



Pre-stand Tending Survey and Prescription Development Standard

FINAL April 13, 2012

These standards apply, in addition to the [General Standards for Ministry Funded Programs \(FS 1001\)](#), to all survey activities funded under Ministry Programs.

CONTENTS

ARTICLE 1: GENERAL STANDARDS	2	ARTICLE 4 RECONNAISSANCE (RECCE) PRE-STAND TENDING GROUND SURVEY STANDARDS	6
1 (optional) - <i>are specific underlined clauses available for optional selection (underlined blue are hyperlinks and are not optional clauses)</i>	2	ARTICLE 5: PRE-STAND TENDING PLOT SURVEY STANDARDS	8
2 (insertion ~) - <i>are where specific underlined values are required to be entered (suggested values maybe listed)</i>	2	ARTICLE 6: REQUIRED PRESCRIPTION, EVALUATION, LAYOUT & REPORTS	9
Definitions	2	General	9
Information and Materials Furnished by the MFLNRO	3	ARTICLE 7: SUBMISSION INTO RESULTS	11
ARTICLE 2: PERSONNEL	3	General	11
Crew Qualifications	3	ARTICLE 8: ADDITIONAL DISTRICT SPECIFIC STANDARDS	11
ARTICLE 3: STANDARDS APPLICABLE TO ALL SURVEYS	3	ARTICLE 9: QUALITY INSPECTION	11
General	3	Quality Inspection - General	11
Format of Documentation	4	Method of Inspection	11
Survey Stratification Criteria	4		
Survey Lines and Plots (where applicable)	4		
Recommendations	5		
Survey and Treatment Maps	5		
Survey Maps - Additional Requirements	6		
Treatment Maps - Additional Requirements	6		

ARTICLE 1: GENERAL STANDARDS

NOTE (The following variation features of this document require the direction of the **Ministry Designated Representative**):

1 (optional) - are specific underlined clauses available for optional selection (underlined blue are hyperlinks and are not optional clauses)

2 (insertion ~) –are where specific underlined values are required to be entered (suggested values maybe listed)

Definitions

1.1 In this document the following words shall have the following meanings.

- (a) “**Accredited Silvicultural Surveyor**” means a person who is registered with the Resource Practices Branch of the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) as an Accredited Silvicultural Surveyor.
- (b) “**Approved Surveys Quality Inspection System**” or “**Approved SQI System**” means the inspection system contained in this Document **or** another similar system approved in writing by the, **Ministry Designated Representative** prior to the commencement of Work.
- (c) “**Control Area**” means an identified area no less than 1 ha. in size located within or adjacent to the prescribed area to be treated (clearly representing the target stand conditions to be treated), that will be left untreated as a control zone for future monitoring of prescribed treatment effectiveness.
- (d) “**Crew**” means one person, or a group of persons working together in the same Opening.
- (e) “**Inspector**” means any person (identified by the Ministry Designated Representative) who under the defined roles of the Approved Surveys Quality Inspection System, performs an inspection review of a survey or treatment prescription - this includes a Recipient (reviewing Contractor work); an Independent Contractor; or MoFLNRO staff (Regional or District).
- (f) “**Ministry Designated Representative (MDR)**” means the MoFLNRO staff person(s) or Ministry Designated Administrator/Authority, identified at the project pre-work and documented in Article 8 of this document, who is responsible for the outcomes of the surveys performed under this standard, and will be empowered to give approval and/or direction to specific article content in this standard that references this title.
- (g) “**Opening**” means an area identified on a vegetation resources inventory map by an opening number.
- (h) “**Pre-stand Tending Survey**” means an assessment to collect stand attributes that are required for making an intensive silviculture prescription.
- (i) “**Reconnaissance Survey or Recce**” means a form of screening walk-through survey that can be systematic or non-systematic in nature, and involves physically walking through a stand to visually note and record characteristics found in the stand and results in a next action recommendation.
- (j) “**Stocking Standards**” means the stocking requirements per BEC site series (i.e. Minimum and Target WS /ha values of ecologically suitable species, of minimum heights) applicable to an Opening that are found either in an approved prescription or within the default Provincial Stocking Standard website – refer to Article .3.11.
- (k) “**Stratification Criteria**” means the criteria a contractor will use to stratify an opening for survey sampling and reporting purposes, as set out in these standards.

