Site Index (excerpt from the main SoP document)

Standard Operating Procedures - July 7, 2014

General Caveat Regarding the Use of This SOP:

The following standard operating procedures are based upon the principle of using the most current and reliable information wherever possible and the application steps below are the recommended process to follow. However, there may be some instances where the end user wishes to deviate from these standard operating procedures and in such cases the user should notify the ministry of the proposed deviation from this SOP with a rationale for review and approval by the ministry prior to commencing further work. Please contact Forest Analysis and Inventory Branch (FAIB) if you have a proposed deviation with rationale for consideration.

Application of a Site Index Estimate:

When assigning site index it should reflect the actual productivity of existing natural stands and the potential productive capacity of managed stands. Area-weighted averages are used to calculate the site index for all natural and managed stands.

There are only two sources for site indices:

(i) Vegetation Resource Inventory (VRI) SI estimates
(ii) SI estimates from the provincial site productivity layer

Please refer to the following process in order to determine where and when to apply the appropriate Site Index (SI) data source in your analysis.

1. (a) For currently unmanaged (natural) stands that are mature or are un-harvested MPB attacked stands use the Vegetation Resource Inventory (VRI) SI estimates*.
   (b) When these stands are harvested in a timber supply model (i.e. future managed stands), use SI estimates from the provincial site productivity layer.

*Note: Predicted yields from natural regeneration under MPB attacked stands that are not harvested, can be further adjusted by altering the standard Operational Adjustment Factors (OAFs), spatial arrangement (clumpiness factor) and regeneration delay (years). (see the OAF SOP)

2. For current managed stands use SI estimates from the site productivity layer.

**NOTE: Using RESULTS site index estimates that are coded as source = growth intercept (GI) method, may provide a more accurate site index estimate for some locations than those derived using SIBEC in the provincial site productivity layer, and could be the preferred SI estimates in some circumstances. There is, however, a risk of double counting the genetic gain when trees from seedlots with higher genetic worth are the source for estimating site index, and subsequently, these estimates are applied widely to AUs, in addition to the genetic gain

assumptions in a timber supply analysis. This risk increases over time with the deployment of A class seed with high genetic worth in managed stands. . .

Additional background information and links are attached below for your reference. Please contact the appropriate contact(s) listed below if you still have questions regarding SI data and its application.

Background – Provincial Site Productivity Layer

Site index (SI) is a key driver in stand level modeling, formulating silviculture prescriptions, and other uses; therefore it is important to have consistency in its use. Over time a number of initiatives have been completed to provide methods to estimate SI, e.g., Site Index by Biogeoclimatic Classification (SIBEC), the growth intercept method, and height-age models.

FAIB is now engaged in a multi-year initiative to improve the currency and coverage of SI information, and to make this information easier to access via a seamless SI GIS layer. The SI program characterizes the timber growing potential of forested sites across BC. This information is critical to informed land base investment decisions. Inventory staff are working with ecologists, site productivity researchers, and clients to plan and execute this program. Currently, the program is funded under the Land Based Investment Strategy (LBIS). For further information please go to the following website:

http://www.for.gov.bc.ca/hts/siteprod/index.html

The development of a province-wide spatial SI layer began with an assessment of all existing PEM, TEM, and SIBEC projects to determine how data from these projects could be integrated and loaded onto a publicly accessible data distribution site. Year 1 deliverables consisted of a seamless SI with priority PEM/TEM and SIBEC data cleaned and loaded together with biophysical model SI estimates developed in-house. When assessing which data to clean and load, the project team focused on filling information gaps in the higher LBIS priority units first and selected the most current and accurate PEM or TEM information available for these units.

The SIBEC SI estimates in the layer are SI averages by species for each site series for which data has been collected as part of SIBEC field sampling and then applied spatially through the PEM or TEM process. It is important to note that the data are collected from a large number of sample points across the province using standards and methods that are published and available. The biophysical model is used to fill in any gaps where no PEM/TEM/SIBEC data of any vintage or level of accuracy was available for these areas.

