provided the submissions are for the same MFR Client, within the same forest district, and have the same contact person.

Any tool that can format an XML/GML document may be used to prepare the FTA document for submission. See [Appendix A](#) for a description of common tools available at this time.

Since the inception of ESF and the inclusion of FTA tenure applications in ESF there have been several versions of the Harvest Application XML/GML submission schema. These versions reflect evolving business requirements and refinements made to the FTA tenuring process. ESF currently supports Harvest Application schema Version 9. Harvest Application Version 9 was implemented in June 2007 to coincide with the implementation of FTA v4.0.

3.3 General Content Requirements

There are a number of components that are common to all submissions made to FTA. Technical descriptions of these components and the required content, as well as a diagram of structure of the submission document are located on the e-FM Forests Tenures, Technical Documentation web site: <http://www.for.gov.bc.ca/his/FT/techDocs.htm>.

The common components include:

Submission Header	Contains information that ensures that the submission is processed correctly by the ESF system, including information such as the version of the FTA schema that is being used to create the submission. This information will be the same for all submissions.
Submission Metadata	Contact information, including email address and phone number, for the person making the submission. In the case of a consultant making a submission on behalf of a MFR Client, this would be the Consultant contact information.
Submission content	This may include a name and description of the submission. This is optional, and would just be used for information purposes for the MFR Client.
FTA Metadata	This is general information about the FTA submission and must include the forest district code, MFR client code, and client location code (used to identify different divisions of a company). The MFR client code and client location codes are assigned by the Ministry and can be found on any stumpage adjustment letter, or by contacting MFR.

Each submission document may contain one or more new or amended submission items, of the same or different types. Submission items include:

- Cutting Permit Applications and Amendments
- Road Permit Applications and Amendments
- Timber Licence Eliminations
- Harvest Applications without Cutting Permit

Specific requirements for submission items are described in the following sections.

3.4 Cutting Permit Applications

Cutting Permit submissions will be made for all major tenure types where Cutting Permits provide the harvesting authority. Cutting Permit application and amendment submissions include new Cutting Permits, as well as amendments to existing Cutting Permits or cut blocks within the Cutting Permit. Submissions can contain applications for 1 or more Cutting Permits. A Cutting Permit is made up of 1 or more cut blocks, with each cutblock comprised of a single or multi-part polygon.

Within the Cutting Permit submission, general information about the Cutting Permit must be provided, as well as information specific to each block within the permit. A complete list and technical description of the data requirements is available for Harvest Application (with CP) schema Version 9 at: <http://www.for.gov.bc.ca/his/FT/techDocs.htm>.

Cutting Permit Data Elements

Cutting Permit information includes Mandatory, Conditional and Optional data elements. The following table defines the XML data elements for a Cutting Permit.

Data Element	XML Tag	FTA ESF Schema 9 Required Data	Details
Forest File ID number	<fta:forestFileID/>	Yes	Required for new and amended Tenure Applications Licence number that applies to the Cutting Permit Example: A12345
File Type	<fta:fileType/>	Conditional	Only required for new Tenure Applications where BCTS office has been specified Code Examples: A20, A21, A23, A24, A25, A26
Application Description	<fta:applicationDescription/>	Yes	Required for new and amended Tenure Applications Submitters description for the Cutting Permit application.
District Code	<fta:district/>	Yes	Required for new and amended Tenure Applications 3 Character organizational unit code for the district that the permit application is in. The geographical district that the cutting permit resides in. This is most often the same as the administrative district but in certain situations can be different. See the following for a complete list of codes: http://www.for.gov.bc.ca/MoF/maps/regdis/regdis.htm
Application Purpose	<fta:applicationPurpose/>	Yes	Required for new and amended Tenure Applications N or A to indicate new or amended CP submission.
Tenure Term	<fta:tenureTerm/>	Conditional	Required for new Tenure Applications only Enter tenure term in months. For a new CP this will be assigned by the ministry.
Cutting Permit ID	<fta:cuttingPermitID/>	Yes	Required for new and amended Tenure Applications This is the Cutting Permit number assigned by the MFR Client Cutting Permit ID is a 3 character alpha numeric string.
Location	<fta:location/>	No	A location description of the CP area. E.g. Wilson Creek.
Marking Instrument Code	<fta:markingInstrumentCode/>	Conditional	Required for new Tenure Applications only Code indicating the means of marking the timber for identification to the timber mark, e.g. hammer, paint. See http://www.for.gov.bc.ca/his/ft/techspec/ for Schema 9 code list.
Marking Method Code	<fta:markingMethodCode/>	Conditional	Required for new Tenure Applications only Code indicating the method of marking the truckload of harvested timber. Refer to Timber Marking and Transportation Regulation to choose appropriate marking method. See http://www.for.gov.bc.ca/his/ft/techspec/ for Schema 9 code list.

Deciduous Indicator	<fta:deciduousIndicator/>	Conditional	Required for new Tenure Applications only Indicates whether the timber mark is primarily for harvesting deciduous species. Otherwise, coniferous.
Catastrophic Indicator	<fta:catastrophicIndicator/>	Conditional	Required for new Tenure Applications only Indicates if there was catastrophic damage to the stand (e.g., blowdown, fire, bark beetle), otherwise the default is endemic damage.
Crown Granted Indicator	<fta:crownGrantedIndicator/>	Conditional	Required for new Tenure Applications only Indicates if the Cutting Permit contains private land in the form of a crown grant.
Cruise Based Indicator	<fta:cruiseBasedIndicator/>	Conditional	Required for new Tenure Applications only
BCTS Office	<fta:bCTSOffice/>	Conditional	Required for BC Timber Sales submissions only The BCTS organization unit code of the office that is making the submission.
Salvage Type Code	<fta:salvagetypeCode/>	Conditional	Only required for new Tenure Applications where the application is for salvage Valid codes are SSS (Small Scale Salvage)
Higher Level Plan Reference	<fta:higherLevelPlanReference/>	Conditional	Applicable to Fort Sign John Pilot Regulation only.
Extent of		Conditional	Mandatory data element when spatial data is being provided as the GML component of the submission. The Extent Of data element is an XML tag used to encapsulate the GML spatial components within the XML Submission. Refer to Section 5 of this document for an explanation of spatial data. Refer to http://www.for.gov.bc.ca/his/FT/techDocs.htm for detailed specifications for formatting spatial data within XML/GML submission.

Cut Block Data Elements

Information specific to Cut Blocks within the Cutting Permit must be included, unless the submission is made to amend only part of the general Cutting Permit information. Many Cut Blocks can be included within one CP submission; each block will have information specific to it.

Cut Block information also includes Mandatory, Conditional and Optional data elements. The following table defines the XML data elements for a Cut Block

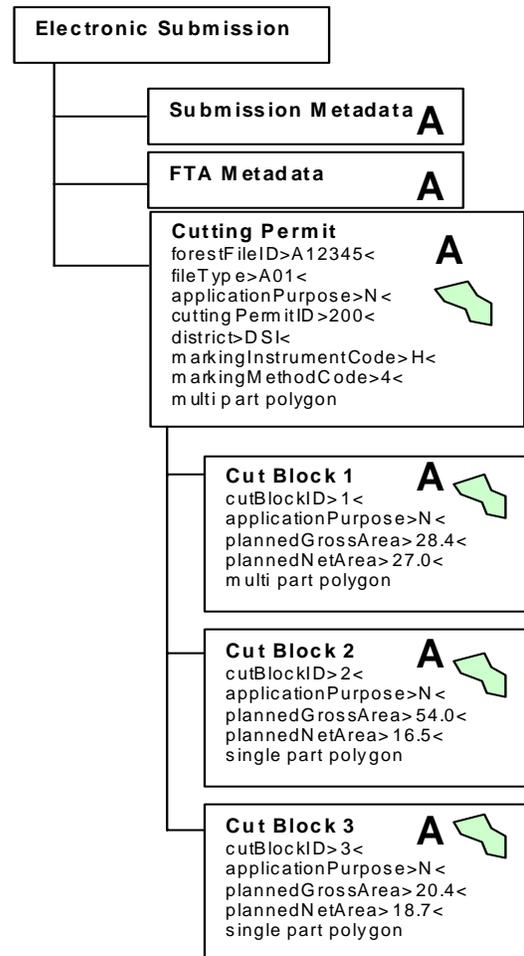
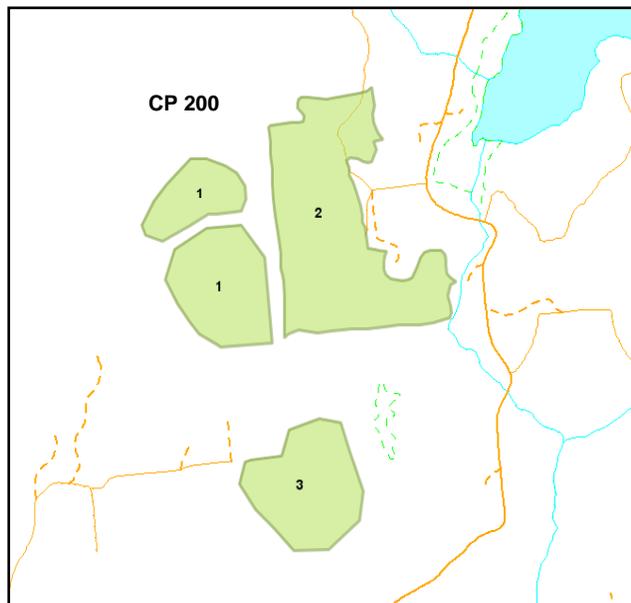
Data Element	XML Tag	FTA ESF Schema 9 Required Data	Details
Cutblock ID	<fta:cutBlockID/>	Yes	Required for new and amended Tenure Applications Cut block identification assigned by the MFR Client.
Application Purpose	<fta:applicationPurpose/>	Yes	Required for new and amended Tenure Applications N or A to indicate new or amended cut block submission.
Block Description	<fta:blockDescription/>	No	A description of the cut block, generally location for information purposes only.
Amendment Reason	<fta:amendmentReason/>	Conditional	Required for Tenure Applications amendments only E – Engineering F - Forest service initiated S – Salvage A - Access Additional Cut Blocks
Planned Gross Area	<fta:plannedGrossArea/>	Conditional	The planned gross area of the block. This is only required if there is no geometry for the cut block. If there is geometry, this value will be overwritten with the area of the geometry.
Planned Net Area	<fta:plannedNetArea/>	Yes	Required for new and amended Tenure Applications The planned net area of the block. This value must be less than or equal to Planned Gross Area
Cruise Volume	<fta:cruiseVolume/>	Conditional	Required for Tenure Applications amendments only
Planned Harvest Date	<fta:plannedHarvestDate/>	Yes	Required for new and amended Tenure Applications The date harvesting is planned to start
Regulation Code	<fta:regulationCode/>	Conditional	Applicable to Fort Sign John Pilot Regulation only.
Owned by file	<fta:ownedByFile/>	Conditional	Required only when a private land block or Timber Licence block is to be harvested under Cutting Permit. Applicable to file types A02 or A04. Identifies the Block of the private mark for any blocks on private land. Identifies the file of the private mark for any blocks on private land. The private mark would be entered as the file name.