- (l) **“Stratum”** or **“Strata”** means, respectively, a Survey area or areas for which the boundaries are determined by the Stratification Criteria for the type of Survey referenced.
- (m) **“Survey”** means, as the context requires a reconnaissance pre-stand tending survey or a full plot pre-stand tending survey and includes the collection and analysis of field data, and all forms, maps, reports, photographs, Survey Summary and Treatment Prescriptions required by this standard.
- (n) **“Survey Map”** means a map produced according to the specifications in Article 3.
- (o) **“Survey Summary”** means a short (no more than one page) summary report from a Survey (signed by the Accredited Silviculture Surveyor), composed of the outcomes of the data compilation and an abbreviated Treatment Prescription (if a treatment is prescribed).
- (p) **“Treatment Map”** means a map produced according to the specifications in Article 3.
- (q) **“Treatment Prescription”** means a logical, biologically-sound, cost-effective recommendation, based on survey results and anticipated stand development, which specifies any future Surveys and/or silviculture treatments that are required for a Stratum, and which also specifies the year and season during which any such Survey or treatment should take place.
- (r) **“Vegetation Resources Inventory Map”** means a Vegetation Resources Inventory Map maintained by the MFLNRO or by a holder of a Tree Farm Licence or Community Forest Agreement.

Information and Materials Furnished by the MFLNRO

- 1.2 At the request of the Contractor, the **Ministry Designated Representative** will provide or facilitate access to :
- (a) any Treatment Prescription or Work Plans applicable to the Openings, when they exist;
 - (b) copies of the Vegetation Resources Inventory Maps applicable to the Openings to be surveyed;
 - (c) applicable aerial photographs or access to ortho photos, subject to any conditions of use that may be attached; and
 - (d) all other available information considered by the **Ministry Designated Representative** to be pertinent to the Work.

ARTICLE 2: PERSONNEL

Crew Qualifications

- 2.1 Each Survey Crew must include at least one Accredited Silviculture Surveyor on the ground who has been to every Opening being surveyed greater than 5 ha. All personnel performing the Work must be familiar with the Treatment Prescription options that are appropriate and generally considered acceptable for the area.

ARTICLE 3: STANDARDS APPLICABLE TO ALL SURVEYS

- 3.1 The standards of performance in Article 3 apply to every Survey – either a recce or full plot pre-stand tending survey.

General

- 3.2 All Treatment Prescriptions must be signed and sealed by an RPF or RFT.

- 3.3 All contents and sections of this document pertaining to specific Survey Standards, will supersede any similar content and section procedures stated in [Silviculture Survey Procedures Manual](#).

Format of Documentation

- 3.4 Where Survey data or results are summarized or represented using computerized or other electronic means, the display, content and format of the information must substantially duplicate the corresponding MFLNRO forms – specifically the FS 657, 748 and 770 and its respective procedural requirements.

Survey Stratification Criteria

- 3.5 Unless otherwise specified in this Standard, Work Area(s) will be stratified as set out in [Silviculture Survey Procedures Manual](#) - Section 3.2: Preliminary Stratification and Section 3.8.1: Field Stratification.

Survey Lines and Plots (where applicable)

- 3.6 Survey lines and plots will be established using either Global Positioning System (GPS) units (preferred), or by manual chaining methods. Survey lines and plots must be identified as follows:
- (a) For both GPS and manual chaining methods:
 - i) point of commencement (P.O.C.) must be marked with flagging tape showing the Opening number in waterproof ink;
 - ii) flagging tape must be affixed at a height of approximately 1.3 meters above each plot centre, showing in waterproof ink the plot number, (optional) date of survey, surveyors initials (if not included with the plot number);
 - iii) flagging tape must be affixed to the ground at all plot centers;
 - (b) If a GPS is being used, plot centre UTM Coordinates must be provided;
 - (c) If a manual chaining method is being used:
 - i) survey baseline (if established) and all strip lines must marked with flagging tape showing the baseline and strip line number in waterproof ink;
 - ii) all plot centre flagging tape affixed at 1.3 meters must have the bearing and distance to the next plot written in waterproof ink.

