Ministry of Forests and Range

FFT WALK-THROUGH GROUND RECCONNAISANCE SURVEY PROCEDURES FOR STANDS IMPACTED BY MPB

Effective December 15, 2006

These standards apply, in addition to the General Standards for Ministry Funded Programs (FS 1001) and the Ministry Survey Standard, to walk through ground reconnaissance surveys on stands impacted by MPB funded under the Forest for Tomorrow (FFT) Program in the Prince George TSA.

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1.0 SCOPE OF DOCUMENT

1.1 These procedures are intended as a guide, and may need to be altered to meet localized conditions and objectives.

1.2 These procedures are heavily weighted towards immature managed stratums/stands which have been juvenile spaced, but may also be applicable to immature stands which have not been juvenile spaced, or even stands which have not been managed (eg. natural regeneration after wildfire).

2.0 DEFINITION/BACKGROUND – WALK-THROUGH OR WALK-THROUGH RECONNAISSANCE GROUND SURVEY

2.1 A walk-through is an initial reconnaissance of a stand (opening, stratum etc.). They 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. A small number of sample plots or measurements should also be taken to further define the characteristics of the stand. The walk through will be used to recommend the next course of action on the stand.

3.0 RECOMMENDATIONS / NEXT COURSE OF ACTION

1.1 Upon completion of the walk-through reconnaissance and sample plot establishment, and the compilation or summary of the data collected, there should be a recommended next course of action. The broad categories are:

1. Leave as is (do nothing)
    i. For example, stands which have little to no MPB attack, and should not be susceptible to future MPB attack due to their piece size/dbh class distribution. Or stands which have an abundance of healthy acceptable understorey conifers which are keeping the stratum stocked (in the case of heavy mortality of the overstorey).

2. Complete a full survey (and recommend plot intensity)
    i. For example, stands which have a great deal of variability in levels and distribution of MPB attack, and/or in levels and distribution of potentially acceptable understorey conifers, and are therefore very difficult to accurately describe with a walk-through and limited plot establishment.
3. Re-assess. Do another walk-through reconnaissance in the future, and recommend a date.
    i. For example, stands which have only a small amount of MPB attack currently, but are susceptible to future attack due to their piece size/dbh class distribution, and the potential for MPB to enter the stand in the future.
4. Develop a treatment plan or work plan. This may include just planting, or a combination of site preparation and planting.
    i. For example, stands which are heavily attacked by MPB, and have little to no understorey conifers, and thus have very low current stocking. Essentially it would be redundant to do a full survey, as walk-through observations and plots have provided enough information.

1.2 **Note: If this is the recommendation, then additional data may need to be collected during the walk-through reconnaissance, so that a more precise treatment or work plan(s) can be developed. This would mean a minimum of 5 sample plots should be established (see number of plots section below)**

4.0 THRESHOLDS/DECISION MATRIX

4.1 The above recommendations/next course of action should at least in a broad sense be based on some threshold criteria and levels (decision matrix). Ultimately this will be driven by the level of MPB attack in the overstorey, (and therefore overstorey stocking); and the amount of acceptable understorey (and thus understorey stocking).

4.2 Two methods can be used (either separately, or both together). One is the traditional well spaced density method; the other is the DFP method of stocking assessment. As long as the recce walk-through collects all the required information, then both analysis can be done, and either, or both used to make a recommendation. However, these two methods are based on plot data only, and the recce walk-through should also be collecting information about the stand that may or may not be represented entirely by the limited number of plots. Therefore the surveyor(s) should be analyzing both their plot data and walk-through non-plot observations in making the final decision.

1. Traditional Well Spaced Density Method (minimum stocking standard/minimum well spaced trees per hectare).

A1. Stand has greater than 600sph of overstorey stocking (well spaced)

B1 Average dbh of remaining overstorey stems is less than 12.5cm

C1 Leave as is, or re-assess

B2 Average dbh of remaining overstorey stems is greater than 12.5cm

C2 Re-assess

A2. Stand has greater than 700 sph of understorey (or combination of understorey and overstorey) stocking (well spaced)

B3 Greater than 700 sph of **just** understorey stocking (well spaced)

C3 Leave as is

B4 Less than 700 sph of **just** understorey stocking (well spaced)

C4 Average dbh of remaining overstorey stems is less than 12.5cm

D1. Leave as is, or re-assess

C5 Average dbh of remaining overstorey stems is greater than 12.5cm

D2. Re-assess, or develop a treatment or work plan

A3. Stand has less than 600sph of overstorey stocking (well spaced), and/or less than 700 sph of understorey (or combination of understorey and overstorey) stocking (well spaced)

B5 Stocking is very variable across the entire stand/stratum (due to variable MPB attack levels, or variable understorey stocking) and/or it is within 100 sph of the 600 or 700 threshold levels.

C6 Complete a full survey

B6 Stocking is fairly uniform across the entire stand/stratum, and is not within 100 sph of the 600 or 700 threshold levels.