Owned by Cutting Permit	<fta:ownedbyCuttingPermit/>	Conditional	<p>Required only when a private land block or Timber Licence block is to be harvested under Cutting Permit.</p> <p>Applicable to file types A02 or A04. Identifies the Block of the private mark for any blocks on private land.</p> <p>Identifies the CP of the private mark for any blocks on private land. If the private mark has no CP, leave blank.</p>
Extent of		Conditional	<p>Mandatory data element when spatial data is being provided as the GML component of the submission.</p> <p>The Extent Of data element is an XML tag used to encapsulate the GML spatial components within the XML Submission.</p> <p>Refer to Section 5 of this document for an explanation of spatial data.</p> <p>Refer to http://www.for.gov.bc.ca/his/FT/techDocs.htm for detailed specifications for formatting spatial data within XML/GML submission.</p>

3.4.1 Cutting Permit Submission Examples

Example 1: New CP with 3 cut blocks. Cut block 1 is made up of 2 separate units, cut block 2 is group selection, and cut block 3 is a clearcut with reserves:

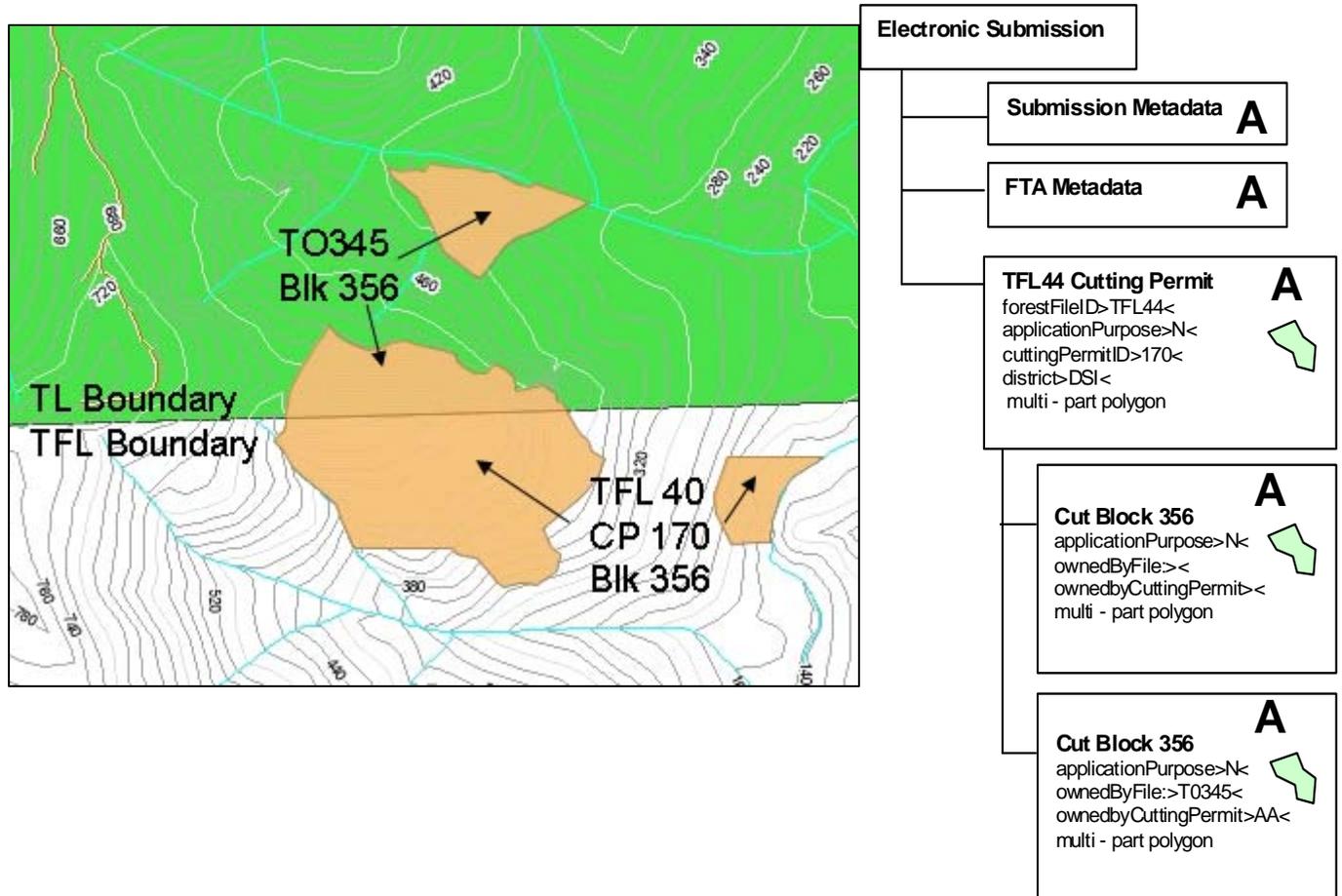
In this basic example, all general FTA submission information must be submitted (see Section 3.3), all Cutting Permit information must be submitted (see Section 3.4), and all cut block information for each of the three blocks must be submitted. The geographic boundaries for the Cutting Permit would generally be the same as for the cut blocks, with just the external boundaries for all three blocks being included in the document. The spatial data for cut block 1 includes both units, coded as a multi-part polygon (see Section 5 for details). Patch boundaries within the group selection block (block 2) would not be included. Block 2 has an area within it that is not part of the cutblock. In block 3, internal wildlife tree management areas (WTMA) or other reserves would not be mapped, just the external block boundary is shown. In the case of WTMA's on the outside of the block boundary (external WTMA's), these should not be shown as part of the cut block area.



A refers to attribute data required.
 refers to spatial data required.

Example 2: New cut block that is partially within a TFL and partially within a TL:

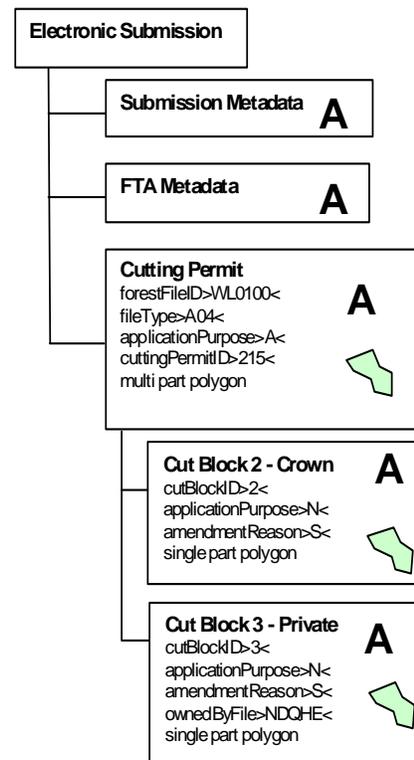
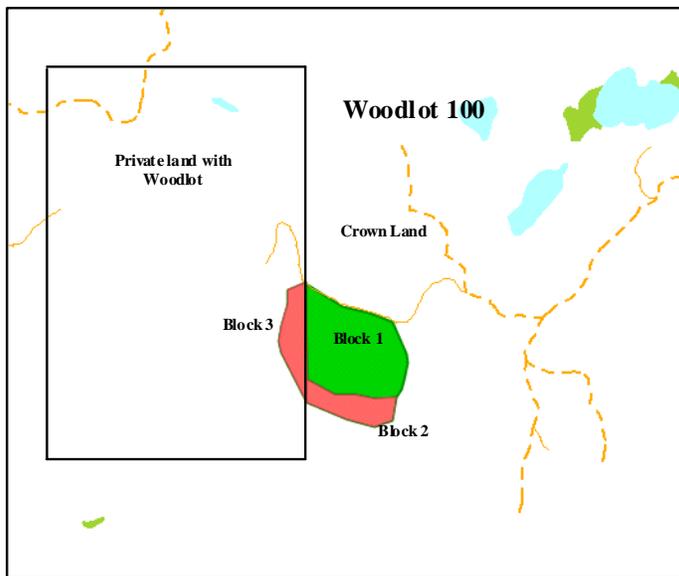
In this case, the new block must be submitted as two cut blocks so that ownership of the block (as it relates to overarching tenure) can be properly defined. One FTA submission document would be made, containing 1 Cutting Permit item, with all applicable information. The Cutting Permit would contain 2 blocks (which represent the 'new' block) with all applicable information. Note for silviculture management purposes the two blocks can be managed as a single opening by establishing a multiteneure opening in RESULTS.