Site Index (SI) Methodology

- 3.7 Site index must be collected following the procedural guidelines outlined in *Land Management Handbook 12 - Selecting a Method to Estimate Site Index 2006*: [Selecting a Method to Estimate Site Index, 2006](#).
- 3.8 The following is a site index hierarchy process applicable to Ministry treatment objectives and Stratum conditions:
1. First if possible, use of the growth intercept (GI) method is most recommended. Tally site index for the current dominant/co-dominant species of the leading species in the Stratum of the largest diameter, with a minimum of (insertion ~3 to 5) samples per Stratum. If a leading species growth intercept cannot be collected, a secondary species will be collected (if possible), again from dominant/co-dominants, and converted for the leading species site index. Data should be collected from non-understorey or non-suppressed trees.
 2. Second, if the growth intercept method cannot be used, the second choice is via Site Index by BEC (SIBEC) **second** approximation data for the

appropriate species (usually denoted by a sample size, standard error and decimal site index in the SIBEC table); or

3. Third, the choice would be via SIBEC **first** approximation data for the appropriate species (usually denoted by no sample size, no standard error and whole number site index in the SIBEC table). SIBEC tables for all BEC subzones/site series by species, by old Forest Service Regions, are available on the [SIBEC](#) webpage.

Access

- 3.9 Current access and required access improvement notes shall be collected during all Surveys and documented/summarized in the Treatment Prescription.

Forest Cover Inventory Label

- 3.10 All Surveys must produce a complete updated forest cover inventory label for each Stratum, as specified in the *Silviculture Survey Procedures Manual* and the RESULTS Information Submission Specification - Government Submission. If a Recce Survey is performed and no treatment is recommended, and there is a current (within the last 5 years) FG survey forest cover inventory label in RESULTS that still best describes the stand attributes, then there is no requirement to update the forest cover label.

Silviculture Label Requirement Criteria

- 3.11 An **estimate** of the updated Silviculture Label is **only required** for each Stratum that recommends a **stand treatment** (based on the ocular estimate of qualified surveyors and not measured plot data). Label content is specified in the RESULTS Information Submission Specification - Government Submission. The intent of this label is to document the base silvicultural composition that is present, relative to the prescribed treatment plan and desired composition. As well, if the prescribed stands are not funded for treatment, a complete silviculture label would be valuable information for future redesign of treatment plans. The Stocking Standards applicable in order to determine the Well Spaced (WS) and Free Growing (FG) stems within the Silviculture Label will follow the hierarchy of locating the appropriate standards:
 1. From an existing and most current approved Site Plan, Silviculture Prescription, PHSP or previous Survey or Prescription containing complete Stocking Standards.
 2. If none of the above documents are available, the Stocking Standards for the Openings' site series will be used as listed in the Default Stocking Standards for all BEC subzones in the province at the [Stocking Standards Website](#).

Recommendations

- 3.12 Subject to the outcome of a Survey, Treatment Prescriptions must be developed in accordance with:
 - a) the procedures in the *Silviculture Survey Procedures Manual*; and
 - b) any previous Treatment Prescriptions for the Opening, if one exists

Survey and Treatment Maps

- 3.13 Survey and Treatment Maps must:
 - a) be submitted in accordance with the RESULTS Information Submission Specification - Government Submission in Chapter 6 for use in RESULTS submissions; and
 - b) the two maps can be combined into one Survey and Treatment map if directed by the Ministry Designated Representative.

Survey Maps - Additional Requirements

- 3.14 In addition to the requirements of Article 3.13, Survey Maps must also show:
- a) the type of Survey;
 - b) biogeoclimatic (BEC) classification from the subzone to the site series level;
 - c) Opening and Strata area;
 - d) Inventory label;
 - e) points of commencement of the survey;
 - f) plot centers numbered at least every fifth plot; and
 - g) (optional) survey lines and direction travelled.

Treatment Maps - Additional Requirements

- 3.15 Treatment Maps must show:
- a) biogeoclimatic (BEC) classification from the subzone to the site series level;
 - b) Opening and Strata area;
 - c) inventory and silviculture label (including either well spaced [WS] or free growing [FG] per Stratum);
 - d) treatment unit boundaries (treatable areas) and identifiers;
 - e) treatment Control Area identified (minimum 1 ha. untreated);
 - f) abbreviated Treatment Prescription Recommendations;
 - g) the direction and distance to nearest town; and
 - h) gross and net treatment area.