C7 Develop a treatment or work plan

2. DFP Method

A1. DFP of 0.2 or less

B1 Average dbh of remaining overstorey stems is less than 12.5cm

C1 Leave as is, or re-assess

B2 Average dbh of remaining overstorey stems is greater than 12.5cm

C2 Re-assess, or leave as is

A2. DFP of between 0.21 and 0.4

B3 Average dbh of remaining overstorey stems is less than 12.5cm

C3 re-assess, or complete a full survey

B4 Average dbh of remaining overstorey stems is greater than 12.5cm

C4 re-assess, or complete a full survey

A3. DFP of between 0.41 and 1.0

B5 Develop a treatment or work plan

4.3 For information on the DFP method of stocking assessment go to http://www.for.gov.bc.ca/hfp/silviculture/MPBI/index.htm

5.0 INFORMATION FROM WALK-THROUGH

5.1 The purpose of the walk-through is to collect pertinent information or characteristics about the stand. The broad categories of information that will need to be collected during the walk-through, and at the plots are as follows:

(a) Site Index

(b) Average dbh and range of dbh's of overstorey pine (dominants and co-dominants)

(c) Basal area (using a prism sweep)

(d) Biogeoclimatic ecosystem classification (site series)

(e) MPB attack levels, distribution and age of attack

(f) Competing (or potentially competing) vegetation and distribution

(g) Small mammal (especially hare) population levels, and/or habitat

(h) Overstorey stems per hectare (live and dead/dying) and live overstorey stocking (well spaced)

(i) Understorey conifers – species, numbers, distribution, stocking (well spaced), age and height

(j) Photographs representing the stand/stratum

(k) Delineation of stratum boundaries

5.2 Understorey tree acceptability criteria (crop tree standards)

(a) For the walk-through reconnaissance, there must be specified understorey tree acceptability criteria (crop tree standards). In the absence of stocking standards, it is the intention to try to meet the stocking standards which would be applied to the biogeoclimatic zone, sub zone and site series of the stand/stratum that appears in the Establishment to Free Growing Guidebook for the forest region in which the stand/stratum exists. This would include such things as preferred and acceptable species, stocking standards, and damage criteria. These "default" standards may be altered at the discretion of a Registered Professional Forester (RPF) if there is justification.

6.0 WALK-THROUGH RECONNAISSANCE PROCEDURES

6.1 Method of Walk-through (Transects versus "wander")

(a) While it is not absolutely critical to use transects (i.e. the walk-through could just be a "wander" through the stand), there are some key information that needs to be collected that is more easily collected while doing transects, and thus it is recommended that the walk-through be done on transects with the use of some "wander" where the surveyor thinks it appropriate.

i. Delineation of Stratum Boundaries

1. While the stratums that are to have a walk-through reconnaissance done have been juvenile spaced in the past, and there is most likely a map of where the stratum is, this stratum boundary needs to be confirmed in at least 2 locations (and possibly more if old maps are found to be incorrect). The use of transects can make the delineation of stratum boundaries easier, though it may be possible to use GPS technology to delineate them as well.

6.2 Plots

(a) The intent of the walk-through plots is not necessarily to have statistically relevant data from the plots, but to just have some data which represents the stratum and can be used as a guide for future surveys, justification to do nothing, or to re-assess in the future. Plots should be established so as to be "representative" of what is being seen in the stand. The most important "representative" aspect will be what is occurring in the overstorey, not necessarily in the understorey (i.e. do not choose "representative" plot based solely on the understorey). If overstorey and understorey are fairly uniform throughout the stand then this is a moot point.

i. Number of plots

1. 1 plot should be established for every 10 hectare – or portion thereof, with a minimum of 3 plots. That is to say that a minimum of 3 plots are to be established in any stand 30 hectares or less, with one additional plot for each 10 hectares, or portion thereof after 30 hectares.

a. Less than 30ha minimum 3 plots

b. 30 to 40ha minimum 4 plots

c. 40 to 50ha minimum 5 plots
d. 60 to 70ha minimum 6 plots
e. 70 to 80ha minimum 7 plots
f. 80 to 90ha minimum 8 plots
g. 90 to 100ha minimum 9 plots
h. over 100ha minimum 10 plots

2. A minimum of 5 plots should be established in any stratum which is recommended for immediate treatment plan or work plan, and any stratum where a change to the inventory (and silviculture) labels is being recommended (for example a stratum with heavy mortality in the overstorey but good understorey stocking which will now create the new inventory and silviculture labels).
3. Deviation from the above required number of plots can be used at the surveyor's discretion if the recommendation is going to be to complete a full survey in the future anyways (always want a minimum of 3 plots no matter what).

ii. Plot Measurements

1. Using a Pre-Stand Tending Survey card (FS 748) record at each plot:
    a. Tally the number of overstorey trees (dominants and co-dominants) by species, and dbh classes in a 3.99m plot. Use split box columns to keep track of alive and dead/attacked trees. Classes of dbh for dominants and co-dominants should be as follows:

        Less than 12.5cm

        12.5 to 15.0cm

        greater than 15cm

        i. Also record:
            1. Pick an "average" overstorey pine (alive) and in the sample trees section record it's dbh, height, age and %live crown
            2. As a comment in the sample trees section write down the range of dbh's found (again alive pine trees)
            3. Again, as a comment record the number of grey, red, and green attacks, and estimate of year of grey attack.

    b. Tally the number of understorey trees by species. Comment on their acceptability and height and age (average and range)
    c. Tally the number of well spaced understorey trees.
    d. Tally the number of plantable and/or preparable spots.

e. Do a prism sweep of alive overstory trees (dominants and co-dominants) and record the number and BAF of prism used.

f. Record the percentage cover, species and height of understorey vegetation (herbaceous and shrubs). This is important from both a potential competition on under-planted seedlings perspective, and on a habitat for hares perspective. Important species for hares are as follows:
   i. -Pink spireae
   ii. -all vaccinium spp.
   iii. -all rose spp.
   iv. -fireweed
   v. -grasses
   vi. -all legume spp. (such as peavine and vetch)
   vii. -all arnica spp.
   viii. -Cow parsnip

g. Note any browsing of conifers, especially bark, and leader or lateral branch tips.

EXAMPLE

BRITISH COLUMBIA RECCE ~~PRE-STAND~~ WALK-THROUGH TENDING SURVEY

Use this form in the field to record individual plot data for Stand Tending treatment prescriptions. Summarize on form FS 770.

REGION RNI | DISTRICT PG | ADMINISTRATION NO. | DATE Y 2006 M 08 D 25 | PAGE 1 | OF

UNIT | AREA ha | SURVEY TYPE Walk-Through Recce | REPORT NO. | OPENING NO. 936056-12 | SURVEY NO. | EXAMINER A.B. | HISTORY SYMBOL I92 L78 P79

LOCATION Barton Lake | T.S.A. | T.S.B.

POINT OF COMMENCEMENT | LINE | PLOT SIZE 50 m²

NON CROP TREE LAYER TALLY (Number of Stems by Species and Range)

PLOT NO.	SPP	Understorey	1.3-4.0	4.1-7.0	7.1-10.0	10.1-12.5	12.6-15.0	>15.0 TOTAL	Wildlife Trees	Wildlife Trees
1	Pl	0	2/0	0/5	0/2			0	2	
	Sx	1						1		
	Prism 5 BAF 3 trees (3 Pl)									

SAMPLE TREES

SPP	DBH cm	HEIGHT m	AGE years	% LIVE CROWN	Stem Damage
Pl	11.4	8.4	27	40	0/0
dbh range: 10.8-11.4					
5 trees 2 grey snags (2004)					
Sx	1.0	1.5	10	90	

COMPETITOR SPECIES TALLY

SPP	% COVER	HEIGHT (m) Current	HEIGHT (m) Est 10	Forest Health
Grass	2	.70		Pore 1
Alnus	2	1.9		P.C. Alnus Dead
				Pl maintaining on bark of 1 Pl

BRUSH: (circle) 1-N 2-L 3-M 4-H | SLASH: (circle) 1-N 2-L 3-M 4-H | CROWN CLOSURE % | SLOPE 2-5 %

COMMENTS (prescriptions, snags, wildlife, watercourses, stand damage, etc.): 1- understorey is very scattered (at plot & through out so far), mostly Sx at 80cm to 1.6m tall. Fairly healthy, 8-10 yrs old. Site Index @ Pl BH Age @ 21 Ht 9.4m = 18SI Ol site Series

FS 748 HSP 86/08 FILE ORIGINAL ON DISTRICT OPENING FILE

6.3 Non Plot Measurements:

(a) Certain measurements/observations should be collected just during the walk-through or in-between plots (or observed in-between plots and written down on the plot cards). These would include:

i. Site Index

1. Site index should be collected via the growth intercept method wherever possible. Use site index curves or SIBEC methods if growth intercept can not be used. It should be collected on a live overstorey Pl tree, but a dead one could also be used. For walk-through purposes, one or two site index measurements are sufficient. Site index can be collected at the plot location(s) as well as just on it's own during the walkthrough – this is up to the surveyors discretion.

2. See http://www.for.gov.bc.ca/hre/spwg/siteindex.htm for more information on site index.

ii. BEC site series classification

1. During the walkthrough, the surveyor should be keeping notes on the ecological classification of the stratum (BEC subzone and site series). This classification can include complexes, or completely different ecological units. However, the intention is to just get an "overview" of what the leading site series is in the stand, and not to make ecological classification a primary reason for the walk-through recce.

iii. Understorey conifers and brush species

1. While this information will also be collected at the plots, it is very important to observe and record this information in a general sense during the walk-through.

2. For understorey conifers, record some comments on the species, the total numbers and distribution, and their acceptability (could they be considered well spaced if needed).

3. For understorey vegetation, record some comments on the species, distribution and height. This is important for potential to compete with under-planted conifers, as well as an indicator of habitat for small mammals (such as hare).

iv. MPB attack

1. Make note of MPB attack levels and their distribution. This could be in the form of comments or as sketching on a map (or both).