Example 3: Existing approved woodlot CP amended to add a cut block that is partially on crown land and partially on private land:

In this example, an issued Cutting Permit for the Crown Land of a woodlot needs to be amended to deal with blowdown. However, the area of blowdown is partly within the Crown Land portion of the woodlot (Schedule B land), and also partly within the private land portion of the woodlot (Schedule A land). Two individual cut blocks under one existing Cutting Permit need to be submitted. The issued CP is for the crown land, and the MFR Client is going to add two cut blocks; one each for the private land and one for the Crown Land portion of the blowdown area to be harvested.

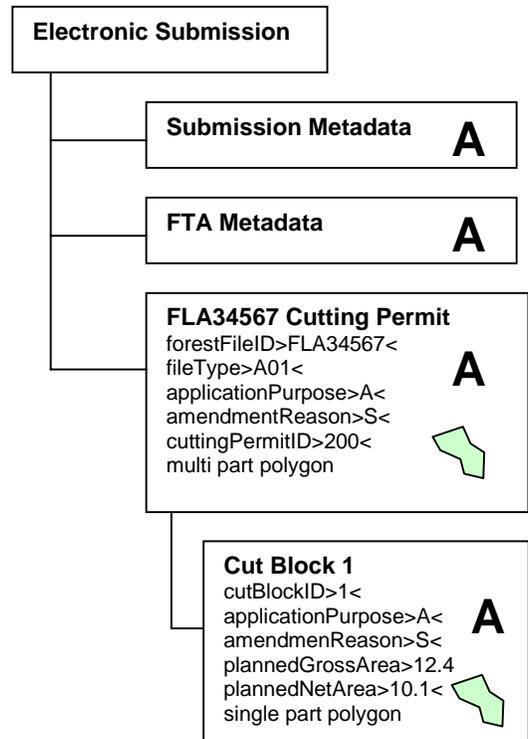
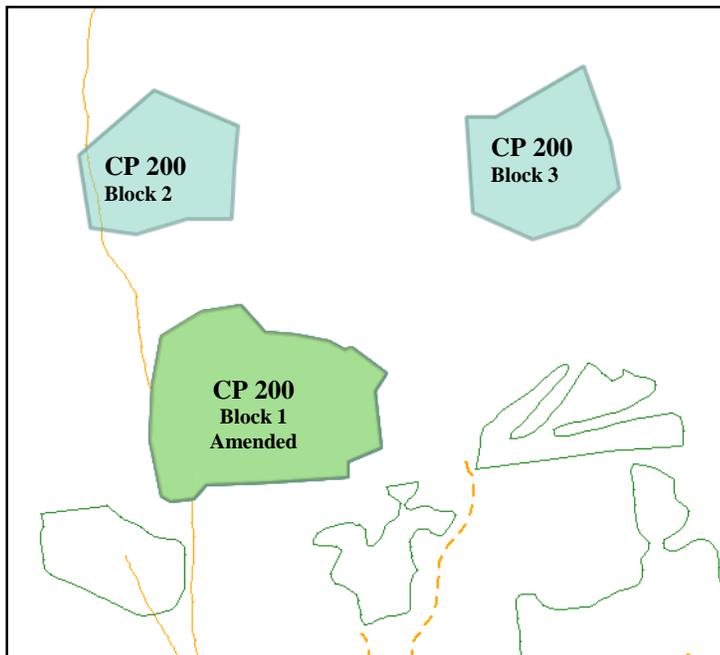
One FTA submission document would be created, containing one Cutting Permit with two cut blocks, with all applicable information. All general FTA submission information must be submitted (see Section 3.3), all Cutting Permit information must be submitted (see Section 3.4) including the previously approved area, but block information would only be included for the new cut blocks. The area would be divided as per the ownership boundary. The application purpose for the CP would be “A” (amendment) and the application purpose for the blocks would be “N” (new). The “owned by file” field would indicate the private timber mark, and the “owned by Cutting Permit” would be blank. The amendment reason could be something like S – Salvage, and the cut block description could state something like “Additional area to salvage an area of blowdown adjacent to the 500 Road.” Blocks that are already approved should not be re-submitted unless they are also being amended (e.g., significant boundary change).



Example 4: Existing cut block amended to include a blowdown area:

A blowdown area adjacent to a cut block in an issued Cutting Permit could be submitted as an amendment to the block, or as a new block. In this case, the blowdown occurred soon after harvest, so the MFR Client is adding the area to the existing cut block in the issued Cutting Permit.

All general information must be submitted (see Section 3.3), all CP information must be submitted, including the spatial data for all other blocks in this permit (see Section 3.4), as well as all cut block information for the block that is being amended. The “amendment reason” field would specify “S” (salvage) and could state “1.1 ha of blowdown added to block”. The “planned gross area” would include the entire area of the block, including the area already issued. The “cruise volume” field would be completed only if the area added to the block was cruised. Information for other blocks that are not being amended should not be submitted. Spatial data would include the entire external boundary of the block including the original and amended area.



3.5 Harvest Applications (no Cutting Permit)

Harvest applications without CP will be made for all tenure types where Cutting Permits do not provide the authority to harvest. Submissions must be made to obtain permission to harvest, cut, or salvage timber under a Christmas tree permit, licence to cut, (note in some cases these do have CPs) log salvage permit, or single mark timber sale license. MFR Clients and BCTS will only use license to cut and single mark timber sale. Harvest application submissions include new applications as well as amendments to previously issued applications, or cut blocks within previously approved applications. General information about the harvest application must be provided, as well as information specific to each block within the application (where applicable).

A complete list and technical description of the data requirements is available for Harvest Application Version 9 at:

<http://www.for.gov.bc.ca/his/FT/techDocs.htm>

Harvest Application Data Elements

Harvest Application information includes Mandatory, Conditional and Optional data elements. The following table defines the XML data elements for a Harvest Application.

Data Element	XML Tag	FTA Schema 9 Required Data	Details
Forest File ID number	<fta:forestFileID/>	Conditional	Required for Tenure Applications amendments only Licence number that applies to the harvest application Example: A12345
File Type	<fta:fileType/>	Conditional	Required for new Tenure Applications only See http://www.for.gov.bc.ca/his/ft/techspec/ for Schema 9 code list. Code Examples: <ul style="list-style-type: none"> ▪ B05 – Occupant Licence to Cut ▪ B07 – Forestry Licence to Cut
Application Description	<fta:applicationDescription/>	Yes	Required for new and amended Tenure Applications Submitters description for the Cutting Permit application.
District Code	<fta:district/>	Yes	Required for new and amended Tenure Applications 3 Character organizational unit code for the district that the permit application is in. A harvest application can only be within 1 district. See http://www.for.gov.bc.ca/MoF/maps/regdis/regdis.htm for complete list of codes.
Management Unit Type	<fta:managementUnitType/>	Conditional	Required for new Tenure Applications only Code to indicate TFL, TSA, etc. for the type of management unit the tenure is within See http://www.for.gov.bc.ca/his/ft/techspec/ for Schema 9 code list.