**ARTICLE 4 RECONNAISSANCE (RECCE) PRE-STAND TENDING
GROUND SURVEY STANDARDS**

General

- 4.1 An initial reconnaissance (Recce) of a Stratum is a form of screening walk-through survey. The Recce will be either systematic or non-systematic in nature, and will involve physically walking through a Stratum to visually record information (either with or without plot data collection) as defined in this standard. A small number of sample plots **may** be established (Article 4.5 to 4.7), but specified information (Article 4.4) must be collected to further define the characteristics of the Stratum and recommend the next course of action.

Recce Procedures

- 4.2 It is recommended that the Recce be performed on a transect basis so that the whole Stratum is covered. A transect can be established either on a predetermined basis or via a random walkthrough. The resultant Recce transect location will be rough mapped or GPSed.
- 4.3 Pre-stratification is recommended prior to performing the Recce in order to identify homogeneous Strata for sampling. This can be performed at a coarser (multi-Opening) scale than normally performed for a full silviculture survey scale. Photos, images and maps, and / or aerial overviews (i.e. by helicopter) are recommended in this pre-stratification procedure. Stratification criteria must follow the procedures included in Article 3.5.

Non-Plot Recce Information

- 4.4 Non-plot measurements/observations collected during the Recce and in-between plots (if established) include:
- a) BEC classification from the subzone to the site series level;
 - b) Forest health factors/damage agents (where applicable);
 - c) Site index using SIBEC
 - d) Delineation of stratum boundaries.
 - e) Densities and range of dbh of total stems by species;
 - f) Impeding broadleaf brush issues;
 - g) (optional) photograph(s) representing the stratum;

(optional) Recce Sample Plot Procedure and Information (if required)

- 4.5 Plots should be established “representatively” as per the representative sampling methodology outlined in the *Silviculture Survey Procedures Manual*.
- 4.6 Number of plots required are:
- a) a minimum of 1 plot should be established for every (insertion ~ 10) hectare(s) – or portion thereof, with a minimum of 3 plots in total.
 - b) a minimum of 5 plots should be established in any Stratum which is recommended for a Treatment Prescription, and any Stratum where a change to the inventory label is being recommended.
- 4.7 The following data shall be recorded at each Recce sample plot in addition to the data requirements of Article 3 and 5 of this standard (except for Article 5.1 - Sampling Intensity):
- a) tally the number of crop trees and total trees by species, and dbh classes (increments of 2-3 cm) in a 3.99m plot or 5.64 m plot (at the surveyor’s discretion);
 - b) Where a spacing treatment is to be recommended based on the recce only, record live crown ratio, height to live crown from a minimum of 3 sample trees and site index from at least 3 plots per stratum. Data collected should be sufficient to meet the requirements of Article 6.4.
 - c) (optional) take photograph(s) representing the Stratum.

Next Course of Action Recommendation

- 4.8 Upon completion of the Recce and/or Recce sample plot establishment, and the compilation of the data collected, there will be a recommended next course of action included in the Survey Summary. The categories are either:
- a) **Re-assess** - Do another Recce in the future and recommend a date of reassessment. May also recommend a different survey such as plantability for NSR, brushing and weeding or forest health assessments. (For example: Significant elk damage, stratum is NSR, recommend a plantability survey April 2013).
 - b) **Leave as is** – No treatment or further assessment required (For example: Insufficient density or non -priority species to support a juvenile spacing treatment);
 - c) **Conduct a full survey** - Recommend a full survey and plot intensity. (For example: Initial recce of strata indicate a great deal of variability in levels and distribution of densities and therefore it’s very difficult to accurately describe the Stratum with a walk-through and limited plot establishment); **or**

- d) **Develop a Treatment Prescription** - Includes primarily a juvenile spacing treatment. (For example: In Strata which are uniformly over dense and meet the selection criteria easily everywhere in the Stratum, it would be redundant to do a full survey, as Recce observations and possible Recce plots have provided enough information. Collection of current access and required access improvements are required, as outlined in Article 3.9).