Project specific information is available for each PEM/TEM dataset that is loaded for each management unit by referencing the most recent technical documentation as follows:

- FLNR Provincial Site Productivity Layer TEM/PEM-SIBEC and Biophysical Analysis (version 4.3 March 31, 2014)

http://www.for.gov.bc.ca/hts/siteprod/download/FLNR_provincial_site_product_layer_pem-tem-sibec_biophysical_analysisv43.pdf

- Appendix B pg 33 - List of PEM./TEM Datasets

http://www.for.gov.bc.ca/hts/siteprod/download/FLNR_provincial_site_product_layer_pem-tem-sibec_biophysical_analysisv43.pdf

• Overview Maps of PEM/TEM Datasets:

http://www.for.gov.bc.ca/hts/siteprod/images/Site_Prod_v3_All_PEM_TEM.png

http://www.for.gov.bc.ca/hts/siteprod/images/Site_Prod_v3_Approved_PEM_TEM.png

• Interactive map for accessing Adobe maps catalogue:

http://www.for.gov.bc.ca/hts/siteprod/maps/SI_maps.html

Where specific PEM/TEM data are not available within your area of interest the site productivity layer uses SI data predicted from the biophysical model to complete or fill in the information gaps.

The provincial GIS site index layer can be downloaded from the FAIB site productivity web page:

ftp://ftp.for.gov.bc.ca/HTS/external/!publish/Provincial_Site_Productivity_Layer_June_2013/

Users of the site index layer have the option of downloading information for the entire province or for specific management units by selecting from the TSA list.

The provincial site index layer will be updated annually (around June 30 of each year) in order to reflect the most recent PEM, TEM, SIBEC, or biophysical data that become available in the previous year. SI data is improved and updated to address any data inconsistencies that may be found with use of the site productivity layer.

Appropriate use of the site productivity layer:

The SI's on the site index layer are all estimates from models, either from PEM/TEM/SIBEC or the biophysical model where a PEM/TEM derived SI is not yet available. In the case of PEM/TEM/SIBEC estimates, two models are used to estimate SI: a PEM/TEM is used to estimate site series and the SIBEC model is used to estimate site index from the PEM/TEM site series estimate. As a consequence, users of the site index layer must be aware of the accuracies in these models. This is particularly the case if you are using the SI estimate on a site specific basis.

The site index layer is better suited to assisting with strategic-level decision-making where the effects of the errors in the site index estimate are reduced from the grouping and averaging of individual site index values for points into large groups of points across a broader area such as an analysis unit. The site index layer was designed specifically to do this. Because the site index estimates are provided for points on a 1 ha grid, the user has a lot of flexibility in how they want to group points for weighting and averaging.

Contacts:

For further information on the provincial site productivity layer please contact Graham Hawkins, MFLNRO at Graham.Hawkins@gov.bc.ca

For further information on SIBEC standards and procedures please contact Gord Nigh or Shirley Mah, MFLNRO at Gord.Nigh@gov.bc.ca Shirley.Mah@gov.bc.ca

For further information on the biophysical model please contact Gord Nigh, MFLNRO.

If you have a proposed deviation from these procedures for discussion with FAIB, please contact Barry Snowdon at Barry.Snowdon@gov.bc.ca

For further information on the FAIB site productivity project please contact either Ron Planden, MFLNRO at Ron.Planden@gov.bc.ca or Corey Erwin, MOE at Corey.Erwin@gov.bc.ca

Additional Information:

Site index data are collected from a large number of sample points across the province using standards and methods that are published and available through the following links:

http://www.for.gov.bc.ca/hre/sibec/

http://www.for.gov.bc.ca/hre/sibec/documents/standards.pdf

Link(s) to PEM/TEM Standards:

http://www.env.gov.bc.ca/ecology/tem/manuals.html

Biophysical model description:

http://www.for.gov.bc.ca/hfd/pubs/Docs/Tr/Tr073.htm

Background information is provided on LBIS, site productivity strategic and annual work plans at:

http://www.for.gov.bc.ca/hts/siteprod/

Provincial site productivity layer website includes background information as well as a provincial level overview map showing which SI data are presently loaded from an assessment and cleanup of the best available PEM/TEM and SIBEC information:

http://www.for.gov.bc.ca/hts/siteprod/provlayer.html