Management unit ID	<fta:managementUnitID/>	Conditional	Required for new Tenure Applications only Management Unit Identifier (e.g. TFL99). See http://www.for.gov.bc.ca/his/ft/techspec/ for Schema 9 code list.
Application Purpose	<fta:applicationPurpose/>	Yes	Required for new and amended Tenure Applications N or A to indicate new or amended Harvest Application submission.
Tenure Term	<fta:tenuerTerm/>	No	The term of the tenure in months. Tenure term is assigned by the ministry.
Block ID	<fta:blockID/>	No	Unique identifier for the tenure block Example: Block A of TL 1234 The spatial representation of the licence area is often divided into blocks when the boundary is divided by a natural feature such as a river. This field allows a unique identifier to be defined for each block. Each block would result in one of these types of submissions. Not the same as a cutblock.
Purpose Code	<fta:purposeCode/>	Conditional	A code that defines the reason for the licence to cut or special use permit application. Required for files of type S01, S02, B04, B07 For BCTS submissions using file types S01, S02, B04, B07 this value must be RW (Right of Way)
BCTS Office	<fta:bCTSOffice/>	Conditional	Required for BC Timber Sales submissions only The MOF organization unit code of the office that is making the submission.
Higher Level Plan Reference	<fta:higherLevelPlanreference/>	Conditional	Applicable to Fort St John Pilot Regulation only.
Licence Regulation Code	<fta:licenceRegulationCode/>	Conditional	Applicable to Fort St. John Pilot Regulation only. A code defining the regulation the Licence is harvested under. F (Fort St. John) G (Forest and Range Practices Act)
Licensee Harvesting Authority ID	<fta:licenseeHarvestingAuthorityID/>	Conditional	Applicable to Fort St John Pilot Regulation only. MFR Client HVA ID associated with the Harvest Authorization as defined under the Fort Saint Jon Pilot Regulation
Location	<fta:location/>	No	A location description of the CP area. E.g. Wilson Creek.
Refer To File Number	<fta:referToFileNumber/>	Conditional	Used if tenure has been cleared under another file number

Extent of		Conditional	<p>Mandatory data element when spatial data is being provided as the GML component of the submission.</p> <p>The Extent Of data element is an XML tag used to encapsulate the GML spatial components within the XML Submission.</p> <p>Refer to Section 5 of this document for an explanation of spatial data.</p> <p>Refer to http://www.for.gov.bc.ca/his/FT/techDocs.htm for detailed specifications for formatting spatial data within XML/GML submission.</p>
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Cut Block Data Elements

In cases where the harvest application has Cut Blocks, there is cut block-specific information that must also be provided. Note that the Cut Block Data elements are required for all submissions except for Christmas Tree Permits and Special User Permits. If there are multiple Cut Blocks, this information is provided for each cut block. Cut block data is required for all Harvest Applications except Christmas Tree Permits, or Special Use Permits.

Cut Block information also includes Mandatory, Conditional and Optional data elements. The following table defines the XML data elements for a Cut Block

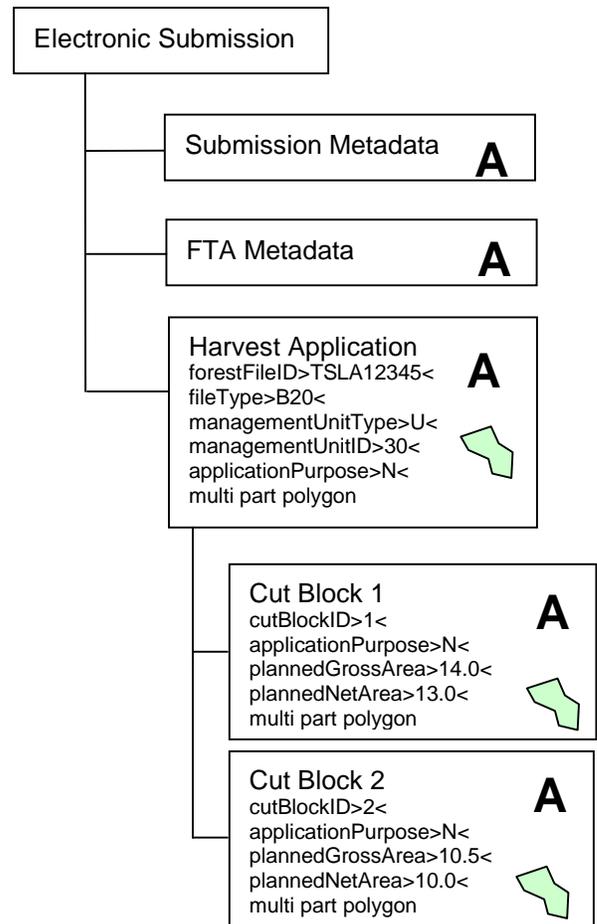
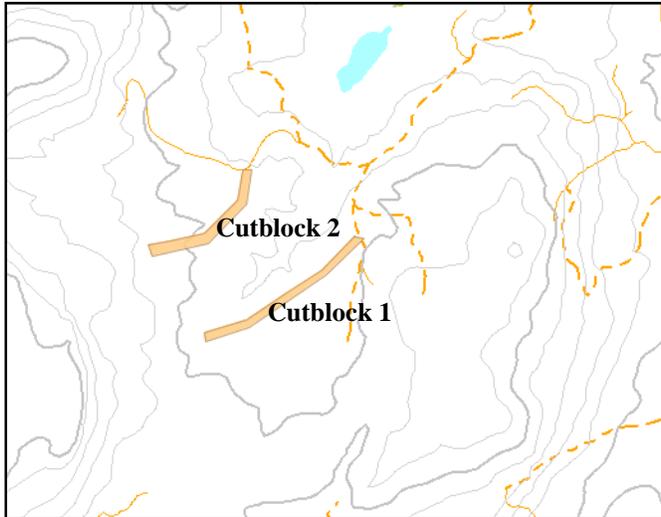
Data Element	XML Tag	FTA ESF Schema 9 Required Data	Details
Cutblock ID	<fta:cutBlockID/>	Yes	Required for new and amended Tenure Applications Cut block identification assigned by the MFR Client.
Application Purpose	<fta:applicationPurpose/>	Yes	Required for new and amended Tenure Applications N or A to indicate new or amended cut block submission.
Block Description	<fta:blockDescription/>	No	A description of the cut block, generally location for information purposes only.
Amendment Reason	<fta:amendmentReason/>	Conditional	Required for Tenure Applications amendments only E – Engineering F – Forest service initiated S – Salvage A – Access Additional Cut Blocks
Planned Gross Area	<fta:plannedGrossArea/>	Conditional	The planned gross area of the block. This is only required if there is no geometry for the cut block. If there is geometry, this value will be overwritten with the area of the geometry.
Planned Net Area	<fta:plannedNetArea/>	Yes	Required for new and amended Tenure Applications The planned net area of the block. This value must be less than or equal to Planned Gross Area
Cruise Volume	<fta:cruiseVolume/>	Conditional	Required for Tenure Applications amendments only

Planned Harvest Date	<fta:plannedHarvestDate>	Yes	Required for new and amended Tenure Applications The date harvesting is planned to start
Regulation Code	<fta:regulationCode/>	Conditional	Applicable to Fort St John Pilot Regulation only.
Reforestation Declaration Code	<fta:reforestationDeclarationCode />	Conditional	Applicable to Fort St John Pilot Regulation only. Valid values are C (Coniferous), D (Deciduous), or M (Mix).
Extent of		Yes	Mandatory data element when spatial data is being provided as the GML component of the submission. The Extent Of data element is an XML tag used to encapsulate the GML spatial components within the XML Submission. Refer to Section 5 of this document for an explanation of spatial data. Refer to http://www.for.gov.bc.ca/his/FT/techDocs.htm for detailed specifications for formatting spatial data within XML/GML submission.

3.5.1 Harvest Application (no Cutting Permit) Submission Examples

Example 1: New single mark timber sale with 2 cut blocks:

In this example, all general FTA information would be included (see Section 3.3), all required harvest application information would be included (see Section 3.5), as well as all required information for each cut block. The geographic boundary of the harvest application would be the same as the boundaries of the 2 cut blocks (multi part polygon). Any internal reserves would not be mapped.



3.6 Road Permit Applications

ROAD PERMIT APPLICATIONS REFERENCED IN THIS DOCUMENT HAVE BEEN REPEALED AND REPLACED WITH THE INFORMATION CONTAINED WITHIN:

v2.5 JUNE 4, 2007 Industry & BCTS Guide to the Submission of Road Tenure via the Electronic Submission Framework (ESF)

This document can be found here:

http://www.for.gov.bc.ca/his/ft/Industry_and_BCTS_Roads_Guide.pdf

3.7 Timber Licence Elimination

MFR Clients with timber licences must annually make timber licence elimination submissions for the portions of the timber licence that have been harvested. More than one timber licence elimination submission can be made within an FTA document. Information about the timber licence and location of the area to be eliminated must be submitted.

A complete list and technical description of the data requirements is available for Harvest Application Version 9 at:

<http://www.for.gov.bc.ca/his/FT/techDocs.htm>

All fields must be completed for a timber licence elimination submission. The following are a selection of fields with clarification on the content or explanation of when the fields must be filled in:

Timber Licence Elimination Data Elements

Data Element	XML Tags	FTA ESF Schema 9 Required Data	Details
Forest File ID number	<fta:forestFileID/>	Yes	Required for new and amended Tenure Applications Licence number that applies to the Cutting Permit Example: T1234
Application Description	<fta:applicationDescription/>	Yes	Submitters description for the Timber Licence Elimination application.
District Code	<fta:district/>	Yes	Required for new and amended Tenure Applications 3 Character organizational unit code for the district that the permit application is in. A CP can only be within 1 district. See http://www.for.gov.bc.ca/MoF/maps/regdis/regdis.htm for complete list of codes.