ARTICLE 5: PRE-STAND TENDING PLOT SURVEY STANDARDS

General

Full Pre-stand Tending Survey Sampling Plot Intensity

- 5.1 The sampling design and intensity will be driven by the degree of variability and complexity found in the Stratum during the Recce. Increased Stratum variability and complexity typically will require more sampling. Plot intensity will range from 1 plot/(insertion ~2)ha to 1 plot/ (insertion ~10)ha. A minimum of 5 plots/Stratum is required. Regardless of the plot intensity, the surveyor must ensure that their plot locations provide uniform coverage of the Stratum. This process will help ensure the plot data is representative of the whole Stratum.

Plot Data Collection and Tally of TT and TC Trees

- 5.2 The following defines the procedure for data collection at each plot – unless a different frequency is identified per data point:
- a) Tally the number of crop trees and total trees by species, and dbh classes (increments of 2-3 cm) up to 15 cm in a 3.99m plot or 5.64 m plot (at the surveyor's discretion);
 - i. (optional) For IDF subzone multi-storied stands with spacing potential, these Strata are to be assessed by tallying TT, and TC, by layer and are defined by the following criteria for these surveys:
 - Layer 1 ≥ 12.5 cm dbh, (stem tally and BA estimate with prism);
 - Layer 2 ≥ 7.5 cm dbh and <12.5 cm dbh;
 - Layer 3 >1.3 m ht and <7.5 cm dbh;
 - Layer 4 ≤ 1.3 m ht.
 - b) Measure one sample crop tree - average dominant or co-dominant (and one suppressed per sample tree plot for Interior Strata) - record dbh, live crown ratio, height to live crown; total height, and breast height age **for a minimum of 5 plots per stratum or every second plot, to a maximum of 10 samples per stratum;**
 - c) Tally broadleaf competition, including alder, maple, willow, cottonwood, bitter cherry, birch and /or aspen by densities by species and dbh class, number of coppices and stems per coppice, and height to live limbs;
 - d) Estimate and record site index using the methods and minimum plot frequency described in Articles 3.7 and 3.8 to a maximum of 10 samples per stratum;
 - e) Record forest health factors/damage agents (where applicable);
 - f) Record presence of danger trees and requirements for danger tree assessments;
 - g) Where alder, maple or cottonwood are considered crop trees, data collection will include all data for Articles 5.2, excluding section c); and,
 - h) Tally or record other factors/observations that may affect treatment operations as per criteria defined by the Ministry Designated Representative, i.e., numbers of ghost cedar trees and/or western white pine, whips to be cut, and/or brush issues (as outlined in Article 8).

(optional) Supportive Photography

- 5.3 Colour photographs may be taken showing representative views of any Stratum requiring detailed explanations of complex or unique conditions observed by the surveyor.

ARTICLE 6: REQUIRED PRESCRIPTION, EVALUATION, LAYOUT & REPORTS

General

- 6.1 The Ministry Designated Representative may at any time request the Contractor to provide any information related to the Work, and the Contractor shall supply the information within a reasonable time period.

A Survey Summary will be produced for all Surveys and will be submitted as outlined in Article 6.9.

Treatment Decision Criteria

- 6.2 Recommendations for treatment – specifically Juvenile Spacing – will be made by the Contractor only for strata that meet the Interim Field Guidelines for the Selection of Stands for Spacing, either for the Coast FS 448A or for the Interior FS448B, whichever is appropriate regionally.

Forest Health Treatment impacts must be considered as outlined in the guideline documents referenced above. Actions for specific pests are:

- a) Black Headed Budworm (IDH) defoliation observed: no Juvenile Spacing treatment.
- b) Western Spruce Budworm (IDE) defoliation observed: Should be reported to the regional MFLNRO specialist before planned treatment (spacing is an acceptable treatment).

Treatment Prescriptions

- 6.3 Treatment Prescriptions will be prepared for all separate treatment units where activities, other than future surveys, are required.
- 6.4 For all Strata with proposed treatments (treatment areas), a complete Treatment Prescription will be produced by the Contractor, comprised of 4 components:
1. Completed LBIS Pre-Stand Tending Survey Report Template—manually completed and/or digitally uploaded, including the following elements in the Recommendations Section of the Template:
 - a. a schedule of treatments and treatment window including options/alternatives, preference rationale, and follow-up surveys;
 - b. danger tree assessment recommendation where applicable;
 - c. total hectares of the prescribed treatment unit, (optional) as determined by a GPS traverse;
 - d. access notes including information on accessibility and any required access improvements (e.g. 4WD, quad access only, required road or culvert repairs, brush removal and other);
 - e. for spacing treatments include:
 - i. crop tree to be left and order of preference, minimum inter-tree distance between crop trees, target and minimum and maximum crop trees per ha., minimum cutting height below which trees are not required to be cut, minimum stump height, criteria related to the cut stump angle, treatment of slash and maximum slash depth and any areas of unspaced buffers (e.g. 10m unspaced buffers established along all drivable roads);

