FRST 318 / 537C **Case Study #2**

Due: March 6th at midnight

Hand in via e-mail to FRST318@outlook.com with lab number and first names of each group member in the subject line.

This assignment is to be completed in assigned **GROUPS**

SouthCoast Forest Products Ltd. would like to prepare a bid for a 2,100 ha private woodlot that is for sale on the Sechelt Peninsula (*in the Sunshine Coast Forest District, Vancouver Forest Region, in the CWH biogeoclimatic zone*). The woodlot is 2,100 ha and stocked with naturally regenerated 140 year old Coastal HemBal with a density of 1000 stems/ha. Growing conditions on this section is good (Site Index 30) and the average slope is 10%. Unfortunately, however, the stand is in poor condition due to a combination of over-mature stock and severe wind damage.

Arbor Vitae Ltd. of Vancouver, BC prepared a timber cruise report and identified several silvicultural options for managing the woodlot as described below.

Due to the poor condition of the stand, clearcut the current stand and then proceed with one of the following management options:

1. Manage for HemBal (Hw) with artificial regeneration (density: 2,500 stems/ha) and clearcutting for final harvest; and
2. Convert the area to Coastal Douglas Fir (Fd) and manage with artificial regeneration (density: 2000 stems/ha), thinning to 600 stems/ha at 33 m top height, and clearcutting for final harvest.

SouthCoast Forest Products Ltd. has requested a financial evaluation of these management options using land expectation value calculations (rotation ages of 10 to 110 years, in 10 year increments) using a 4% interest rate. Since SouthCoast Forest Products Ltd. is currently negotiating the purchase of this woodlot, the optimum management strategy as well as the maximum bid value has to be identified. Additional costs associated with this woodlot are management and auditing costs as noted in Table 1.

SouthCoast Forest Products Ltd. is also interested in an investment analysis of the woodlot that includes carbon management. In doing so, they have requested that you manage for carbon by extending the rotation age by 10 years. The additional carbon sequestered will be accounted using a carbon contract that will end once the stand is harvested. You are to assume the current market price of \$9.00 /CO_2e (Pacific Carbon trust estimates the price for improve forest management to be between 7 and 12 dollars) is held constant and a10% loss of creditable carbon from leakage and emissions due to harvesting activities.

Objectives

You are required to produce an investment analysis of two scenarios on the woodlot: one analysis that does not include managing for carbon; and one that manages for carbon. Your objectives will include:

1. Optimal rotation age and management scenario for the wood lot; and
2. Maximum bid value for the whole woodlot.

Deliverables

For the purposes of this exercise, you will submit a summary report along with your calculated costs, revenues and LEV excel file spreadsheet. The report should be a maximum of three pages and describe the rational behind the optimum management strategy and the maximum bid for each scenario. Your spreadsheet should be easy to follow and logical. Please use titles, headers, colours, and tabs to organize your spreadsheet neatly.

Deliverables are due **March 6th at midnight via email** to FRST318@outlook.com with you lab number and first names of each group member noted in the subject line.

Additional Information

To generate an accurate financial analysis, please use BC Ministry of Forests, Lands and Natural Resource Operations Market Pricing System for the Coast (3 month period, ended November 30, 2014)[1]. Information on stand yields (merchantable volume of trees with 12.5+ dbh) and log grade breakdown matrices should be obtained using the BC Ministry of Forests Growth and Yield Modeling Software TIPSY v4.3 which is installed on your workstations.

Note 1: Please note that HemBal is treated as Coastal Western Hemlock in TIPSY so use 100% Coastal Western Hemlock (Hw) instead of HemBal for your analysis in TIPSY.

Note 2: All financial analysis should be done by you in an excel file spreadsheet, **DO NOT USE** TIPSY's economic output. Just extract the log breakdown table.

Note 3: A guide to TIPSY is available on the FRST 318 web site under the Case Studies tab. This guide describes how to use tipsy for this assignment and is very useful.

Note 4: In order to assist you in your analysis, a cost table for site preparation, regeneration, management and logging has been provided under Table 1 on the following page (please note the units used).

[1] https://www.for.gov.bc.ca/ftp/hva/external/!publish/web/parameters/coast/2015/MPS_201502.pdf There are two tables in this document, one for old growth and one for 2nd growth stands. Pay attention when extracting the prices.

Table 1: Silviculture Costs Summary

Description		Value	Units
Site Survey		100.00	$/ha
Site Preparation		500.00	$/ha
Planting		Hw: 1045.00 Fd: 1470.00 Cw: 5695.00	$/ha
Thinning	Tree to Truck	25.00	$/m^3
	Hauling	11.00	$/m^3
	Roads	4.00	$/m^3
Clearcutting	Tree to Truck	22.00	$/m^3
	Hauling	11.00	$/m^3
	Roads**	4.00	$/m^3
Auditing		20,000	$/3 years
Management		75.00	$/ha/year

** Due to the extremely poor condition of the access roads to the woodlot, the road costs for the initial harvests of the woodlot would increase by $11.00 per m^3 (for a total road cost of $15.00/$m^3$).

Note 5: Steps to convert volume of the lot to carbon are provided below (note for this exercise we will only consider the bole of the tree, other carbon pools will not be considered). First calculate biomass using the following function from Kivari et al. (2011):

$Biomass_{bole} = 0.4052*Volume_{bole}$

Convert biomass to dry weight assuming 0.5 a factor then dry biomass to carbon assuming 0.5 factor:

$C = Biomass*0.5*0.5$

To get CO_2e multiply by molecular constant

$CO_2e = C*3.666$

References

Kivari, A., Xu, W., and Otukol, S. 2011. Volume to Biomass Conversion for British Columbia Forests. Available online [accessed January 13, 2014] <*www.for.gov.**bc**.ca/*>