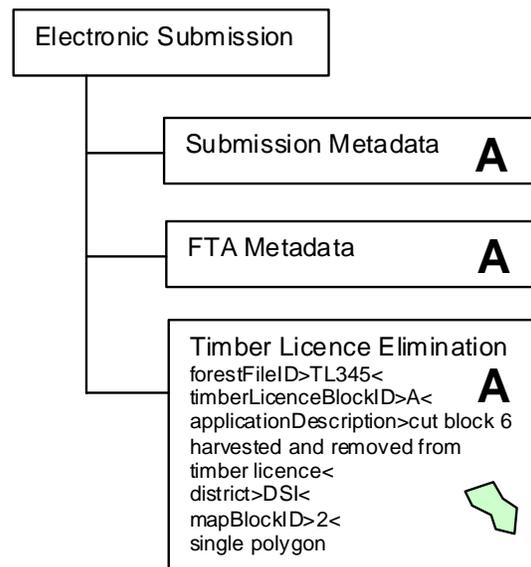
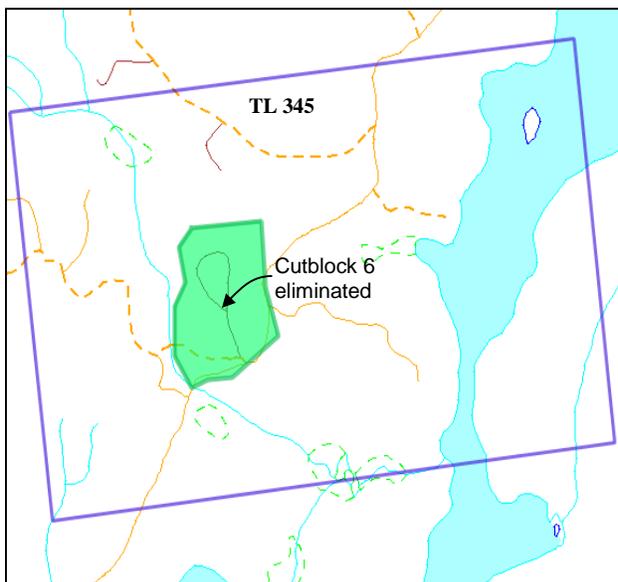
Timber Licence Elimination Map Block Data Elements

Data Element	XML Tags	FTA ESF Schema 9 Required Data	Details
Timber Licence Block ID	<fta:mapBlockID/>	Yes	Multiple blocks allowed per Timber Licence Elimination (Schema 8) The ID for the block being eliminated
Extent of		Yes	Mandatory data element when spatial data is being provided as the GML component of the submission. The Extent Of data element is an XML tag used to encapsulate the GML spatial components within the XML Submission. Refer to Section 5 of this document for an explanation of spatial data. Refer to http://www.for.gov.bc.ca/his/FT/techDocs.htm for detailed specifications for formatting spatial data within XML/GML submission.

3.7.1 Timber Licence Elimination Example

Example 1: One cut block harvested from timber licence

The MFR Client must annually submit all areas that have been harvested under the timber licence. All general FTA submission information must be submitted (see Section 3.3), and all timber licence elimination information must be submitted (see Section 3.7). The forest file ID number refers to the timber licence number, and must be included. The block ID refers to the timber licence block from which the cut block area was harvested, not to a cut block number that was given to the harvested area. The geographic boundary that is included would show the actual harvested cut block.



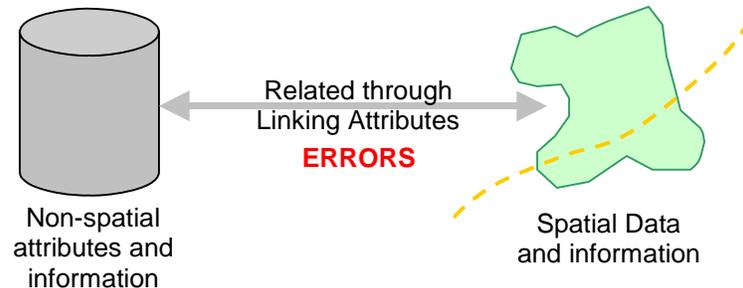
4 Automated land and resource tenure checks through the web

MFR Clients are able to report on land status and review land and resource tenure clearances for the areas for which they are submitting applications for permits or licences. Reporting on the land status prior to submitting a forest tenure or permit request will reduce the likelihood of delays in processing applications and reduce the number of rejected requests resulting from conflicts between land and resource tenures. MFR Clients are expected to perform an automated licence status check prior to making formal submissions to MFR for tenure or permits, but application processing will still proceed if a status check is not done.

Status checks can easily be completed across the internet using permit and tenure electronic submission documents (XML/GML) and the View Map function in ESF provided by Ministry of Forests and Range and ILMB.

5 Details on the formatting of the submission

Overview of the Submission Format



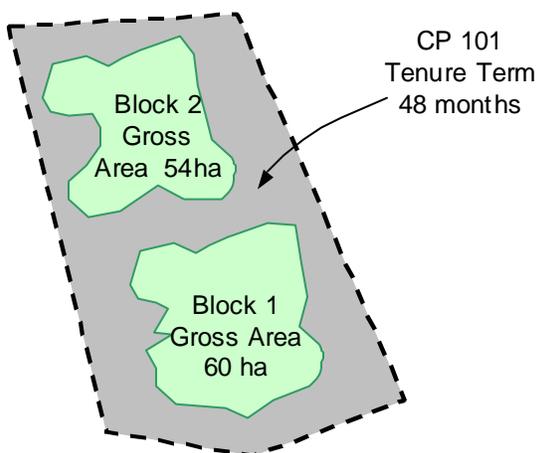
The format of a submission document is non-proprietary in nature and allows both the spatial and attribute information to be integrated into a single document. In the past the documents submitted electronically to government separated the spatial data and the non-spatial data into different, related files. The structure of the separate spatial and attributes files did not show the relationships or hierarchies between features such as the cut blocks that collectively formed a Cutting Permit.

The new submission document format and structure requires that attributes and spatial information are integrated and there is very little room for errors or interpretation in relating the spatial and the attribute information. The format is structured to contain information about individual features (such as a cut block and attributes) in addition to information about how the features relate to one another. The description of the structure of the data and the relationships between features are referred to as document “schemas”.

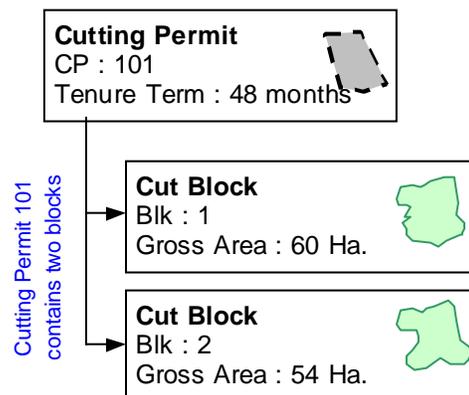
A guide to the structures and content of the submissions can be found:

<http://www.for.gov.bc.ca/his/FT/techDocs.htm>.

Submission Information Overview



Submission Document Structure



Cutting Permit 101 contains 2 cut blocks (blocks 1 or 2) with different areas. The cut blocks are both contained within the cutting permit structure and formatted to show that relationship.

The overall submission formatting standards utilize XML (extensible mark-up language) in order to provide a simple way to structure information. The standards for XML are developed by **World Wide Web Consortium** (<http://www.w3.org/>) which sets all standards

Further information technical information on XML can be found at <http://www.w3.org/XML/>

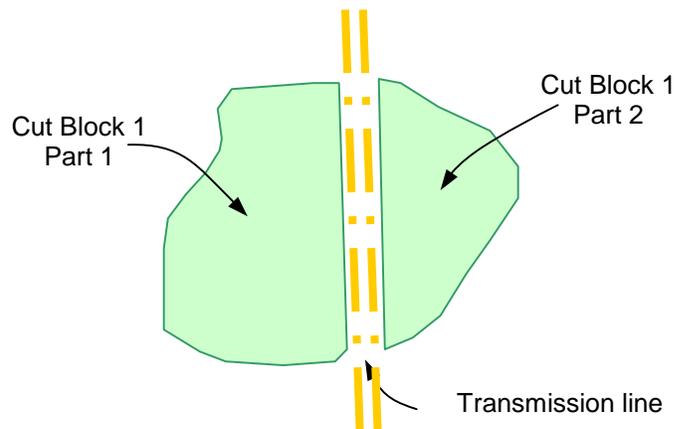
Further technical information on GML can be found at <http://www.opengeospatial.org/standards/gml>

for the internet, internet data formats and more. Spatial information stored in the submission document is an extension of standard XML called GML (geography mark-up language). The standards for capture of spatial features (GML) in XML are defined by the **Open GIS Consortium** (<http://www.opengeospatial.org/>) which is an international spatial standards development consortium.

Properly Formatting Spatial Data in Submissions

One of the more difficult issues to deal with when preparing a submission document is complete knowledge of the spatial data and how it should be structured for the submission. Traditionally we are taught to think of spatial information in terms of polygons, lines and points. Polygons, lines, and points are still key to the structure of the spatial information, but for electronic submissions, these simple geometries must be extended to include multiple parts and internal holes.