- ii. (optional) For IDF subzone Strata with multi-storey stand structure, a Prognosis model report is required.
 - f. any forest health issues to address;
 - g. where a Stratum may also require brushing treatments, include competing species densities, average dbh and range, average height and range, height to live limbs, potential coppice issues and prescriptions, optional treatment methods, rationale for treatment in tandem with spacing operations, and comments on other issues with potential to affect operations; **and**,
 - h. any necessary measures to address potential Integrated Resource Management values.
2. Additional digital attachments relative to the [LBIS Pre-Stand Tending Survey Template](#) such as:
 - a. Colour photograph for each Stratum.
 3. Treatment Map with location of Control Area;
 4. Survey Summary

(optional) Layout of Treatment Units (treatable areas)

- 6.5 The Contractor will only layout and/or traverse those areas approved by the **Ministry Designated Representative**.
- 6.6 If traversing is required of treatment units, roads and spur roads, it is preferred to be completed using GPS technology
- 6.7 All non-GPS layouts and traverses must be aerial-photo tied and ground-tied to a mappable unit.
- 6.8 All treatment unit boundaries will be flagged using winter weight ribbon of the colour and format as defined by the **Ministry Designated Representative** and TSA standard. All flagging shall be inter-visible at a glance (i.e. two consecutive ribbons are visible in one direction), and attached as high as possible, to residual stems. Layout of treatment areas must exclude non-productive areas (i.e. roads & landings), areas unsafe for spacing due to steep terrain, voids > (insertion ~0.5) ha and Stratum with an average stand density < (insertion ~2000) stems per hectare.

Reports and Deliverables

- 6.9 For each Opening that a Survey is performed, the Contractor will ensure the provision of the following products to the **Ministry Designated Representative** and deliverables 2 to 4 in the following table will be included as attachments in the RESULTS submission.

Recce and Pre-stand Tending Survey List of Deliverables	# of Original s	Digital Deliverable Format (insertion ~ content)
1. All original field data and summary forms.	1	<u>Not applicable</u>
2. Survey Map and Survey Summary.	1	<u>.pdf</u>
3. LBIS Pre-Stand Tending Survey Report Template (signed by an RPF) and Treatment Map, where future treatments are recommended.	1	<u>.pdf</u>
4. <u>(optional) Colour photograph for each Stratum</u>	<u>1</u>	<u>.jpg (incorporated into report)</u>

ARTICLE 7: SUBMISSION INTO RESULTS

General

- 7.1 The Contractor must submit completed survey data, prescribed planning activities (where applicable), forest cover polygon data, inventory label data, silviculture label data (where applicable), attachments such as photos (where applicable) and digital maps into RESULTS using Electronic Submission Framework (EZLink or CENGEA) or online submission (whichever is applicable).

Data Entry Standards

- 7.2 All data must be entered into RESULTS in accordance with the FFT Standards for RESULTS Submissions. This standard describes the process of creating new Openings and provides a link to the Provincial Standard for RESULTS submissions - "RESULTS Information Submission Specifications for Government Funded Silviculture Activities" and "Silviculture Information Submission Guidebook".

RESULTS Quality Management

- 7.3 For the purposes of quality management, the Contractor must submit tabular and spatial data for 5 (five) Openings into RESULTS by a deadline specified by the **Ministry Designated Representative**. Following this initial submission, the Contractor will periodically provide to the **Ministry Designated Representative**, a list of Openings that have been successfully submitted into RESULTS.

ARTICLE 8: ADDITIONAL DISTRICT SPECIFIC STANDARDS

- 8.1 Additional standards to all of the base standards above (including TSA specific Forest Health factors impacting prescriptions), may be requested by specific TSA **Ministry Designated Representative**. These additional standards must be attached to this document.
- 8.2 These additional standards will be clear as to the Articles of this base standard that are being added to and/or superseded and will contain specific rationale for a variance to this base standard.