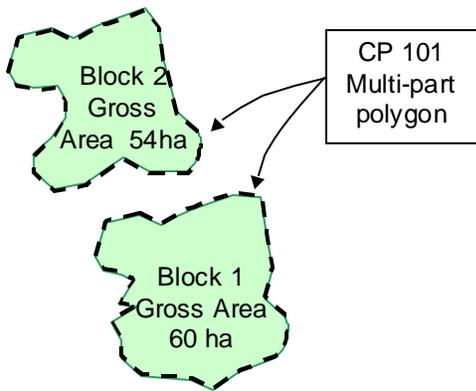
Multi-part geometry allows for a single feature (such as a cut block), represented by two spatially isolated polygons, to be represented in GML as a multi-part polygon. It is extremely important to use multi-part geometries when trying to represent a single feature when there are gaps between some of the feature parts. Multi-part polygons in GML **are not** the same in structure as utilizing two polygons to represent the same feature. Attributes are stored only once in a submission for a feature being represented by a multi-part geometry (i.e. a single cut block divided by a transmission line). Representing a feature with two polygons, such as one cut block described spatially by two polygons with duplicate attributes, within a submission file will cause your submission application to fail (see diagram below).



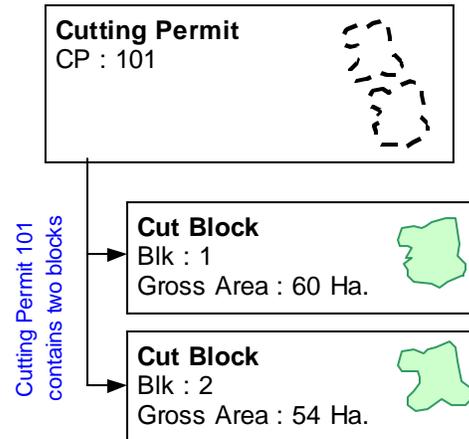
Single cut block (CP 101 Block 1) represented by a multi-part polygon.

For forest tenures and permits, a common usage of multi-part polygons will be in representing a Cutting Permit boundary where the Cutting Permit boundary is consistent with the cut block boundaries that are part of the submission. For the 2 cut blocks represented by single polygons, the Cutting Permit would be represented by a single multi-part polygon (see diagram below).

Submission Information Overview

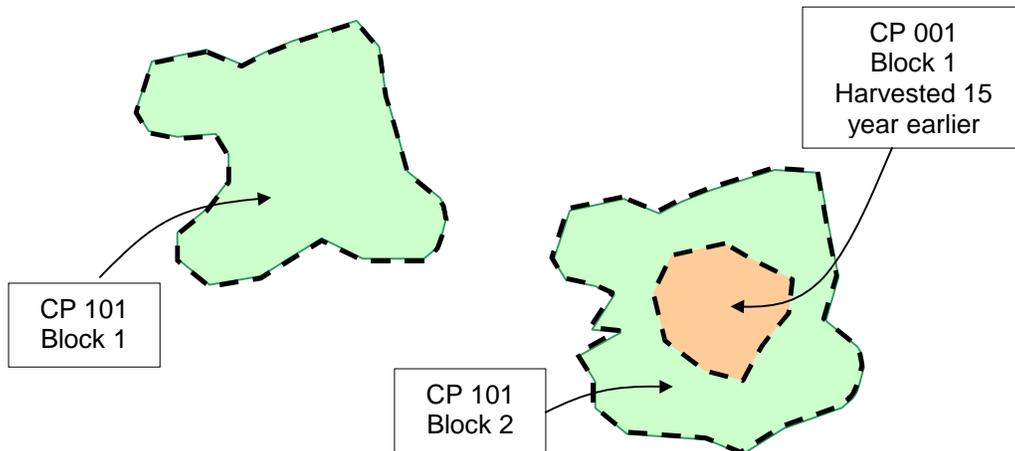


Submission Document Structure



The cutting permit boundary is a multi-part polygon that covers the same geographical area as its' component cut blocks. The cutting permit boundary must be represented as a multi-part polygon and not 2 separate polygons to be valid.

In cases where an internal hole within a polygon is required, such as a new Cutting Permit that completely surrounds a previously approved harvested area, the spatial data must utilize internal rings or polygons to encode the "donut holes" in the spatial information (see diagram below). It is important to note that internal reserves are **not excluded** from the polygon boundaries of cut blocks and/or Cutting Permits. There is no requirement to submit spatial information about internal reserves with submissions.



The cutting permit and block boundary in CP 101, block 1 submission must include an internal donut hole in both the cutting permit and the cut block geometry. The area harvested 15 years earlier would not have any associated information.

When dealing with spatial projections, three general types are supported: Geographic (Latitude/Longitude), Universal Transverse Mercator (zone 7,8,9,10,11 in metres), and Albers Equal Area (BC Standards). When supplying e-submission documents, the project information must be defined for

each spatial object. For information on encoding GML and examples for forest and Tenure submissions, refer to the FTA Submission Guide available at <http://www.for.gov.bc.ca/his/ESF/>.

Common Mistakes in Formatting Documents

There are some key things to be aware of when formatting submissions:

1. Do not think of the submission document as a database. The structures to the submission can be seen more as a document with structure and content much like a book with chapters, sections, and paragraphs rather than tables of information. The “schema” defines the structure.
2. Do not overlook the importance of the spatial information within the submission. It is critical for a properly formatted document to include the properly formatted spatial information.
3. CAD systems do not create the spatial data structures required for e-submission. Data conversion routines must manipulate CAD to create the correct structure.
4. Optional attributes that have no information supplied within the submission should not have XML/GML tags.

6 What to do next

The submission of forest tenure and permitting information documents through the Electronic Submission Framework provides an opportunity to streamline applications for Cutting Permit and tenure. Critical to the success of any e-submission is an understanding of the general process of submitting information electronically. Following this, it is recommended that any individual or group determines and develops an approach to managing and preparing electronic submissions which could include the use of service providers or the implementation of a system to directly extract submissions for an existing information management system. If you are unsure on how to prepare, ask for help. There are many groups and service providers that are equipped to support e-submissions.

Appendix A. Tools for preparing submissions

There are many tools and approaches to managing the information for e-submission to the Ministry of Forests and Range and ILMB. One key feature of the e-submissions is that the submission format is not specific to any particular software application. The format standards are internationally developed standards and are supported by many spatial and non-spatial applications. Below is a general description of information management product groups for managing land and resource information.

Product Group	Description
Computer Aided Mapping/Design Applications (CAM/CAD)	These applications support cartographic design and development, but do not provide direct linkages between spatial elements and their attributes. These applications typically do not include support for spatial topology, projections, and attribute integration.
Geographical Information Systems (GIS)	Geographical information systems focus on managing and analyzing spatial information and provide a mechanism to relate spatial and attribute information directly. They help manage spatial topology, projections and integrate attributes.
Non-Spatial Forest Management Systems	There are many systems in use across the province to manage attributes relating to inventories, surveys or appraisals that do not directly manage or integrate spatial information into the product. In many cases spatial data is managed in a separate application such as a CAM/CAD or no spatial information is captured.
Integrated Forest Management Systems	Integrated forest management systems manage both the attribute and spatial information relating to forest applications and support the direct editing of e-submission documents.
Data Conversion System	These tools are often referred to as data transformation tools and convert data from one format and structure to another.
e-Submission Document Management Tools	These tools support direct editing of e-submission documents and focus directly on editing the content of an e-submission document.
Development Libraries and utilities	One option for supporting GML /XML submissions is through the development of custom applications designed to support XML/GML directly. To support this development many commercial and non-commercial development libraries are available.

Computer Aided Mapping/Design Applications (CAM/CAD)

Many groups utilizing CAM/CAD packages for mapping often use database, spreadsheets or documents to track non-spatial information. These non-spatial management systems could be forest management systems or custom solutions for management of attributes. Utilizing CAD/CAM packages for electronic submission will require the use of other applications to integrate and structure the spatial and attribute data into the necessary formats such as extract, load and transform tools or e-Submission Document Management Tools.

There are many key issues that will be faced in this option for submitting e-Submissions. First, CAD/CAM packages do not directly support spatial topology (see appendix B for definitions of topology) or often utilize different, often complex, data structures to represent spatial data that is not easily integrated with attribute information. CAD packages do not support mapping projections and often utilize arbitrary coordinate systems for mapping that do not directly relate to real world coordinates. Data from CAD/CAM software and formats can be transformed into correctly formatted GML, but users may experience translation problems that require manual editing and fixes. For transformation of CAD/CAM data to work more smoothly, the structure of the CAD data and data creation processes must be based on extremely good standards that are applied consistently.

Geographical Information Systems (GIS)

MFR Clients utilizing geographical information systems for mapping often use custom or commercial forest management systems to manage complex attributes. Often attributes and spatial information are tightly integrated and relating spatial data to attribute information is not a difficult exercise. Some commercial GIS packages may support export to GML, but currently GML support is evolving and requires some custom development to create properly formatted GML.

Although some GIS tools generate GML, they often do not provide support for structuring the spatial and attribute information in a structure to meet the e-Submission standards. Use of GIS tools will often require the use of secondary applications or customizations to correctly format an electronic submission. This can be gained through the use of extract, load and transform tools or e-Submission Document Management Tools.

Non-Spatial Forest Management Systems

Non-spatial forest management systems provide support for managing information that is necessary for submission to government. Such systems manage survey information, silviculture activities and related details, but do not directly support mapping of spatial information. Some systems do provide linkages by linking fields to spatial data stored in a GIS or CAD/CAM, but require user intervention to manage the relationship between the spatial and attribute systems.

For electronic submissions, the use of extract, load and transform tools or e-Submission document management tools are essential to creating properly formatted submissions. In some cases direct export of attribute information from the non-spatial forest management systems to XML is anticipated to be available. Integration of the spatial and attribute information and creation and management of spatial data is still anticipated to occur through external applications. In some cases, customization of the export utility may be required to meet the Ministry of Forests and Range standard codes for particular client specific customizations/implementations of the forest management system. For information particular to your software product, contact your forest management system provider.

Integrated Forest Management Systems

Integrated forest management systems are anticipated to support direct export of e-submission documents from the application. The tight management of information and control of business processes and the strong association between spatial and attribute information allows for easy export of information to e-submission format. In some cases, customization of the export utility may be required to meet the Ministry of Forests and Range standard codes for particular client specific customizations/implementations of the forest management system. For information particular to your software product, contact your integrated forest management system provider.

Extract, Transform and Load Applications (ETL)

ETL applications provide a generic framework as well as tools to allow for data translation routines to be developed and executed. These tools represent a set of core technologies for transforming attribute and spatial data and require specialized training and expertise to develop transformation routines.

ETL tools function most effectively for organizations with very structured input data sources or locations that have dedicated staff to train and utilize the transformation tool.

e-Submission Document Management Tools

As e-submissions are evolving, tools specifically designed to create and manage e-submission documents are becoming available. These tools focus on the business process of creating and editing spatial and attribute information for e-submission. Current systems available can act as stand alone applications capable of creating submission without any GIS, CAD/CAM or forest management system or integrate with existing commercial and non-commercial systems. These tools provide the e-Submission structures and formats without needing to understand the details of standards or technologies.

Development Libraries and Utilities

A final option for creation of e-submission documents is the use of custom applications that provide specialized conversion or editing capabilities and/or integrate directly with a MFR Client's existing mapping and information management systems. There are many different sources for programming libraries for many development tools and in many cases, modern development environments provide direct support for XML. Libraries for working with spatial data and GML are available from most GIS vendors as well as open source libraries available on the internet. Developing custom solutions utilizing development libraries requires a high degree of technical expertise and would likely be undertaken in very specific cases.

Selection of the Appropriate Tool

Selecting the appropriate approach to creating submissions can be overwhelming. Outlined below are some common situations for forest management mapping and information management and suitable approaches for preparing submissions.

No Mapping or Data Management Infrastructure

Where an organization has no existing mapping or data management infrastructure and has typically contracted the development of Cutting Permit, road permit and silviculture mapping and entry of forms, the most logical approach to preparing and submitting e-submission is through a data service provider.

Service providers offer a wide range of services for e-submissions to help MFR Clients prepare and submit tenure and silviculture information to the Ministry of Forests and Range.

CAD Mapping without Linked Attribute Information

Where an organization utilizes a CAD tool for the creation of mapping information, but does not utilize a database system or application to manage attribute information the MFR Client could use a service provider or an application to prepare submissions. The service provider option is best suited when there are a small number of submissions to be made an/or the MFR Client does not wish to spend the time and effort learning new technology. If a MFR Client prefers to control the creation or wishes to utilize internal resources of the submissions, the best option is to use an e-Submission Document Management Tool.

Inconsistently Managed GIS or CAD Mapping and Attributes

Where an organization's data is found in various systems with both spatial data and attribute information not following a consistently applied standard, the best approach to create submissions will be to utilize an e-Submission Document Management Tool. This approach is more likely to make the process of developing submissions easier as the tools provide the functionality necessary to correctly format the submission without depending on correctly formatted data. Other alternatives rely on very specific format and structure or a great deal of technical expertise to accurately create the submission document.

Well Managed GIS or CAD Mapping and Attributes

In instances where consistent standards have been utilized in creating spatial and attribute data and the relationships between attribute and spatial are well established, various approaches exist to correctly creating submission documents. Firstly, an organization could utilize a Data Conversion Tool and create scripts to extract information from the data stores and convert it into the submission format. This approach requires expertise in the development of translation scripts and use of somewhat complicated data conversion tools, but allows for easy batch processing of submissions.

Use of non-spatial Forest Management Systems

In cases where organizations have systems in place to manage attribute information, but use various approaches to manage spatial data, there are two main approaches. If the spatial data and the attribute data are managed consistently and relationships between spatial data and attributes are well established, data conversion tools may prove useful. In cases where the linkages between spatial and attribute information is not well established and standard data management approaches are not followed, an e-Submission Document Management Tool is a likely solution. This approach will allow for submissions to be quality assured and provide easy methods to visualize and review the submission prior to being submitted.

Integrated Forest Management Systems

In instances where an organization utilizes an integrated forest management system the best approach to dealing with e-submissions is to talk to your system provider to determine if they are supporting e-submissions directly from within the integrated system. If your provider does not have support or it is a system developed in-house, it may be worthwhile exploring the development of custom applications that create the submissions directly and allow for quality assurance and review of the submission. In this situation where technical resources are available, the use of a data conversion tool may be a suitable approach.

Key factors in selecting a e-submission Approach

1. How well is the data managed? Poorly managed data makes batch processing, data conversion and the development of custom scripts difficult. Don't assume that if you have a database system in place that your information is well managed, information management also relies on how a system is used and implemented.
2. What technical resources and skills does an organization have to allocate to the preparation of e-submissions? Data conversion and scripting requires technical resources to maintain and manage. The simplest approach to managing technical resources is to utilize a qualified service provider. The more technically challenging approach is development and maintenance of data transformation scripts.
3. How many different systems do you use to manage information that you will be submitting? If you utilize many different systems to manage information that will be submitted, the solution you select should work for all the types of submissions you will be making.
4. Do you already have a system that directly supports e-submission? Many information management systems utilized in British Columbia will have e-submission support. It is worth checking with your product vendor to determine what submissions they support.
5. What features will make your life easier when creating submissions? The selection of one approach over another is not trivial and it is worth investigating the options out there. Talk to product vendors and service providers to fully understand what will work best for your situation.

Appendix B. Formatting spatial objects

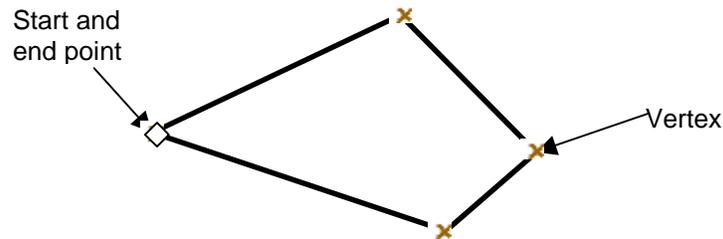
Key to the electronic submission framework is the inclusion of spatial data. To ensure submissions are accepted, spatial information must be formatted correctly and topologically correct. Topology refers to the structure and rules that must be applied to have valid geometric objects that can be used in analysis.

Basic structures for geometry include:

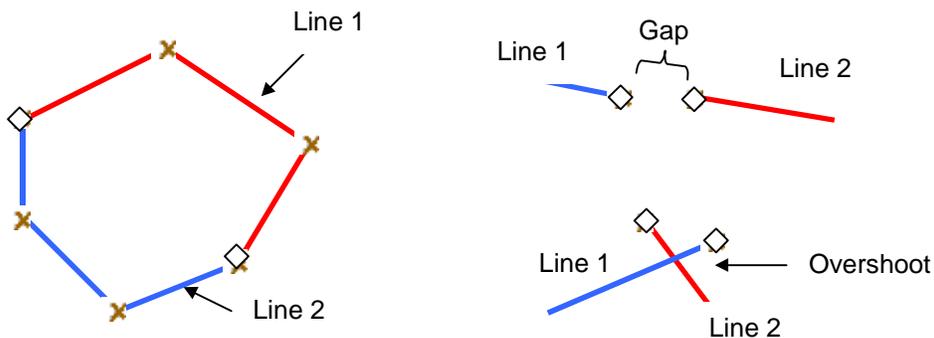
- Polygons
- Lines
- Points

Polygon Topology

A polygon is a closed shape that has a starting point equal to its' end point and is made up of a minimum of three points or vertices.