ARTICLE 9: QUALITY INSPECTION

Quality Inspection - General

- 9.1 Unless otherwise specified by a Ministry Designated Representative, the methodology given in this Article shall form the basis for the Approved Surveys Quality Inspection System.

The Approved SQI System will involve potentially two parties: at least the Ministry Designated Representative and potentially a second as the Inspector – if different than the Ministry Designated Representative.

Method of Inspection

- 9.2 If the Deliverables contain all of the required elements and are deemed satisfactory, the Ministry Designated Representative / Inspector shall conduct a reconnaissance of the Payment Area to carry out a preliminary assessment of the quality of the Work.

- 9.3 If, after any reconnaissance, the Ministry Designated Representative / Inspector decides, in their discretion, to conduct field inspections of the corresponding Payment Area, they shall inspect 10% or more of the Payment Area to determine compliance with the terms and conditions of this Agreement.
- 9.4 The Ministry Designated Representative will provide the Contractor with a copy of the inspection of the Deliverables and the preliminary assessment, and/or field inspection within 10 working days of the date of the inspection so that the Contractor is notified in a timely manner as to:
- (a) whether to proceed to the next activity or phase of Work; and/or
 - (b) any deficiencies or non-compliance with the Agreement.

Field Inspection

- 9.5 The Ministry Designated Representative / Inspector shall conduct field inspections by checking, at their discretion, the results of all plots and lines established by the Contractor on a portion of the Payment Area or by establishing an independent survey of some of the Strata within the Payment Area.
- 9.6 Where the Ministry Designated Representative / Inspector checks the results of actual plots established by the Contractor in an Opening, they shall inspect the greater of ten (10) plots established or 10% of plots established, and the Province shall assess and compare the data it obtains with that collected by the Contractor for the same plots.

Provision of Field Maps

- 9.7 The Ministry Designated Representative may request that the Contractor provide them with copies of Survey cards and field maps for any Stratum surveyed, and the Contractor shall supply the copies within a reasonable time period as agreed to by the Ministry Designated Representative.

Satisfactory Work Quality Defined

- 9.8 The Ministry Designated Representative / Inspector must examine the data to the extent necessary to determine that the Survey has been undertaken and reported in accordance with this Standard, and specifically may determine a Survey to be **satisfactory** when:
- a. an Opening is correctly stratified according to the Stratification Criteria;
 - b. the Survey correctly identifies for a Stratum:
 - i. the Biogeoclimatic zone, sub-zone, and site series,
 - ii. the order of the leading and secondary species in the inventory label, and
 - iii. any pest, pest damage, disease, disease damage or other physical damage;
 - c. a field check finds a difference of no more than 10% between the Survey and the Ministry Designated Representative's / Inspector's tally in any data collected in Article 4 and 5;
 - d. field cards, reports, maps or summaries are legible, and are completed in accordance with this Standard, and;
 - e. the Deliverables are complete and contain no errors, omissions or false statements.

Approval of Payment from Inspection

- 9.9 The Ministry Designated Representative shall approve payment for any Payment Area where the Contractor has, in the sole opinion of the Ministry Designated Representative, satisfactorily completed and submitted all Deliverables and Silviculture Treatment Recommendations required for the Payment Area to the Standards of this document. The Ministry Designated Representative may approve partial payment for achievement of specified milestones as set out in the Work Progress Plan.

- 9.10 The Ministry Designated Representative will recommend the following action on a per Opening basis, for Work pertaining to all Surveys that are determined unsatisfactory due to non-compliance of the criteria identified in Article 9.8:
- a. the Ministry Designated Representative shall promptly notify the Contractor, and
 - b. the notice shall:
 - i. specify the fault, give the Contractor a deadline for compliance, and specify if the Ministry Designated Representative wishes to exercise their option to require the Contractor to rework the unsatisfactory Work; or,
 - ii. specify the fault, indicate that the Ministry Designated Representative will exercise the option to correct the unsatisfactory Work, and deduct from payment all direct and indirect costs incurred for correcting the unsatisfactory Work.

If the Contractor fails to comply by the specified deadline for compliance, or if any inspection of further Work indicates that Work is again unsatisfactory, the Ministry Designated Representative will recommend no payment per Opening basis, for Work pertaining to all Surveys.