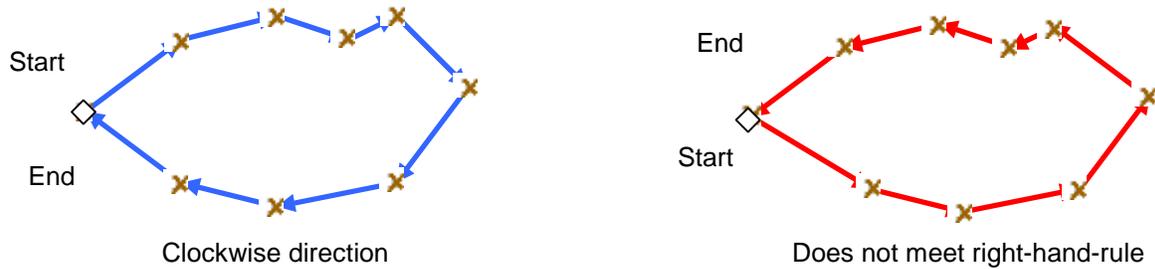
A polygon start and end point must be of the exact same coordinate for the polygon to be considered closed. In some CAD systems polygons can be represented using lines. When lines are used to represent polygons the start and end points of each line forming the polygon must have start and end point coordinates that match exactly. Lines forming the polygon cannot overlap and the point of intersection must be where the end and start points meet.



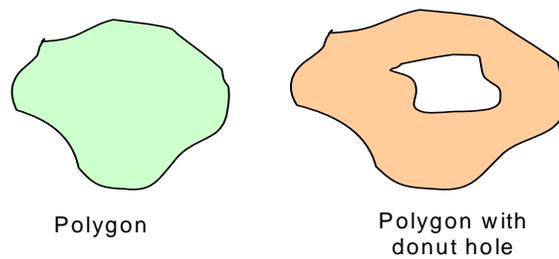
To ensure that end points and start points exactly match with CAD data requires the use of third party software. It is strongly recommended that data being converted from DGN to GML be cleaned using a tool such as MAPS 3D prior to converting to GML.

For polygons, it is common approach to ensure that the order of vertices flows clockwise. The standard approach ensures that the inside of the polygon is always on the right side of a line going from the start of

the line to the end. This is often referred to as the “right-hand-rule” and helps identify the inside and outside of the polygon. This rule should be applied to polygon holes as well.



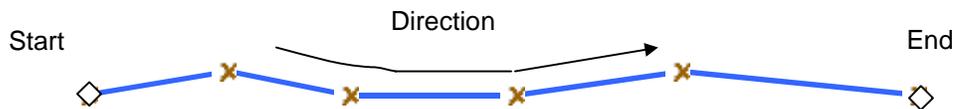
Polygon holes are used to identify internal donut holes in a polygon.



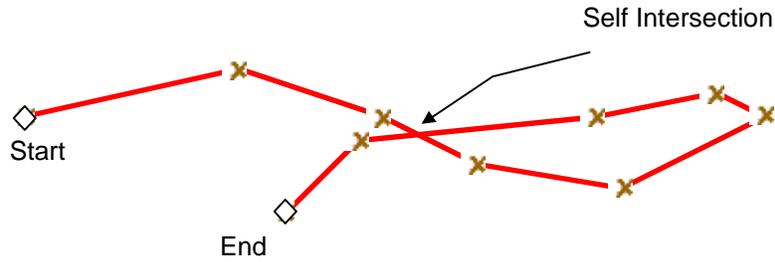
When properly formatting GML for e-submission, polygon topology is critical to properly represent a spatial feature. GML uses linear rings to represent internal polygon holes as well as outer boundaries of a polygon.

Linear Topology

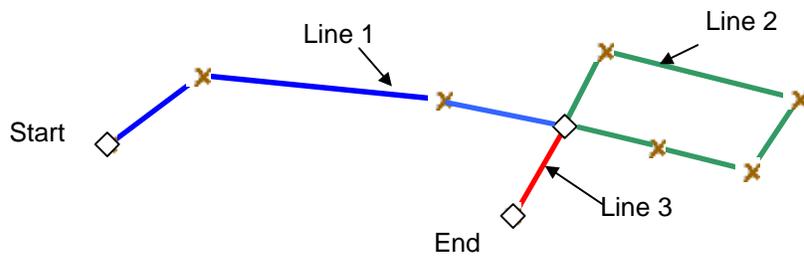
Lines are fairly simple structures. These consist of a starting point and at a minimum an end point. Direction of a line is dictated by the location of starting and end points.



When building information that requires direction, ensure that lines are formatted correctly. Lines must not intersect themselves in all submissions.



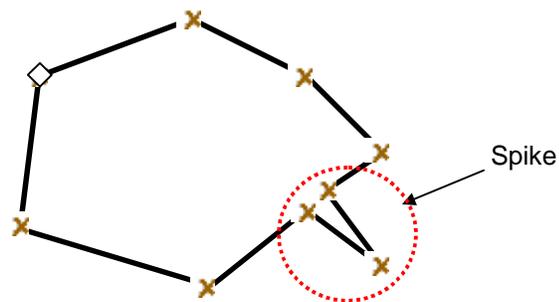
When a line intersects itself it likely identifies that two separate lines are required.



Common Topology Issues

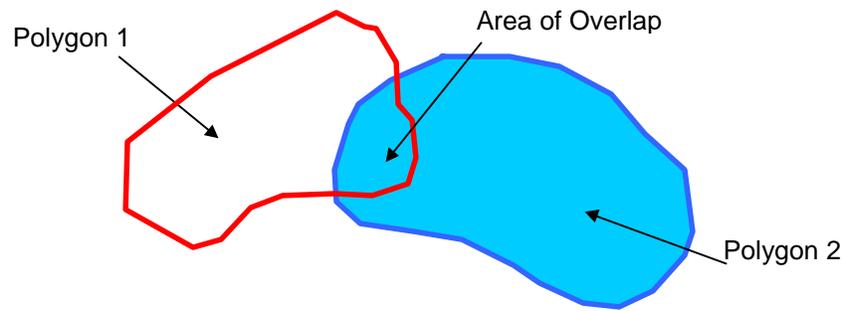
Spikes

In some cases spikes are formed during the preparation of data. Spikes are portions of lines or polygon edges that form sharp angles between three vertices. These spikes become individual polygons as automated processing occurs in many GIS or spatial processing systems.

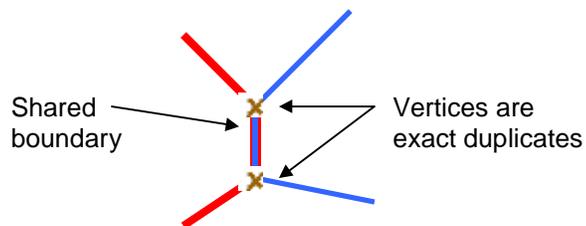


Overlapping Features

When dealing with multiple geometrics, overlap can occur and small slivers formed between geometrics. Where features follow a shared boundary, the vertices must be identical in both geometrics to ensure no slivers or overlaps occur.



When formatting shared boundaries in a CAD environment the same lines (a copy) should be used to form a boundary between features.

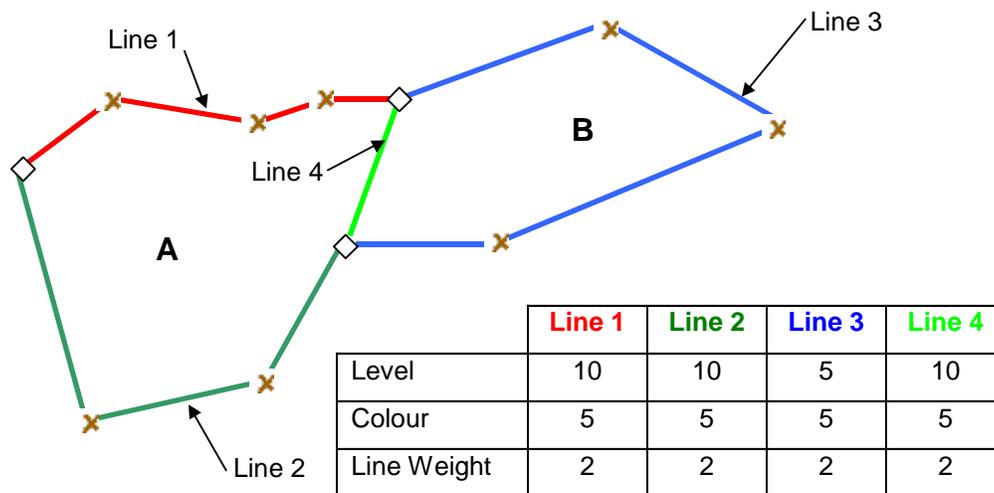


In Microstation using complex shapes to represent geometry makes ensuring the shared boundaries between features difficult. It is recommended that polygons are represented in Microstation using lines.

Using CAD to represent topology

CAD systems, such as Microstation do not support management of topology. This does not preclude using CAD systems for mapping for ESF submissions, but does require standardization of creating files and use of third party software. The management of topology and structures is one of the key things separating CAD systems and GIS systems.

Polygons can be represented in Microstation by using proper structure.



Polygon A is formed by lines 1, 2 and 4 as they all have the same level, line weight and color (other factors can be used to relate lines into polygons). Polygon B cannot be created because there is no way to relate color, line weight, and level to form a polygon. Polygon B is difficult to determine even though it “looks” right based on the fact that line 3 is on a different level from all other lines. Using CAD attributes help data conversion tool create topological relationships.

There are many ways to create topological relationships in a CAD environment, but they require the development and consistent application of standards. It is recommended that organizations wishing to use CAD tools to map data for submission consult an expert to create standards to create the structures necessary to properly convert into GML.